

Union Street Geotechnical Ltd. Company Profile



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1 INTRODUCTION

Union Street Geotechnical Ltd. (Union Street) is a Red Deer, Alberta based engineering firm which provides consulting services in geotechnical and environmental engineering and material testing services. Our goal is to provide our clients with sound technical advice suited to their project in a timely, cost effective manner.

2 COMPANY HISTORY

Union Street employs professional and technical support personnel who have gained a vast majority of their professional experience in the construction, municipal, and energy industries in Alberta and British Columbia. Our office in Red Deer is strategically located to service clients in Central Alberta. Our staff are supported by current technical support and a modern, in-house, Canadian Council of Independent Laboratories certified materials testing laboratory.

Union Street personnel have conducted a wide variety of projects related to geotechnical engineering, environmental engineering, and materials testing including foundation design and recommendations, asphalt and gravelled surface roads and parking areas structural design, slope stability assessment, soil characteristic analyses and remediation and design recommendations for a wide variety of geotechnical and environmental sites, and a wide variety of materials testing projects. These projects have included design recommendations ranging from thickened edge slab-on-grade to Continuous Flight Auger (CFA) Piles for foundation designs, Phase I to Phase III environmental assessments, and from performing a single sieve for a client to materials testing projects spanning several months.

3 CERTIFICATIONS

All Union Street engineers are registered with the Associate of Professional Engineers and Geoscientists of Alberta (APEGA). Additionally, Union Street Geotechnical Ltd. is registered with APEGA and has an active, in good



standing, corporate permit to practice. Union Street also has professional staff who are members of Engineers & Geoscientists of British Columbia.

Union Street's laboratory has also been certified by the Canadian Council of Independent Laboratories (CCIL) for Category 0 - Concrete analyses and employ certified staff to perform relative analyses.

4 SERVICES

Union Street offers the following types of engineering services:

4.1 GEOTECHNICAL

Union Street can perform geotechnical investigations and provide recommendations for a wide variety of projects ranging from civil and structural construction projects to detailed slope stability assessment. Union Street staff have been involved in projects located in the Yukon, British Columbia, Alberta, and Saskatchewan.

We offer the following geotechnical services:

- Asphalt and gravel surfaced roads and parking areas structure design;
- Foundation design and installation monitoring;
- Lagoon and retention pond design;
- Horizontal Directional Drilling (HDD) investigations; and,
- Slope stability analysis.

4.2 ENVIRONMENTAL

Union Street can perform environmental services in the following areas:

- Waste storage systems;
- Baseline studies;



- Spill control and remediation;
- Decommissioning and reclamation; and,
- Phase I, II, and III Environmental Site Assessments.

4.3 MATERIALS TESTING

Our in house materials laboratory and field staff are capable of providing materials testing for soil, aggregate, concrete, and pavement materials. Fieldwork typically includes providing quality control for materials placement during construction projects. Laboratory and field equipment utilized typically include nuclear moisture-density gauge, gastech analysis, slump and air kit for concrete testing, and other types of equipment utilized for quality control.

Some of the materials testing services offered by Union Street include:

- Asphalt analysis;
- Concrete testing;
- Soils analyses and suitability;
- Aggregate analyses and suitability;
- Portable field laboratory;
- Construction monitoring; and,
- Compaction testing.

5 MANAGEMENT STRUCTURE

Union Street's mission is to provide our clients with ideal technical advice suited to their projects in a timely, cost-effective manner. Our engineering recommendations utilize solutions common to the industry with an emphasis on "timely". The construction season is short in Alberta, and Union Street recognizes the often rapid turnover time required for engineering reports.



Projects are assigned to an experienced project engineer who possesses the skill and expertise to meet the clients schedule and quality requirements. The project engineer will be supported by unnamed technical support staff but will be the one point of contact for the client.

6 PROJECT PROFILES

Union Street looks forward to working with you on your future projects. Below is a brief summary of projects our staff have been involved with:

- Over 100 geotechnical investigations ranging from the Yukon to Saskatchewan for a wide variety of clients from institutional to residential to energy related projects;
- Performed environmental assessments from Stage Is in British Columbia to Saskatchewan to being involved in numerous upstream oil and gas earth pits and several downstream retail Underground Tank removal projects;
- Provided technical and field support for road designs in Alberta and British Columbia;
- Performed slump, air, and compressive strength concrete testing on numerous projects; and,
- Provided Quality Control and Materials Testing service for various provincial, municipal, and private projects.

The following is a small sample of some of the projects that our company personnel have been involved with:

6.1 SYLVAN LAKE NEXSOURCE CENTRE

Union Street personnel performed the geotechnical investigation for the NexSource Centre in Sylvan Lake, Alberta, in the spring of 2015. The NexSource Centre is a multi-use recreational facility and includes a proposed



skating rink, curling rink, walking/running track, seniors centre, meeting and banquet spaces, and lounges.

Personnel employed at Union Street worked closely with the owner in developing and executing a drilling program which placed boreholes in the footprint of key infrastructure and considered the public while the fieldwork was being performed as portions of the existing facility were in use during the time of drilling.



Photograph No. 1: Photograph showing an artist's rendering of the finalized NexSource Centre once construction is complete.

The field program consisted of drilling four boreholes, to a maximum depth of 9.60 m, and two test pits throughout the site. The analyses in the report discussed the recommendations for; site grading and site road/parking construction, cut/fill excavations and slopes, structure foundations, cement type, frost considerations, seismic, and other geotechnical aspects related to the development.

Following the drilling program, it was determined the soil conditions were suitable for cast-in-place concrete piles, driven steel piles, or screw piles. The owner elected to utilize cast-in-place concrete piles, which were mostly installed in the summer of 2015 with no issues.

6.2 DIVERSITY TECHNOLOGIES CORPORATION - FRAC SAND STORAGE & HANDLING FACILITY

Union Street personnel performed a wide range of geotechnical engineering and materials testing services for the construction of a frac sand storage and



handling facility on a 13.4 ha site located near Rocky Mountain House, Alberta.

Twelve boreholes were drilled across the site in order to provide geotechnical recommendations for the construction of six 2,000 ton storage capacity silos, three rail spurs with a 95 railcar capacity, weigh scales, office/control building, warehouse facility, access roads, and other infrastructure related to the development.

During construction, Union Street also performed GRLWeap modelling for driven steel piles to determine blow count refusal criteria, settlement assessment for the railway pit, compaction testing on the roadway subgrade, sub-base, and base structures, and concrete testing, of which one testing event saw over 700 m³ poured in one day.



Photograph No. 2: Photograph showing the completed pour of the 700 m³ slab.



Photograph No. 3: Photograph showing the completed construction of the silos on the 700 m³ slab.

6.3 WYNDHAM GARDEN HOTEL

Union Street personnel were directly involved in the geotechnical investigation, quality control, and materials testing process of the construction of a 1,663.4 m² Wyndham Garden Hotel in Leduc, Alberta. The facility consists of a five storey, 150 unit structure along with a 165 stall asphalt parking lot and associated landscaping.

The field program consisted of drilling eight boreholes; one at 15.2 m, two 12.2 m, two 9.14 m, and three 3.05 m. The analyses in the report discussed the recommendations for; site grading and site parking lot construction, cut/fill excavations and slopes, structure foundations, cement type, frost conditions, seismic, and other geotechnical aspects related to the development.

Following the drilling program, it was determined the soil conditions were suitable for driven steel and cast-in-place concrete piles. The owner elected to use cast-in-place concrete piles, of which a total of 145 piles were installed in the spring of 2015. Union Street personnel were on-site to monitor the installation of the piles and to perform materials testing. The hotel opened and became operational in 2016.





Photograph No. 4: Photograph showing a Wyndham Garden Hotel similar to that constructed in Leduc, Alberta.

6.4 QUEEN ELIZABETH II HIGHWAY/GAETZ AVENUE INTERCHANGE

Union Street personnel have worked closely with the prime contractor and consulting engineering firm provided a wide range of geotechnical engineering and materials testing services for the Queen Elizabeth II Highway and Gaetz Avenue Interchange project in Red Deer, Alberta.

Services provided include instrument installation, concrete testing, asphalt testing, and QA/QC regarding asphalt and gravel transport and delivery.

This project was completed in 2019.

6.5 HABITAT FOR HUMANITY RESTORE

Union Street provided a geotechnical investigation for a proposed single storey, 223 m² Habitat for Humanity ReStore warehouse in Red Deer, Alberta.

The field program consisted of drilling three boreholes; one 12.2 m and two 9.14 m deep boreholes within the proposed development footprint. The analyses in the report discussed the recommendations for; site grading,



foundation systems, excavations, frost, cement type, and other geotechnical aspects related to the development.

In this case, as the owner is a non-government, non-profit organization, Union Street provided their geotechnical investigation report near cost as a community outreach initiative.

6.6 GENERAL PROJECT PROFILE

Union Street have also been directly involved in the following projects:

- Mark's Work Warehouse, Geotechnical Investigation & Materials Testing, Wainwright;
- Lacombe Ford, Geotechnical Investigation, Lacombe, Alberta;
- Spruce View Lagoon, Geotechnical Investigation, Red Deer County;
- Proposed HDD of the Medicine River, Geotechnical Investigation, Rimbey;
- Town of Stettler Lagoon, Materials Testing, Stettler County No. 6, Alberta;
- Super 8 Motel, Geotechnical Investigation, Calgary;
- Shop & Office Building, Geotechnical Investigation, Queens Business Park, Red Deer;
- Oliver Crossing Apartments, Geotechnical Investigation & Materials Testing, Calgary;
- A&B Oilfield Construction Ltd., Geotechnical Investigation & Materials Testing, Sedgewick;
- Subdivision Retention Pond, Geotechnical Investigation, Schimke Business Park;
- G.H. Dawe Community Centre, Geotechnical Investigation, Red Deer; and,



- Multiple other geotechnical and materials testing projects throughout Alberta ranging from Okotoks to Fort Mackay to Grande Prairie to Lloydminster.

7 HEALTH & SAFETY

Union Street Geotechnical Ltd. is committed to the safety and occupation health of all our employees, those working around us in the immediate vicinity, and the public. We are committed to exercising every reasonable effort to provide a safe work environment that is free of hazards and the ongoing development of our safety program.

As a small part of this commitment, all of our field staff are trained and certified in the following:

- Emergency First Aid - OFA Level 1;
- Ground Disturbance Level 1;
- Workplace Hazardous Materials Information System (WHMIS);
- Petroleum Safety Training / Construction Safety Training System; and,
- Transportation of Dangerous Goods, Level 1 & Class 7.

8 INSURANCE

Union Street carries general liability insurance, professional liability (Errors & Omissions) insurance, and automobile insurance on all company owned vehicles.



9 CLOSURE

Union Street Geotechnical Ltd. is an engineering consulting firm employing trained, educated, experienced personnel who enjoy working in their chosen field. Our staff have worked on, and are experienced in, a wide variety of projects in the geotechnical, environmental, and materials testing engineering fields in the construction, municipal, institutional, and energy sectors in Alberta and British Columbia.

If you have any questions regarding our services, please do not hesitate to contact our office.

Thank you,

Union Street Geotechnical Ltd.

