

ENGINEERING & GEOSCIENCE



Soatwoon Lake, West Coast Vancouver Island, BC



Thelwood Creek, Campbell River, BC



Lower Birk Creek, Barriere, BC



Forsite Engineering & Geoscience Ltd. draws expertise from a close knit group of professional engineers, professional geoscientists, project managers, and technologists in offices throughout BC. We are able to offer our staff an unusually wide variety of excellent experience working with a team of knowledgeable professionals. The Engineering Group continues to develop specialized services to address the needs of an expanding client base.

The broad spectrum of services available from Forsite Engineering & Geoscience creates opportunities for cost effective solutions within tight timeframes. Our company has a proven track record of project management that we apply to every project to help ensure timelines and cost expectations are met. Forsite Engineering & Geoscience also partners with Forsite Consultants Ltd. on specific projects to provide an even broader spectrum of services to meet our clients' needs.

We provide products and services of a consistently high quality, we provide client support services that include training and technical advisory roles, and we work with our clients to deliver long term solutions to complex engineering problems.



Yalacom River, Lillooet, BC



Henderson Lake, Vancouver Island, BC



Cranberry Creek, Revelstoke, BC

Surveying & Design Services

Our engineering team completes surveying and design projects for clients in the land based resource sector and urban civil and rural environments. Our surveying skills and equipment allow us to work on virtually any project where precise survey control is required. We use AutoCAD as our drafting software which allows us to work between our road design software and surveying data. We regularly complete road design packages for a wide variety of clients. We can combine our survey capabilities with site inspection services and provide engineering advice for road construction that is underway. Forsite Engineering & Geoscience can also complete as-built drawings and certification for all of our in-house design products.

Surveying services include survey level GPS (RTK) or total station construction staking and topographic surveys. All engineering staff are fully trained in the use of total stations, GPS, and our survey and design software.

► Resource Road Bridge Design

Our engineering team provides bridge and major culvert design services. We provide upwards of 150 structure designs per year throughout the province. Our experience includes site survey and design to Canadian Highway Design Standard (CAN/CSA-S6) for many different foundation and superstructure options. Every crossing site requires careful consideration of site specific design parameters to determine the most cost effective solution. Design options include concrete and steel structures, wooden structures, and larger diameter pipes and arch designs. Forsite Engineering & Geoscience staff also complete all required hydrology calculations as required for every designed structure.

We can inspect bridges and specify repair work. We also tender, manage construction, and provide substantial conformance documentation when required. We also have working agreements with structural engineers to assist in the certification of steel superstructures.

► Road Location, Survey, and Design

We have the skill depth to provide road location services for timber harvest, urban development access, mining exploration trails and roads, and hydro electric project access. We specialize in road layout on steep, complex terrain. Road location and geometric survey and design requires the integration of client needs, environmental constraints, and geotechnical constraints to provide the most cost effective solution. Forsite Engineering & Geoscience Ltd. staff design several hundred km's of road per year. Our road design packages are fully integrated with bridge designs and terrain stability and geotechnical assessment results completed in-house. We provide a complete package including explanatory text, notes and road statistics to be used for road staking that appropriately convey the effort required to construct the road. Forsite Engineering & Geoscience also completes as-built drawings. We combine our survey capabilities with site inspection services and can provide engineering advice for road construction that is underway.

We can also complete detailed phase by phase construction cost estimates based on road design volumes, machine rates and productivities.



Matsu Creek - MidCoast, BC



Revelstoke, BC



Kicking Horse Mtn. Resort, Golden, BC

Geotechnical Services

Our geoscience team completes terrain stability assessments, geotechnical assessments, terrain stability mapping, and overview watershed risk assessments for a wide variety of clients throughout British Columbia.

We have been completing operational terrain stability assessments for proposed forest development for the past 8 years. We have worked in all areas of the province and for a mix of government and industry clients. We have developed a standard product that is focused on providing clients with an clear understanding of the potential landslide hazard and risk associated with a particular development in a format that clearly communicates our recommendations to manage that risk. We present road recommendations in a tabular format that is easily understood by design staff.

Forsite Engineering & Geoscience has become retained increasingly more frequently to complete terrain hazard or landslide assessments for proposed residential developments in the Salmon Arm,

Golden and Revelstoke areas. These assessments meet the requirement for Ministry of Transportation rural subdivision approval and where required local municipalities. The assessments are completed in compliance with the recent document entitled Guidelines for Residential Landslide Hazard Assessments produced by APEGBC.

We have recently expanded our services into foundation geotechnical assessments for urban and rural road and housing construction projects through a working relationship between our staff of geoscientists and Mr. Iain Blown, P.Eng., P.Geo., a senior geotechnical engineer working on contract with Forsite Engineering & Geoscience and the principal of Monashee Geotechnical Ltd.

In the past several years Forsite Engineering & Geoscience has completed residential geotechnical assessments in Salmon Arm, Revelstoke and Golden, with particular emphasis on mountain developments at Kicking Horse Resort in Golden and Revelstoke Mountain Resort in Revelstoke. Forsite Engineering & Geoscience

has completed numerous overview level watershed road inventory and landslide hazard risk assessments. The projects, typically funded through the Forest Investment Account, involve an office based assessment of the watershed which includes a review of aerial photographs, terrain mapping, surficial and bedrock geology mapping, inventories of potential elements at risk and consultation with stakeholders. The product is a risk rating for individual road segments that is used for access management planning.

Geoscience staff based in the Salmon Arm office are currently completing a TSIL C terrain stability mapping project for 5 watershed units in the North Thompson River watershed. This project is being completed to provincial standards and involves air photo delineation of terrain polygons followed by field confirmation and digitizing onto base mapping.



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Recently Completed and On-Going Projects

Advanced Energy, Revelstoke BC:

The Advanced Energy project is a 10 MW micro hydro project consisting of a 4 km Penstock with an intake weir and powerhouse with a tailrace. The project is located on Cranberry Creek, 20 minutes south of Revelstoke BC. Forsite Engineering & Geoscience provided all site surveying services and construction staking for the construction of the penstock, intake weir, and powerhouse, road location, survey, design, and construction applications. Forsite also provided all stream crossing site surveys, designs, construction supervision, and as-built drawings. Work was completed between 2003 and 2007. The project began producing power in the spring of 2008.

District of Mackenzie, Mackenzie BC

Forsite Engineering & Geoscience was awarded the road survey and design project in Northern BC in the fall of 2008. The project involved the field location, site surveying, geotechnical assessments, and design for approximately 74 km of road. We are providing full-phase engineering services to facilitate the survey and design of an improved road location to provide for the safe and efficient year-round movement of resources, industrial traffic, and general trade and commerce between Fort St. James and Mackenzie. Our engineering staff is in the process of completing the road designs and a comprehensive cost benefit analysis of the chosen route vs. the original road location.

Tsleil-Waututh Nation, North Vancouver, BC

Forsite Engineering & Geoscience completed an overview assessment of the Indian River FSR and the Hixon Road in the Indian River watershed in the fall of 2008. The goal of this project was to develop road upgrade and deactivation prescriptions and assist the Tsleil-Waututh nation in the development of an access management plan for the watershed. Access is required for Terasen Gas to access their pipeline in the watershed, BC Transmission Corporation to access the power line and the Tsleil-Waututh to access resource and heritage resources in the watershed.

The project also involved survey and design of several crossing structures to ensure long term access and protection of the buried pipeline.

Dayton and Knight, Salmon Arm:

Forsite Engineering & Geoscience provided ground survey data tied to geodetic elevations to create a base site plan that was used by Dayton and Knight in the design of an in-ground water reservoir holding tank. We also established horizontal and vertical control points to be used for layout during construction. Construction is planned for summer 2009.

Innovation Building Group, Golden BC:

Forsite Engineering & Geoscience staff provided the foundation geotechnical assessments and construction supervision for The Aspens at Kickinghorse Mountain resort. The Aspens is a 12 unit townhouse complex. We also completed the foundation geotechnical services and reinforced earth retaining wall, design, and construction supervision for Palliser Lodge, a 4 storey hotel at Kickinghorse Mountain Resort. Forsite Engineering & Geoscience has a working arrangement with

Braun Geotechnical based in Vancouver BC to provide site specific geotechnical advice as required for these projects.

Albas Ventures Inc, Enderby BC:

The Enderby project was a rural road for subdivision constructed to Ministry of Transportation standards. Forsite Engineering & Geoscience provided site surveying, construction staking, and general engineering advice during construction. At the conclusion of the project, Forsite also provided as-built drawings to MOT standards. The project was completed in 2008.

Western Forest Products Inc., Jordan River BC:

The Jordan River project is a subdivision road survey and design project to rural Ministry of Transportation standards. Forsite Engineering & Geoscience has completed all topographic site surveying in conjunction with a legal surveying company to aid in the completion of road and crossing designs. We are currently in the process of completing road designs and are working with a civil engineering subcontractor to complete the bridge designs.

Foundation Geotechnical and Rural Subdivision Landslide Hazard Assessments, Salmon Arm BC:

Forsite Engineering & Geoscience staff have completed numerous foundation geotechnical projects in the Salmon Arm area for single family homes as required by the City of Salmon Arm development bylaws. These projects generally involved a pre-construction site assessment followed by construction inspections during construction of the house foundations. Our staff has also completed Landslide Hazard Assessments for rural property owners in order to subdivide properties according to the Ministry of Transportation bylaws.

Skyline Gold, Iskut River BC:

Forsite Engineering & Geoscience completed an initial route selection and construction cost estimates to allow for road and bridge construction for mining access in northwest BC. At the conclusion of fieldwork, a Special Use Permit application to the Ministry of Forests was completed according to Mineral Exploration Code requirements.

Ministry of Forests and Range, Southern Interior BC,

Forsite has successfully completed numerous contracts with the Ministry of Forests for bridge site survey, design (embedded pipes, arch, concrete slab, steel superstructures), construction inspection, and as-built reporting since the inception of the engineering group.

BC Timber Sales, Mackenzie, Prince George, Dawson Creek, Kamloops, Port McNeill:

Forsite Consultants Ltd. has a number of multi-phase contracts with BC Timber Sales in BC. Forsite Engineering & Geoscience Ltd. provides site surveys, geometric road design, bridge design, and terrain stability assessment services for these contracts. Forsite Consultants Ltd. has successfully administered many multi-phase contracts for years.

