

Expressways and Major Road Projects 20,000 Km

Expressways

- Pre-Feasibility Study, Optimisation of Road Corridor using Modern Technology, Data Acquisition for Delhi - Jaipur, Delhi - Meerut, Mumbai - Vadodara and PDR for Chennai - Bangalore Expressway

4/6 Lane Highways

- DPR for Nellore - Chilkalurupet, Farukhnagar - Kottakota, Kanyakumari - Trivandrum, Nelamangala - Hassan, Hyderabad - Vijayawada, Jodhpur - Pokaran and other Roads
- Intermediate Ring Road, Radial Roads around Bangalore and Techno - Economic Feasibility Study for Satellite Town Ring Roads

2/4 Lane Roads

- Investigations and Design for Sambalpur - Rourkela, Ankola - Bellary, Devanahalli - Kolar, Report for OMT Bangalore - Mysore - Madikeri, etc.

Land Acquisition on Turnkey

- Mumbai - Vadodara Expressway

Urban Roads, Flyovers and Internal Roads for industry

- Kochi, Kanpur, Bangalore Outer Ring Road, Ranchi Flyover Anjanapura Layout, Bangalore, HPCL Refinery and BASF Mangalore

High Altitude Roads, DPR for Defence Projects

- Avalanche Control Structures in Central Himalayas, DPR for Roads and Tunnels at Shimla, Internal Roads for Defence Projects in Andhra Pradesh, Himachal Pradesh and Rajasthan

Web Enabled Enterprise GIS

- Collation of DPR for 5700 Km of National Highways, development of PMS and BMS for Construction Supervision

Construction Supervision and Project Management

- Nellore-Chilakalurupet, Krishnagiri-Ranipet, Yadgir-Shahpur, UP State Roads Project (Phase II) including **800m** long Bridge,
- Proof Checking and Supervision for 110 Bridges, Supervision of Operation & Maintenance of 3700 Km Roads in Karnataka

International projects

- Design of 1996 Km of Roads for 101 towns, Traffic Management and Interchange Designs of grade separated junctions on Tripoli Ring Road, **Libya**, Kabul - Jalalabad Road, **Afghanistan**, Road and Drainage Network, Structures, **Saudi Arabia**
- Construction Supervision of University Buildings and Roads in **Libya**

SECON's other Area of Core Competence and Service Offerings

Investigation and Services

- Engineering, Property and Hydrographic Surveys
- Geotech, Soil Investigation and Foundation Engg.
- Photogrammetry, LiDAR and Remote Sensing
- Route Planning, 3D Corridor and GIS Database
- Geological and Geophysical Surveys
- Ground Water and Resistivity Surveys
- Underwater Leak Detection and GPR Surveys
- GIS/CADD Conversion and generation of Database

Design Consultancy and Engineering Services

- Water, Sewerage, Storm Water and Treatment
- Irrigation, Flood Control & Water Management
- Cross Country Pipeline Transportation
- Town Planning, Electrical, Telecom and Utilities
- GIS Driven Software Application Development
- GIS Based Land Information System, Right of Way
- Environment and Social Impact & Management Plan
- Highway Engineering & Construction Supervision

Awards

- **Best Professionally Managed Company 2014** - Construction Industry Development Council (CIDC)
- **Geospatial Company of the Year 2013** - India Geospatial Forum 2014
- **Best Project for Urban Infrastructure 2011** - Construction Industry Development Council (CIDC)
- **Export Excellence Award (Gold) 2010** - Federation of Karnataka Chambers of Commerce & Industry (FKCCI)
- **Export Excellence Award (Silver) 2008** - Federation of Karnataka Chambers of Commerce & Industry (FKCCI)
- **Certificate of Appreciation 2012** - Gas Authority of India Limited (GAIL)
- **Woman Consultant of the Year 2012** - Consulting Engineers Association of India (CEAI)
- **Woman Consultant of the Year 2009** - Consulting Engineers Association of India (CEAI)

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SECON

(CMMI Level 3, ISO 9001: 2008, NABL Accredited)



GIS Driven Multidiscipline Engineering Consultancy



HIGHWAY ENGINEERING AND CONSTRUCTION SUPERVISION

Survey and Investigation

- Feasibility Study of Road Corridor, Survey Control, Data capture by Modern Technology, Preliminary and Final Location Survey
- Geotech, Material, Pavement and Sub Grade Investigations
- Hydraulic and Hydrological Investigations
- Traffic and Social Surveys including Analysis
- Environmental Impact Study, Management and Clearance
- Turnkey Land Acquisition and Computerization of Land Records

Design Engineering and Detailed Project Report (DPR)

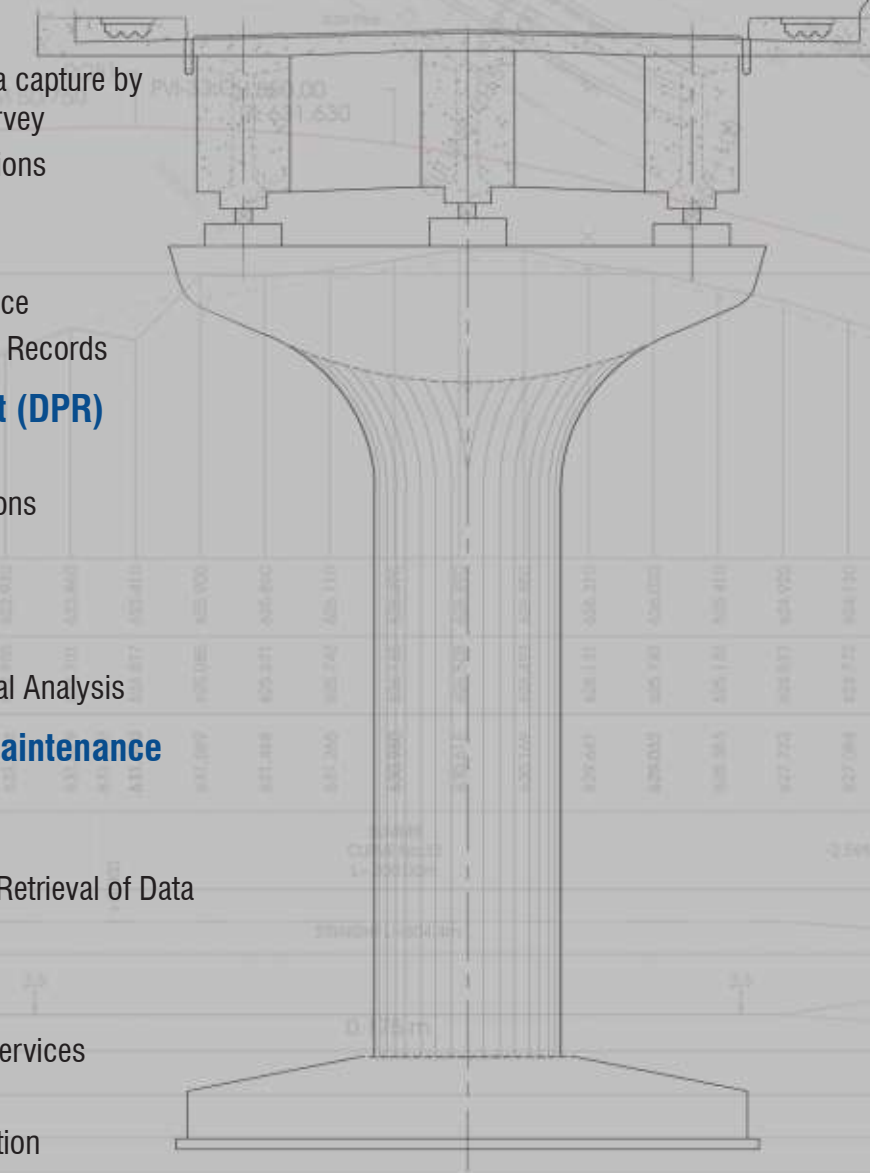
- Compliance to Standards, Code Practices and QAP
- Road Geometrics, Intersections, Alignment Plan, Sections
- Road Furniture and Safety Features
- Design of Structures, Grade Separators, Drainage
- Rigid and Flexible Pavement Design
- Bill of Quantities, Project Costs, Economic and Financial Analysis

Web Enabled Enterprise GIS, Highway Asset, Maintenance

- Generate Dynamic Database and Project Monitoring
- End to end Land Acquisition Process and Tracking
- Advanced Web Application, Automatic generation and Retrieval of Data

Construction Supervision

- Project Supervision and Contract Management
- Technical Control, Project Monitoring and Inspection Services
- Quality Control and Certification
- Independent Engineering, Claims, Reviews and Arbitration



Total Solution from a Single Window

SECON, established in 1981, is a CMMI LEVEL-3, ISO 9001:2008 and NABL Accredited Firm of over 700 personnel. The HQ in Bangalore, India, has an aesthetically designed 105,000 sft company owned office. Regional Offices at Mumbai, New Delhi, Vadodara, Bhopal, Lucknow and Tripoli, Libya augment SECON's range and reach. SECON is the only company that offers in-house multitask / skill solutions for Design Engineering, Related Investigations including Software Development, Testing & R&D Services. SECON also renders services on Onshore - Offshore Model.



Highway Design and Construction Supervision

SECON provides turn-key solutions in the field of Highways using Modern Technology, Remote Sensing, extensive Computer Application for Survey, Planning, Design, Construction Supervision of 4/8 lane Highways, Expressways, Urban, Hill Roads and Other Road Networks, related Structures, Bridges, Flyovers including Land Acquisition on Turnkey.

Total Road network covered exceeds 20,000 Km.



Survey & Investigation

Feasibility Study, Alignment selection and Optimization of Road Corridor, Survey Control, Data capture by Photogrammetry, LiDAR and Remote Sensing, Preliminary & Final Location Survey and Land Acquisition

Geotech and sub surface investigation and Testing

- Deep boring for Bridges, ROB, Interchanges, Underpasses and High Embankments
- Collection and Testing of soil and rock samples, Analysis, Foundation Engineering and Design

Material Investigations

Identify Sources, Borrow and Quarry Areas, Testing for Suitability, Mass Haul Diagram, Design of Mixes for earthfill, subgrade and Pavement

Pavement Investigations

Pavement Condition Surveys, Benkelman Beam Deflection studies, Trial pits and Roughness measurement using Bump Integrator. Ascertaining the composition, Surface Distress, Cracking, Pot holing, Roughness, Structural Strength, condition of Shoulders and Sub Grade Characteristics by testing & analysis

Hydraulic and Hydrological Investigations

Catchment area, Drainage Studies, Secondary Data Collection of Rainfall, Top Soil, Vegetation, High / Low / Historic Flood Level, Calculation of design discharge, velocity, Afflux, Scour, Silting, Hydraulic characteristics, Linear Waterway, Settlement Characteristics, etc.



Traffic Engineering and Surveys

Secondary Data Collection, Volume Count, Turning Movement, Origin - Destination and Commodity Movement, Axle Load / Speed Delay Studies, Willingness to Pay, Truck Terminal, Pedestrian Surveys and Black Spot Analysis. Data Analysis and estimation of Traffic growth rate, Projection and determination of Tollable Traffic and load for pavement design.

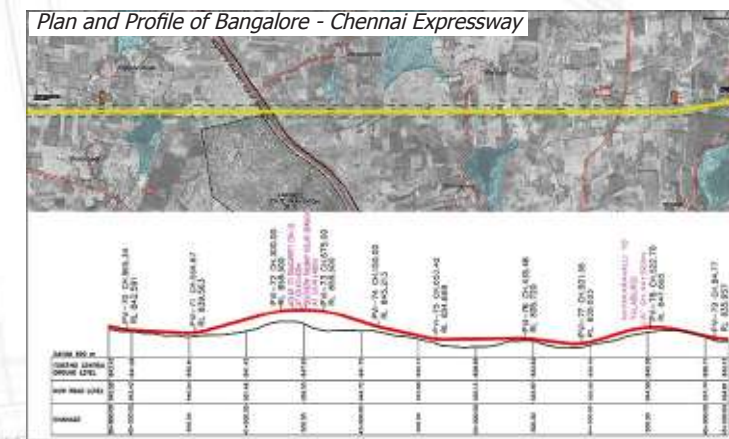


Environmental Impact Study, Management, Mitigation, Rehabilitation and Clearance

Environmental Screening, Base Line Study, Potential Impacts, Redevelopment of Borrow Areas, Mitigation Measures, Resettlement and Rehabilitation Plan, Monitoring during Construction, Compensatory Forests, Environment Management Plan, Policy, Legal and Administrative Frameworks.

Land Acquisition on Turnkey and computerization of Land Records.

Inventory of Property, Structures, Crop, Land Plan Schedules, ROW Boundary, Utility Shifting, Way Leave License, Permission, Computerisation of Database, Assistance for Land Acquisition.



Economic and Financial Analysis

- Economic Evaluation, Cost Benefit Analysis (CBA), Internal Rate of Return (IRR).
- Financial Analysis, BOT (Build-Operate -Transfer) viability
- Project Implementation and Financing options

Construction Supervision

- Construction Supervision including Project and Contract Management.
- Project Monitoring
- Technical, Financial Control, Certification.
- Independent Engineering, review of drawings / documents, site inspection, monitoring of construction works, Road Safety Audit, Assistance in Resolution of Disputes



Design Engineering and Detailed Project Report

- Road Geometrics, Alignment Plan, Profile, Intersections and Junction Improvement
- Service Roads, Over and Under Passes, Bypasses
- General Arrangement Drawing (GAD) and Detailed Drawings for Bridges and Structures, Grade Separators
- Design of rigid and flexible pavement and Overlays
- Bus and Truck laybys, Wayside Amenities, Truck Parking, Weighing Stations, Toll Plazas
- Road furniture, Safety features, Rehabilitation of Structures
- Detailed Project Report (DPR) including Technical Specifications, Bill of Quantities, Cost Estimates and Tender Documents



Web Enabled Enterprise GIS, Highway Asset, Maintenance

- Onsite Road Information, Condition of Structures
- Land Information, Schedule, Jurisdiction, Utility Crossings, end to end Process Tracking, Design Parameters, Monitoring of Construction progress
- Monitoring of Accident Prone areas and Disaster Management
- Generation, Retrieval of Data, Dynamic Reports and Maintenance
- Highway Asset and Maintenance Management System