

Statement of Qualifications

**Geographic Information Systems
Photogrammetry and LIDAR Services**



SECON Private Limited

<http://www.SECON.in>



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1. Profile

SECON is an ISO 9001:2000 certified GIS Driven Multidiscipline Engineering company with 550 personnel. SECON is a financially sound, stable, zero-debt company that was established in 1981. The company is currently in its 25th year of operations. SECON is one of the leading multidiscipline engineering consulting firms and the largest and oldest surveying and mapping firm in India with over 25 years of experience. Most of SECON's clients are repeat and long-term clients.

SECON provides world-class GIS services and software solutions at cost-effective rates by using the global delivery model. SECON is an ESRI Business Partner and a member of the Autodesk Developer Network (ADN).

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.

The key differentiator for SECON is that the company is not just an offshore conversion firm, but a well-established (established in 1981) Multidiscipline Engineering firm. The SECON QA/QC staff working on the surveying and mapping projects have first hand experience in dealing with SECON's Engineering Consulting staff that provide input while working on SECON's engineering consulting projects.

SECON personnel have access to SECON's engineering talent and domain expertise in:

- Oil and Gas Pipeline Transportation
- Water and Sanitation Engineering
- Highway and Transportation Engineering
- Civil and Structural Design
- Irrigation and Flood Control Engineering
- Environmental Engineering
- Geotechnical Engineering
- Cadastral and Parcel Mapping
- Land Surveying and Mapping
- Photogrammetry, LIDAR and Image Processing
- GIS Driven Software Development
- GIS Data Conversion and Maintenance

SECON has the following standing in India:

- The largest private (non-government) surveying and mapping firm in India
- The dominant pipeline corridor mapping firm 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 and design firms in India



SECON has executed over:

- 35,000 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.
- 800 km of mapping, design, and construction supervision of highways
- 1,000,000 Hectares (3,861 sq miles) of large-scale mapping (topographical and cadastral) for Irrigation projects
- 400,000 Hectares (1,550 sq miles) of Irrigation and Water Management design projects
- 300 infrastructure development projects (includes subdivision/township mapping, design and planning)
- 300,000 meters of geotechnical investigation and drilling in various soil strata.
- SECON has also extracted the Detailed Project Report data for 7,300 km of National Highways in India and collated this data for entry into the NHAI Road Information System.
- SECON is currently short-listed for the pioneering National Highway Asset Inventory project in India. This project is to perform the asset inventory of 5,700 km of National Highways in India.
- SECON is currently executing a major multimillion dollar mapping and consulting project for the planning and design of the Water and Sanitation system for 13 municipalities (119 settlements) in Libya.

2. SECON's GIS Service

SECON has been offering GIS services since 1995 and has vast experience in the creation and maintenance of GIS databases and applications for diverse clients.

SECON is one of the oldest users of Autodesk and ESRI software in India. SECON was one of the first ESRI Business partners in India and is also a member of the Autodesk Developer Network and the ESRI Developer Network.

Capabilities

GIS Driven Software Development

SECON has vast experience and proficiency in developing applications on the ESRI and Autodesk platforms. SECON is also familiar with Microstation, Geomedia and open source GIS software. SECON has a proficiency in developing applications for Pipelines, Right of Way Management and Water & Sanitation applications. The spectrum ranges from

Testimonial

“We are very satisfied with the services rendered by Secon Surveys Pvt Ltd and would strongly recommend them for GIS services and software solutions”

**Mohd Ahsan, MIS Expert, PACT,
UP Water Sector Restructuring Project,
Irrigation Dept, UP, India**



simple desktop applications to Web enabled enterprise GIS application development. Please refer to the experience section for a sample of the relevant experience of SECON in GIS driven application development.

GIS/CAD Data Conversion

SECON has a large team of GIS technicians to provide GIS/CAD data conversion services for a variety of industries such as:

- Water and Sanitation
- Oil & Gas
- Cadastral and Parcel Mapping
- ALTA and Title Mapping
- Water Resources and Floodplain mapping
- Environment and Natural Resources
- Irrigation and Flood Control
- Photo Interpretation and Data Capture
- Electric Utilities
- Telecom

Testimonial

“We are very satisfied with the services rendered by Secon Surveys Pvt Ltd and would strongly recommend them for GIS services and software solutions”

Program Manager, Information Solutions, PBS&J

SECON has executed GIS conversion projects across the globe for clients in the US, Canada, Italy, Africa and India.

Capacity

GIS Driven Software Development

SECON has a team of 25 developers with a capacity of 4000 hours/month for software development. With 2 months notice, SECON can ramp this capacity to 40 developers.

GIS/CAD Data Conversion

SECON has a team of over 150 GIS/CAD personnel for data conversion with a capacity of 24000 hours/month for data conversion. With 2 months notice, SECON can ramp this capacity to 220 personnel with a capacity of 35000-40000 hours /month.

Pricing

GIS Driven Software Development

For short-term, low-volume projects, SECON's billing rate for GIS Software development ranges between is \$18/hour-\$26/hour. SECON can offer significant discounts of upto 15% if its business partners outsource long-term, high-volume projects. A typical long-term, high-volume project would be 2,000 hours/month for a minimum of 10-12 months.



GIS/CAD Data Conversion

For short-term, low-volume projects, SECON's billing rate for GIS Data Conversion ranges between is \$8/hour-\$12/hour. SECON can offer significant discounts of upto 15% if its business partners outsource long-term, high-volume projects. A typical long-term, high-volume project would be 5,000 hours/month for a minimum of 10-12 months.

3. SECON's Photogrammetry and LIDAR Service

SECON has embarked on a planned strategic initiative to become a major player in the Photogrammetric and LIDAR services arena.

SECON has embarked on this initiative for two reasons:

- To become a major offshore service provider in the Photogrammetric and LIDAR services arena. SECON is one of the pioneering Indian offshore companies offering LIDAR processing services. SECON intends to sell its services to clients in North America, Europe, the Middle East and North Africa. SECON is in the process of spinning off its offshore services (exports) as a separate revenue stream.
- To use these services for its engineering projects in India and other parts of the world.

SECON's corporate strategy is based on building long-term business relationships that are mutually beneficial, working with partners that are willing to outsource their Photogrammetry and LIDAR processing services to SECON's Bangalore, India facilities.

SECON's operations are certified to the world standard ISO 9001:2000 quality management system.

SECON is willing to perform small (up to 100 hours) pilots at no cost as a proof of concept and to build its partners confidence in SECON. SECON can offer significant discounts of up to 20% of its normal billing rates if its business partners outsource long-term, high-volume projects.

SECON also is seeking partners who can offer their services (with cameras and sensors) for upcoming projects in India. The Photogrammetry and LIDAR market in India is opening up to private agencies and SECON intends to capitalize on this opportunity. The government of India has the following projects underway:

- Mapping of the entire country with private agency participation
- The river interlinking project. This project will link the perennial and flood-prone rivers to the seasonal rivers of India. This will be one of the largest projects ever undertaken in the world and will span at least 2 decades, involving significant Photogrammetric and LIDAR mapping services to map the basins and watersheds of these rivers.



SECON is the only agency in India with the experience to perform both the mapping and design of these projects. SECON is well positioned to be a significant player for these projects with its sterling reputation and extensive experience and network of clients.

Capabilities

Photogrammetry

SECON offers a full range of Digital Photogrammetry processing services. These include:

- Aerial Triangulation
- DTM/ Contour Generation
- Feature collection (3D Vectorization)
- Orthophoto generation/ Mosaicing/ Tiling

LIDAR

SECON offers a full range of LIDAR processing services. SECON has the requisite capabilities for classifying and editing (filtering/cleanup) LIDAR data.

SECON offers the following LIDAR services:

- Classification of ground and non-ground points (using automated classification and manual filtering methods)
- Removal of noise points
- Transmission line LIDAR processing
- DEM and contour generation
- 3D surface model generation
- Land use classification
- Flood plain mapping (hydrological modeling of watersheds)

Software

Photogrammetry

SECON uses Photogrammetric software from Inpho and DAT/EM. The software from these companies integrates with each other and the entire process is seamless and result in industry standard deliverables.

LIDAR

SECON uses Terrasolid software for processing of LIDAR data. The software includes TerraScan, TerraModeler and TerraMatch.

TerraScan has proven to be an industry standard for LIDAR data processing and classification. The filtering process is performed with TerraScan to extract the “bare earth” points, which are used to represent the terrain. Bare earth filtering is required in order to generate contours and DTMs. A LIDAR processing professional determines the



techniques to apply, and manual classification is applied to obtain the bare earth surface.

Routines/Algorithm: TerraScan macros are used for filtering. If required, specific macros can be developed in-house based on specific project requirements.

SECON also is developing custom macros and software to assist in the classification process and to further reduce processing costs.

Various quality control steps are built into SECON's processing procedures to ensure quality data.

Capacity

Photogrammetry

SECON has 4000 hours/month of Photogrammetry capacity. Based on awarded projects, SECON can ramp up its capacity to 4,000 hours/month or as required within two months.

LIDAR

SECON has 5000 hours/month of LIDAR capacity. Based on awarded projects, SECON can ramp up its capacity to 7,000 hours/month or as required within two months.

Pricing

Photogrammetry

For short-term, low-volume projects, SECON's billing rate for Photogrammetry is \$17/hour. SECON can offer significant discounts of 15% if its business partners outsource long-term, high-volume projects. A typical long-term, high-volume project would be 2,000 hours/month for a minimum of 10-12 months.

LIDAR

For short-term, low-volume projects, SECON's billing rate for LIDAR is \$18/hour. SECON can offer significant discounts of 15-20% if its business partners outsource long-term, high-volume projects. A typical long-term, high-volume project would be 2,000 hours/month for a minimum of 10-12 months.

4. Security at SECON's ISO 9001:2000 Certified Operations Center

SECON has a state of the art 105000 sqft ISO 9001:2000 certified operations center that is fully owned by the company.

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



Aesthetically designed 105,000 sqft. Company owned office space



The controls include:

Security - Physical Controls

- 24X7 security guards
- Access Control Devices to restrict access to the different areas of the Operations Center.



Security - Technical Controls

- Network Monitoring Tools
- Web content filtering tools to restrict websites and ftp sites.
- Anti-Virus Tools
- Firewalls
- Secure Servers
- Encryption
- Restricted and controlled access to floppy drives, zipped drives and CD/DVD writers- these are disabled on all machines. Disabled USB drive data transfer on all machines. Only the network administrator can do data transfer to external devices and closely controls this external data transfer.
- Restricted access and monitoring of SECON FTP site.
- Regular backup of data on daily and weekly intervals
- Power Backup with UPS and Generators
- Leased Line Backup for Internet Connectivity

5. SECON's Global Delivery Model

Contracts

All contracts between the North American client and SECON are through made to SECON Private Limited LLC, a US company incorporated in Florida. The company carries Professional Liability, General Liability and Workmen's Compensation insurance.

SECON's offices in Tampa Bay, Florida, Denver, Colorado and Houston, Texas manage the project and liaison with the client. The work is performed at SECON's ISO 9001:2000 certified operations center in Bangalore, India. This provides a seamless client experience and results in high-quality, cost-effective, consistent and timely deliverables.

Project Management

Weekly progress reports will be sent by email from SECON to the client project manager. The SECON Project Lead will interact on a frequent basis (more than 2-3 times a week) with the technical lead from the client during the project.



SECON will extensively use webconferencing tools such as Webex and Citrix Online to interact with the client on an as-required basis. Project documentation will be exchanged by Microsoft Word, Excel, Visio, and MS Project.

Communications Protocols

Email will be the preferred method of communication. In addition teleconferencing and webconferencing will be used. File transfer will be done through FTP. Large file transfers (>40gb) will be transferred by Courier. SECON has a 1mbps leased line for Internet and File Transfer purposes.

6. Offices and Contact Information

<p style="text-align: center;">India</p> <p>147, 7B Road, EPIP, Whitefield Bangalore 560066 Phone:91-80-41197778 Fax:91-80-41194277 Email: feedback@SECON.in</p> <p>Dhyan Appachu, Director, International Operations Chief Technical Officer Email: dhyan.appachu@SECON.in</p>	<p style="text-align: center;">USA</p> <p>12000 4th St North, #142, St Petersburg, FL 33716 Phone: 813-495-0158 Fax: 727-499-6945</p> <p>2727A W. 107th Court Westminster, Colorado 80234 Ph/Fx:303-464-7699 Dana Scott Director - Business Development USA Email: dana.scott@SECON.in</p>	<p style="text-align: center;">SINGAPORE</p> <p>152 Beach Road, #28 Level Gateway East Singapore 189721 Tel: +65-6827-9786 Fax: +65-6295-2567</p> <p>Ravi Kiran, Manager Business Development Email: ravi.kiran@secon.in Mobile: +65-9112-0931</p>
<p style="text-align: center;">LIBYA</p> <p>SECON Private Limited PO Box 13456, Tripoli,Libya Phone: (218)(21)3613557</p> <p>Rupesh Jang Shah Email: Rupesh.shah@SECON.in</p>	<p>Kenneth Neil Duke Vice President - Business Development 18115 Shireoak Houston, TX 77084 Phone:(832) 647-6656 Email: neil.duke@SECON.in</p>	



7. Resources

Software

Photogrammetry and LIDAR Processing

- ❖ Aerial Triangulation:
 - Match AT 4.0 from Inpho, Germany
- ❖ DTM Extraction (Automatic):
 - Match T 4.0 from Inpho, Germany
- ❖ Ortho Rectification:
 - OrthoMaster 2.0 from Inpho, Germany
- ❖ Mosaicing/ Tiling/ Seam Editing:
 - OrthoVista 4.1 from Inpho, Germany (2 Sets)
- ❖ Feature collection/ Editing:
 - SummitEvolution 3.5 from DATEM, USA (3 Sets)
 - AutoCAD Map 2006 from AutoDesk (30 Sets)
 - Microstation V8 from AutoDesk (2 Sets)
 - ArcView 9.1/ ArcInfo 9.1 from ESRI (6 Sets)
- ❖ Image Enhancement:
 - Adobe Photoshop CS V8.0
- ❖ Image Compression:
 - GeoExpress with Mr.SID

- ❖ LIDAR Data Processing:
 - Terrasolid TerraScan, TerraScan, TerraModeler, and TerraMatch. Custom classification macros (under development).

GIS

- AutoCad Map 3D, Autodesk Raster Design, Autodesk MapGuide
- ArcGIS ArcView, ArcGIS ArcInfo, ArcGIS Spatial Analyst, ArcGIS 3D Analyst
- ArcSDE, ArcIMS, ArcGIS Server
- ArcEngine, ArcPad
- MicroStation, Geographics, Descarte

CAD

- AutoCAD, MicroStation V8, MicroStation J, IntelliCAD, Surfer

Software Development

- Visual Studio.NET Enterprise
- Visual Studio.NET Enterprise Architect
- Visual Studio.NET Professional
- Visual Studio Enterprise Developer
- MSDN Universal
- Mantis



Civil Design

- AutoDesk Land Development Desk Top
- Auto Civil Rel. 8.0, Autodesk Civil 3D,
- Staad Pro, Geopak, Nova Point Road Professional, MXRoadMax
- WaterCAD, SewerCAD, StormCAD

SECON has an extensive library of custom in-house developed software for all its areas of operation.

Computers and Peripherals

Description and Make	Quantity
Personal Computers- Intel Pentium, AMD Athlon, Cyrix	Over 300
Laptop Computer – Toshiba, Acer, Vesta, Compaq	8
Compaq Ipaq	4
Large format Design Jet Plotter – HP	7
Laser Jet Printer – Rex Rotary, HP	16
InkJet Printer – EPSON	15
Dot Matrix – Wipro, TVS	4
Digitizers – Calcomp	6
CD Writer – HP, LG	4
Modems - D-link	10
Hubs	7
Switches	3
Scanner – HP	2
UPS	300 kVA
Captive Power Generator – Kirloskar, Simpson, Escon	750 kVA



8. Experience

The following projects are representative samples of SECON's experience.

Software Development

Project: Web-enabled Watershed Monitoring and Management System (GIS)		Country : Canada
Location within Country: Toronto		Professional Staff Provided by your firm:
Name of Client : Toronto Region Conservation Authority (TRCA) & York University		No. of Staff : 3
Address: Toronto Region Conservation Authority (TRCA) 5 Shoreham Drive Downsview Ontario M3N 1S4 Canada		No. of Staff Months : 30
Start Date (Month/Year) June 2003	Completion Date (Month/Year) January 2004	
Name of Association Firm(s) if any:		No. of Months of Professional Staff provided by Associated Firm(s) : NA
Narrative Description of Project: This consolidated GIS system, Watershed Monitoring and Management System provides a web-based data uploading, mapping, assessment, and reporting service for various indicators like Fish, Benthol & Water Chemistry of watershed health.		
Description of Actual Services Provided by SECON Staff: This pilot project focuses on the development of a Web-based data assessment and reporting system to support the TRCA's Regional Watershed Monitoring Program. As a pilot project, its purpose is to demonstrate how biological monitoring and abiotic data can be presented in a geographic context to facilitate the sharing of watershed monitoring data with civic, scientific and political stakeholders. This consolidated system will provide for a web-based data uploading, mapping, assessment, and reporting service for various water quality indicators. A three-tier architecture infrastructure was implemented in a Windows 2000 environment to allow map services to be served through an ArcIMS server and presented through a customized thin HTML interface. All data will be contained in Geodatabases and managed by ArcSDE. Additional services and functionality (e.g., data entry, catalogues indexing and dynamic web reporting) is provided through custom MapObject programming, Java 2 Enterprise Edition (J2EE) and integration with other supporting applications (e.g., Crystal Decisions)		



Project:

SECON Alignment Sheet Generator (SASG)

With the development of the Alignment Sheet Generator, SECON has achieved a fully automated technique to generate Alignment, Cross section details & Reports for the entire length of the pipeline.

SASG is a high-end engineering application, which can process the survey data with details like Planimetry, profile, cross-sections, soil investigation / soil resistivity, etc. SASG was developed in-house by SECON and can be customized to meet a client's requirements for generating pipeline alignment sheets.

SASG has the following features:

- Effective Survey Data Management
- Generates Ready to plot Alignment Sheets & Cross Sections
- Cross Sections with Geotech Details & Jurisdiction Details
- Various Reports on Population Density Index, visual Classification of Bore Holes & Soil Strata and Soil Resistivity
- Reports on TP/IP Bearing Angle/ Deflection Angle with List of Coordinates and Progressive Chainages

SASG is currently being customized for IBG (<http://www.ibgrombach.com/>), a leading European engineering firm. This will help the company generate survey and engineering alignment sheets for their water transmission pipeline projects.

SASG has been customized for Reliance (<http://www.ril.com/>), the largest private sector Indian corporation, and is extensively used by them for their large oil and gas transmission pipeline network.

Project:

Irrigation Resource Information System (IRIS)

The Uttar Pradesh Water Sector Restructuring project is aimed to promote more sustainable development and use of the state's limited water resources. As part of this contract, SECON developed IRIS.

The application allows staff to upload, assess, and extract their data on demand and in a geographic context. Among other features, a cartographic interface allows users to query and view geographic details of catchments area in an irrigation network. The tailor made geo-database is used to monitor water resource data.

IRIS helps water resource agencies lower operational costs while improving the effectiveness of their monitoring programs and the quality of services. IRIS can be further customizable to cater to any client's requirement. The system is developed using ArcObjects.

Testimonial

“SECON’s Pipeline management modules for generating crossing drawings, bore logs, reports, etc., ensures mapping and capturing with much higher speed and excellent repeatability compared to conventional methods. Updating and retrieval of data and information is greatly simplified. Being GIS compatible, the product has the capability for a seamless integration with other available pipeline application to perform “End-to-End” functions for Pipeline facility in all phase of its life cycle, viz., Concept to Commissioning, Asset Management and Statutory Compliances. The modules are field proven”

Senior Officer, Gas Transportation Infrastructure & Co. Ltd (Reliance Group), Mumbai, India

Testimonial

“We are very satisfied with the services rendered by Secon Surveys Pvt Ltd and would strongly recommend them for GIS services and software solutions”

Mohd Ahsan, MIS Expert, PACT,
UP Water Sector Restructuring Project,
Irrigation Dept, UP, India



Project : Pipeline Database Management System - Development of Comprehensive, software for generation of GIS/MIS database for survey and ROU/TOW data, engineering applications, to facilitate Disaster Management Module, Pre construction, Construction, Post construction, Operation Maintenance		Country : India
Location within Country: Gujarat		Key professional staff Provided by your Firm/entity (profiles): No. of Staff : 10
Name of Client : Gujarat State Petronet Ltd.		
Address: GSPC Bhavan, 3rd Floor, Sector – 11, Gandhinagar 382 011		No. of Staff Months : 90 Duration of assignment : 9 months
Start Date (Month/Year) February 2003	Completion Date (Month/Year) November 2003	
Name of Association Firm(s) if any: Nil		No. of Months of Key professional staff, provided by Associated Consultants : Not Applicable
Narrative Description of Project: Integrating pre construction, post construction and O&M details into database with user-friendly GIS tools developed for easy retrieval of data, reports generation and presentation		
Description of Actual Services Provided by SECON Staff: <ul style="list-style-type: none"> ▪ Carrying out user assessment study ▪ Procurement of Satellite imagery and preparation of base map ▪ Georeferencing of the seamless map based on established ground control points ▪ Convert all engineering details like alignment sheets, pipe books, P&ID drawings, As-built drawings, Geotech details into computer format ▪ Integration of Cadastral survey details & Acquisition details ▪ Carrying out Ground survey for as-built updating – Deployment of GPS interfaced with Pocket PC in order to collect the ground truth data and the pipeline details involving bends, SV, CP, CV, Main line Valve stations, etc., ▪ Collecting Disaster management support details like Hospitals, Fire extinguishers, Police stations, etc and integrating in GIS Map ▪ Converting all maps & large scale survey details to GIS format & Creation of GIS database ▪ Development of exclusive software for GIS/LIS including Training and Implementation. Application modules for Disaster Management support, Land/survey details, Document management system, WEB based O&M and Crossing details access are provided 		



Project: ROU Master – Right of Way Management Software		Country: India
Location within Country: Karnataka, Maharastra, Gujarat, Goa, Punjab, Andra Pradesh, Tamil Nadu, Madhya Pradesh, Rajasthan, West Bengal and Orissa		Professional Staff Provided by your firm:
Name of Client: Gas Transportation & Infrastructure Co. Ltd.		
Address: H - Block, 2nd Floor, A - Wing, Dhirubhai Ambani Knowledge City, Thane - Belapur Road, Navi Mumbai - 400 709.		No. of Staff : 8
		No. of Staff Months : 95
Start Date (Month/Year) October 2003	Completion Date (Month/Year) December 2004	
Name of Association Firm(s) if any: NIL		No. of Months of Professional Staff provided by Associated Firm(s) : Not Applicable
<p>Narrative Description of Project: ROU Master a Right of Use (RoU) Acquisition software is an advanced windows based software that provides details about land records, ownership details and automates the complete land acquisition process.</p> <p>It is useful for managing enormous data collected & generated for various activities involved with ROU Acquisition. The laborious work of generating reports and notices for individuals is replaced by a few keystrokes on the computer.</p> <p>Remote Upload: The data updated at all the sites offices is uploaded to the central server using “Remote Upload”, a special tool of ROU Master. The data is transferred through secured FTP.</p>		
<p>Description of Actual Services Provided by SECON Staff:</p> <ul style="list-style-type: none"> • Requirements Analysis • Application Development • Application Testing • Implementation • Customer Support • Documentation • Application Training 		



Project: ROU Master – Right of Way Management Software		Country: India
Location within Country: Gujarat		Professional Staff Provided by your firm:
Name of Client: GUJARAT STATE PETRONET LTD.,		
Address: Block – 15, 3 rd Floor Udyog Bhavan, Sector – 11 GANDHINAGAR - 382 011		No. of Staff : 10
Start Date (Month/Year) January 2003		No. of Staff Months : 125
Completion Date (Month/Year) February 2005		
Name of Association Firm(s) if any: NIL		No. of Months of Professional Staff provided by Associated Firm(s) : Not Applicable
Narrative Description of Project:		
<p>ROU Master a Right of Use (RoU) Acquisition software is an advanced windows based software that provides details about land records, ownership details and automates the complete land acquisition process.</p> <p>It is useful for managing enormous data collected & generated for various activities involved with ROU Acquisition. The laborious work of generating reports and notices for individuals is replaced by a few keystrokes on the computer.</p> <p>Data Migration: The data for 16 pipeline projects spanning 700 kilometers was automated using ROU Master.</p>		
Description of Actual Services Provided by SECON Staff:		
<ul style="list-style-type: none"> • Requirements Analysis • Application Development • Application Testing • Implementation • Customer Support • Documentation • Application Training • Data Migration 		



Topographic and Cadastral Mapping

Project : Topographic and Cadastral Survey & Preparation of Land Records (World Bank aided)		Country: India
Location within Country: Uttar Pradesh, India		Professional Staff Provided by your firm:
Name of Client: UPWSRP(World Bank), Uttar Pradesh Irrigation Department, Govt. of Uttar Pradesh		No. of Staff : 125
Address: Uttar Pradesh Water Sector Restructuring Project Irrigation Department Uttar Pradesh Pakri Ka Pul, VIP Road, Alambagh Lucknow-556012, India		No. of Staff Months : 2750
Start Date (Month/Year) January 2004	Completion Date (Month/Year) Jan 2006	Number of Parcels: Project scope covered app. 1,521,352 acres(2377 sq miles, 615658 Hectares) – 2,500,000 parcels app.
Name of Association Firm(s) if any:		No. of Months of Professional Staff provided by Associated Firm(s) : NA
Narrative Description of Project: Topographic and Cadastral survey and preparation of Land records and establishment of a survey grade GIS database. The project area covered 1,521,352 acres (2377 sq miles) – 2,500,000 parcels app. The outputs of the assignments are used for redesigning and rehabilitation of all the Irrigation and Drainage systems. Various analysis such as flow analysis and spatial analysis are performed using the GIS coverage's that is created as the output. This is the largest topographic and cadastral mapping project done in India by a private (non government) agency.		
Description of Actual Services Provided by SECON Staff: Topographic mapping 1,521,352 acres (615658 Hectares/2377 sq miles) with 20cm contour interval at 1:5000 scale. Cadastral mapping of approximately 2,500,000 parcels -field data collection, Field surveys for control, conversion from hardcopy to GIS format Generation of survey grade GIS database with combined topographical and cadastral details. GIS software development of customized application for the GIS database—generates custom views, reports, queries. GIS training for the irrigation staff		



Project: Gujarat State Industrial Landuse Base Map Generation, Gujarat, India		
Client Name: Gujarat State Petronet Ltd,		
Project Performance Period	From: January 2000	To: January 2005
Location of Project: Gujarat, India		
Brief Description of the services for this project: Mapping of 1581 km long Gas Pipelines in Gujarat and preparation of GIS based Industrial Database for 2,35,000sq km		
Services provided : <ul style="list-style-type: none">▪ Generation of maps from Satellite Imagery and SOI Topo Maps(1:50000 scale)▪ Creation of GIS database for the pipeline corridor▪ Centre line survey, detailed engineering survey, soil investigation and soil resistivity survey, cadastral and ROU acquisition as per P&MP Act.▪ Study of alternatives and finalisation of optimum corridor.▪ Establishment of trench centre line, profile survey▪ Survey of Pipeline corridor using GPS and high end Total Stations▪ Soil investigation and soil resistivity survey at 500 m intervals▪ Collection of Population Density and Social data▪ Hydrological and geotechnical investigations for River crossings▪ Cadastral survey and preparation of land plan schedule▪ Preparation and serving of notices under Section 3(i) and 6(i) of P&MP Act, 1962 and publication of the same in the Gazette of India▪ Generation of data for Environment Impact Assessment and Environmental Clearance from the Ministry of Environment and Forests.▪ Obtaining clearances for various crossings, such as Expressways, National Highway, State Highways, Railways, Utilities, etc.▪ Generation of Gujarat Map Database from Satellite Imagery using latest practices.▪ Development of exclusive software for GIS/LIS and ROU acquisition including Training and Implementation		



Data Conversion

Project:		
City of Chino Hills, CA—Water/Sewer Geodatabase and Mapbook Creation		
Client Name: subcontract from PBSJ – City of Chino Hills		
Project Performance Period	From: May 2004	To: December 2004
Location of Project: Chino Hills, California		
Brief Description of the services for this project: The City of Chino Hills is located NE of Anaheim Ca, It has a population of @ 66,500 people, covers about a 45 square miles, and has roughly 200 miles of water and sewer pipes.		
Services provided :		
<ul style="list-style-type: none"> ▪ Georeferencing ▪ GIS Data conversion from Scanned Water/Sewer plans and creation of the geodatabases for Water and Sewer Networks ▪ Creation of Mapbooks - a series of atlas maps of the service area network of 8.5*11 size with proper annotation placement. 		

Project:		
City of La Mesa. CA —Water/Sewer Geodatabase QC		
Client Name: subcontract from PBSJ – City of La Mesa		
Project Performance Period	From: June 2005	To: July 2005
Location of Project: La Mesa, California		
Brief Description of the services for this project:		
Services provided :		
<ul style="list-style-type: none"> ▪ QC, correct and update the City of La Mesa's sewer geodatabase, attributes, and map book 		

Project:		
GIS Cleanup of Floodplain Mapping		
Client Name: Under NDA for FEMA		
Project Performance Period	From: August 2005	To: Sept 2005
Location of Project: 3 counties in USA		
Brief Description of the services for this project:		
Services provided :		
<ol style="list-style-type: none"> 1. To “clean up” the floodplain mapping in three Counties. Clean up means to attribute the 100 year and 500 year floodplains on both the polylines and polygons and digitize missing floodplain boundaries. <ol style="list-style-type: none"> a. Make sure the polylines and polygons have arc/node topology. The datasets must not contain slivers or dangles. 2. The final deliverable was arc and polygon files that contains all floodplain boundaries for the entire county that that meet FEMA's Guidelines & Specifications Appendix L. 		

Project:		
City of Tampa 911 Street Network Correction		
Client Name: subcontract from Advanced Mapping – City of Tampa		
Project Performance Period	From: Feb 2005	To: March 2005



Location of Project: Tampa, Florida
Brief Description of the services for this project: Services provided: The scope of the project is to correct the “not true to ground” situation and update associated attributes (street name, address range) of its roads centerline to support for geocoding.

Project: Peace Creek—Contour Digitization from Aerial Photos and DTM creation		
Client Name: Under NDA		
Project Performance Period	From: August 2003	To: March 2004
Location of Project: Peace Creek, Florida		
Brief Description of the services for this project: Services provided : <ul style="list-style-type: none">▪ Georeferencing▪ Digitization of contours and break lines from scanned aerial photographs		



Photogrammetry and LIDAR processing

Project : Scottsdale DTM collection		Country : USA
Location within Country: California		Professional Staff Provided by your firm:
Name of Client : Under NDA		
Address: Under NDA		No. of Staff : 12
Start Date (Month/Year) 14 th Dec 2005		No. of Staff Months : 6
Completion Date (Month/Year) 6 th Jan 2006		
Name of Association Firm(s) if any:		No. of Months of Professional Staff provided by Associated Firm(s) : NA
Narrative Description of Project: The project is of collecting DTM (breaklines and mass points) to create 2' accurate contours.		
Description of Actual Services Provided by SECON Staff: As per clients request and sample file, priority was given to collect more breaklines in undulating areas. Almost all models contain golf courses and undulating hills/ lands and hence more time has spent to capture breaklines. <i>Pre-production:</i> Convert the image file to standard image format. Orient the images according to exterior orientation parameter (georeferencing) <i>Production:</i> 3D compilations in stereo plotters where 3D breaklines are mass points are collected. All files are edge-matched at the edges. <i>QA:</i> Check for floating and digging of breaklines and mass points in stereo mode. Check for edge matching with adjacent tiles. Check with QC routines for crossing of breaklines. <i>Finalization:</i> Final checking in stereo plotter with generated contours.		



Project : Cherokee County LiDAR data cleanup		Country : USA	
Location within Country: Kentucky		Professional Staff Provided by your firm:	
Name of Client : Under NDA		No. of Staff	: 10
Address: Under NDA		No. of Staff Months	: 5.5
Start Date (Month/Year) 16 th Dec 2005	Completion Date (Month/Year) 13 th Jan 2006		
Name of Association Firm(s) if any:		No. of Months of Professional Staff provided by Associated Firm(s) : NA	
Narrative Description of Project: The project is to filter Laser points to respective classification. Some of the ground points are taken back to default points and some default points are converted back to ground points.			
Description of Actual Services Provided by SECON Staff: <i>Pre-production:</i> All tiles are open in LiDAR software to check the data quality and corrupt files. <i>Production:</i> LiDAR clean up work using TerraScan Software where default points are changed to ground and ground points are changed to default wherever necessary. <i>QA:</i> Cross section check throughout the tile in both direction (vertical and horizontal) <i>Finalization:</i> Final checking in TerraScan/Terra Modeler Software with generated contours and surface.			