

GROUND

ENGINEERING

March 9, 2016

Subject: Proposal for Professional Services,
Geotechnical Subsurface Exploration Program,
8440 Spruce Mountain Road, Larkspur,
Colorado.

Proposal Number 1603-0413

Mr. Jason Buechler, PE
R&R ENGINEERS-SURVEYORS, INC.
710 W. Colfax Avenue
Denver, Colorado 80204

Dear Mr. Buechler:

Ground Engineering Consultants, Inc. (GROUND) is pleased to submit a proposal to conduct a subsurface exploration program to develop geotechnical and pavement section parameters for design and construction of the proposed building, associated parking and storage yard, addressed as 8440 Spruce Mountain Road, in Larkspur, Colorado. Provided plans show the proposed building to be constructed southeast of the intersection of Upper Lake Gulch Road and Spruce Mountain Road. Additionally, paved parking areas, entrances/exits, a gravel storage yard, and underground utilities are also anticipated. We assume no below grade levels are planned for construction.

Based on provided information and our experience with similar projects, we propose the following:

Scope of Work

- Drill four (4) test holes at locations to be determined by the soils engineer. Two (2) test holes will be drilled within the proposed approximate building footprint limits and the remaining two (2) test holes will be drilled within the approximate limits of the private paved area and gravel storage yard. No test holes will be drilled in off-site areas for public pavement design. Final depths of the test holes may vary in the field as exploration progresses and as the subsoil profile becomes evident. We anticipate foundation test hole depths to be approximately 25 to 40 feet below existing grade, or until practical drill rig refusal, whichever is greater and the pavement test hole depths to be approximately 5 to 10 feet below existing grade, or until practical drill rig refusal, whichever occurs first. The test holes will be drilled to evaluate the subsurface soil profile and to obtain samples for laboratory testing.

- Conduct a laboratory testing program to evaluate the engineering characteristics of the materials at the site.
- Analyze the results of the field and laboratory investigations to develop geotechnical parameters including but not limited to proposed structure foundation types, floor systems, site grading/earthwork operations, excavation, utility installation, lateral earth pressures, water soluble sulfate content, soil corrosivity, and pavement sections.

Specific retaining wall parameters and/or design are not specifically included in this scope of service at this time (GROUND is not aware of such structures). If retaining wall structures are planned for construction, GROUND should be contacted to re-evaluate our scope and fee.

- Prepare a report summarizing the data obtained, and present our conclusions and parameters. An electronic copy (PDF format) of the report will be provided. Up to three (3) hard/paper copies are available upon request. Field work, data analysis and report preparation will be conducted under the supervision of a registered professional engineer.

Fees

Based on the proposed scope of work outlined above, we estimate a lump sum fee of **\$4,000** to complete the subsurface exploration program. We assume that the project site is accessible to conventional, truck-mounted drilling equipment.

Optional Additional Services: GROUND will not proceed with the following optional additional services without your prior approval and authorization. However, some of these services may be required to complete the surface exploration program or may be needed by the design team. Additional optional services anticipated for this project may include:

- **Private Utility Locate:** A private utility locate may be required to attempt to identify private locates that will not be marked by the free public locate service, UNCC. GROUND can coordinate with a private locating subcontractor to provide this service upon request. This service is **estimated to be \$500** in addition to the fees above.
- **Shear Wave Velocity Test – Surface Method:** In order to possibly assign a 2015 IBC Seismic Site Class C or “better” definition to the project site, a quantitative assessment of the seismic classification is needed. A better seismic site classification could result in

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substantial cost savings for the design and construction of buildings with moderate to heavy (anticipated) loads. GROUND will provide the site-specific Seismic Site Class using surface geophysical methods. This service is will cost an additional **lump sum fee of \$3,500** to the fees above.

If additional services are required above and beyond the scope of work outlined above, we propose that our fees for the additional services be in accordance with the hourly and unit costs presented in the *Fee Schedule* and *General Conditions*.

This fee assumes normal work day (Monday to Friday) operations. Additional fees may apply for night, weekend, and/or holiday work.

Please review the *General Conditions*, which contain a limitation of GROUND's liability. Also note that GROUND reserves the right to alter the work scope items if deemed necessary and withhold data and reports until we have received a signed proposal.

Additional considerations:

- Unless otherwise agreed, Client will furnish right-of-entry for Consultant and Consultant's Subconsultants/Subcontractors to make borings, surveys and/or conduct other surface or subsurface explorations. Consultant and its Subconsultants/Subcontractors will take reasonable precautions to reduce damage to property. However, cost of restoration or damage that may result from field operations is not included in the fee unless otherwise stated.
- Consultant will not be liable for damage to any underground facility (any "item of personal property" which is buried or placed below ground for use in connection with the storage or conveyance of water or sewage, electronic, telephonic, or telegraphic communications or cable television, electric energy, or oil, gas, or other substances). "Item of personal property" includes, but is not limited to, pipes, tanks, irrigation, sewers, conduits, cables, valves, lines, wires, manholes, and attachments thereto. Owner must locate any of the private, on-site facilities. This requirement is in accordance with Section 2 9-1.5-103 of the Colorado Revised Statutes and is formal written notice requesting the locates for any privately-owned facilities under Owner's control. Consultant will notify public utilities through the Utility Notification Center of Colorado (UNCC).
- A contractor who relies upon Consultant's reporting for development of his scope of work or cost estimates may find the geotechnical information to be inadequate for his purposes or find the geotechnical conditions described to be at variance with his

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experience in the greater project area. The contractor is responsible for obtaining the additional geotechnical information that is necessary to develop his work scope and cost estimates with appropriate precision.

- Evaluation/identification of hazardous/contaminated materials that may be present, is not included in Consultant's scope of services unless otherwise indicated. Client/Owner must inform Consultant to the presence of hazardous/contaminated materials, known to him, prior to performance of any subsurface exploration.

Schedule

We propose to initiate the investigation within 3 days of being given notice to proceed. We anticipate that preliminary information will be available within 1 to 2 weeks after notice to proceed, and the final report should be completed approximately 3 to 4 weeks after notice to proceed. GROUND will attempt to adhere to this schedule, however, this remains dependent upon favorable weather conditions, site access and buried utility locations. In any event, we will notify you of our progress and pertinent information, as it becomes available.

If you have any questions, concerns or comments regarding this proposal, please contact this office. If this proposal meets with your approval, please return one signed copy to this office at which time we will sign and return an executed copy to you.

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We appreciate this opportunity to work with you on this important project.

Sincerely,

GROUND Engineering Consultants, Inc.

Eric C. Mocko, P.E.

Reviewed by Amy Crandall, P.E.

Agreed to this _____ day of _____, 2016

R&R Engineers – Surveyors, Inc. by:

Please print name

Agreed to this _____ day of _____, 2016

GROUND Engineering Consultants, Inc. by:

Please print name



FEE SCHEDULE - ENGINEERING SERVICES

2016

FIELD INVESTIGATION

ENGINEERING

All Engineering Services require a project-specific proposal

Truck Mounted Drill Rig with 2-Man Crew		• Principal Engineer (hourly)	\$175.00
• Solid Stem Auger (hourly)	\$125 - \$155	• Senior Project Manager, Engineer, Geologist (hourly)	\$150.00
• Hollow Stem Auger (hourly)	\$150 - \$170	• Project Manager (hourly)	\$125.00
• Wireline Coring	Quote	• Project Engineer, Geologist (hourly)	\$105.00
• ODEX, Rotary, Sonic Drilling	Quote	• Field / Staff Engineer (hourly)	\$85.00
Track Mounted, All-Terrain, Limited Access Drill Rigs, & Drill Rig Support Equipment	Quote	• CAD Technician (hourly)	\$75.00
• Water Truck, Support Truck, Hydro-Vac Truck (daily)	\$150 - \$350	• Special Consultation, Expert Testimony and Court Appearance	Quote
Excavator / Backhoe	Quote		
Standby Time	Hourly Rate		

MISCELLANEOUS

• Equipment Rental	Cost + 20%	• Environmental Drilling, Sampling, Analysis	Quote
• Outside Laboratory Services	Quote	• Personal Protective Equipment (PPE)	Quote
• Out-of-town living expenses, commercial travel costs, equipment rental, etc.	Quote	• Vibration Monitoring/Geotechnical Instrumentation Services, Thermal Conductivity and Resistivity	Quote
• Pile Dynamic Analysis, Ground Penetrating Radar, Cross Hole Sonic Logging, Sonic Echo, Falling Weight Deflectometer	Quote	• Retaining Wall Design, Shoring Design, Seepage Analysis, Slope Stability Analysis	Quote

LABORATORY TESTING

Natural Density and Moisture Content	\$15.00	Permeability	
Atterberg Limit (ASTM D 4318)	\$65.00	a. Falling or Constant Head, 2-4" Diameter	\$250.00
Specific Gravity (ASTM D 854)	\$65.00	b. Triaxial Permeability	\$375.00
Relative Density (ASTM D 2049)	\$200.00	Time-Consolidation (ASTM D 2435)	\$400.00
Gradation Analysis (ASTM D 422)		California Bearing Ratio (ASTM D 1883), 1-Point	\$150.00
a. All Standard Sieve to #200 Sieve	\$60.00	California Bearing Ratio (ASTM D 1883), 3-Point	\$350.00
b. Percent Less Than #200 Sieve	\$35.00	"R" Value (ASTM 2844)	\$350.00
c. Gradation with Hydrometer	\$135.00	Resilient Modulus (per point)	\$750.00
Swell-Consolidation	\$65.00	Los Angeles Abrasion Test	\$150.00
Soil Suction	\$60.00	Soil Stabilization Mixture Analysis	Quote
Proctor - Standard Compaction (ASTM D 698)	\$100.00	Sulfate Soundness (ASTM C 88)	\$200.00
Proctor - Modified Compaction (ASTM D 1557)	\$110.00	Fractured Faces Test	\$60.00
Unconfined Compressive Strength		Flat or Elongated Particles (D 4791)	\$60.00
a. Soil (ASTM D 2166)	\$45.00	Corrosivity Testing	
b. Rock	Quote	a. Water-Soluble Sulfates	\$50.00
Direct Shear (3-Point)		b. pH Test	\$50.00
a. Unconsolidated-Undrained (Quick Test)	\$375.00	c. Reduction/Oxidation Potential (Redox)	\$40.00
b. Consolidated-Undrained	\$400.00	d. Sulfide Content	\$50.00
c. Consolidated-Drained (ASTM D 3080)	\$975.00	e. Soil Resistivity (Direct Measurement Method)	\$40.00
Triaxial Shear		f. Soil Resistivity (Soil Box Method)	\$95.00
a. Unconsolidated-Undrained (Quick Test)	\$600.00	Organic Content	\$65.00
b. Consolidated-Undrained (R-Test)	Quote		
c. Consolidated-Drained (S-Test)	Quote		

GENERAL CONDITIONS

INTENT OF SERVICES: The services and any subsequent analysis and reporting performed by the Consultant under this agreement are intended to assist the Client in planning and/or designing the project. Any exploration, testing, and/or analysis associated with the services will be performed by Consultant solely to fulfill the purpose of this agreement. Any changes in project plans or schedule, referenced within Consultant's reporting, should be brought to the attention of the Consultant, in order that provided geotechnical information be re-evaluated and, as necessary, modified.

Any geotechnical conclusions and information in Consultant's reporting will rely upon subsurface exploration at a limited number of exploration points, as well as the means and methods described. The Client must accept that subsurface conditions are interpolated between and extrapolated beyond these locations and it is not possible to guarantee the subsurface conditions are as indicated. Actual conditions exposed during any subsequent construction may be expected to differ from those encountered during site exploration. Additional exploration and laboratory analysis can always be performed to further evaluate a particular site's subsurface condition, albeit at additional time and cost. The Consultant is available to discuss the benefits of additional geotechnical evaluation with the Client. Our scope of services reflected the Client's preferences, objectives, budget, and schedule as understood by GROUND at the time of proposal preparation. The resultant information provided may not be sufficient for use by other parties or other purposes. In the event the Client or any user of Consultant's reporting does not fully understand the risks associated with the earth conditions at the project site and the acceptance of responsibility to manage/mitigate these risks, Consultant encourages he contact a company principal for further assistance.

A contractor who relies upon Consultant's reporting for development of his scope of work or cost estimates may find the geotechnical information to be inadequate for his purposes or find the geotechnical conditions described to be at variance with his experience in the greater project area. The contractor is responsible for obtaining the additional geotechnical information that is necessary to develop his work scope and cost estimates with appropriate precision.

ALL DEVELOPMENT CONTAINS INHERENT RISKS. It is important that ALL aspects of Consultant's reporting, as well as the estimated performance (and limitations with any such estimations) of proposed project improvements are understood by the Client, Project Owner (if different), and properly conveyed to any future owner(s). Utilizing reported information/parameters for planning, design, and/or construction constitutes understanding and acceptance of the information/parameters provided, potential risks, estimates of improvement performance, as well as the limitations inherent within such estimations.

Evaluation/identification of hazardous/contaminated materials that may be present, is not included in Consultant's scope of services unless otherwise indicated. Client/Owner must inform Consultant to the presence of hazardous/contaminated materials, known to him, prior to performance of any subsurface exploration.

Consultant's proposed fees do not include post-report consultation, unless otherwise specified in proposal. In the event of difficult site access, postponement, or termination of our services for any reason after notice to proceed has been provided by Client, cost incurred will be charged in accordance with hourly and unit rates as indicated on the Engineering Fee Schedule. Additional staff consultation services requested following issuance of any report will be billed at rates as indicated above. These fees will be billed accordingly without further notice. Consultant will not proceed with any additional field-related services (drilling, utility locates, etc.) without Client's prior written authorization.

INVOICES: Consultant will submit progress invoices to Client monthly and a final bill upon completion of the services. Invoices will show charges for different personnel and expense classifications. Each invoice is due on presentation and is past-due thirty (30) days from invoice date. Rates quoted in this proposal reflect a 3% cash/check discount. Pricing will be adjusted to remove this discount in the event client prefers to pay by credit card. Client agrees to pay a finance charge of one and one-half percent (1.5%) per month, or the maximum rate allowed by law, on past-due accounts. Should Consultant bring suit to recover past due payment for services rendered to Client, Consultant shall be entitled to recover all costs of collection, including reasonable attorneys' fees.

SAMPLES: All samples of soil and rock will be discarded thirty (30) days after report submittal. Upon Client's request and written authorization, samples will be delivered in accordance with Client's instructions, or stored, for an agreed charge.

RIGHT-OF-ENTRY: Unless otherwise agreed, Client will furnish right-of-entry for Consultant and Consultant's Subconsultants/Subcontractors to make borings, surveys and/or conduct other surface or subsurface explorations. Consultant and its Subconsultants/Subcontractors will take reasonable precautions to reduce damage to property. However, cost of restoration or damage that may result from field operations is not included in the fee unless otherwise stated.

UTILITIES: Consultant's team will notify public utilities through the Utility Notification Center of Colorado (UNCC). Consultant will not be liable for damage to any private underground facility (any "item of personal property" which is buried or placed below ground for use in connection with the storage or conveyance of water or sewage, electronic, telephonic, or telegraphic communications or cable television, electric energy, or oil, gas, or other substances). "Item of personal property" includes, but is not limited to, pipes, tanks, irrigation, sewers, conduits, cables, valves, lines, wires, manholes, and attachments thereto. Owner must locate any of the private, on-site facilities. This requirement is in accordance with Section 29-1.5-103 of the Colorado Revised Statutes and is formal written notice requesting the locates for any privately-owned facilities under Owner's control.

REPORTS: Reports, plans and other work prepared by Consultant remain the property of Consultant until all fees for Consultant's services have been paid. Client agrees that all reports and other work furnished to the Client and his agents not paid for will be returned upon demand, and will not be used for licensing, permits, design and/or construction. If any information provided in such reports is used for the design and/or construction of the project or anything else at the subject site, GROUND is indemnified by the user with regard to professional and general liability.

USE OF ELECTRONIC OR OTHER SUPPLIED DATA: Electronic documents, site plans, or other information provided to Consultant for the subject project may be used in compiling geotechnical, environmental, or construction-related reports for the subject project. It is the responsibility of the owner or supplier of such documents to ensure that our use does not violate any copyright or confidentiality that may be pertinent to the supplied information.

LIMITATION OF LIABILITY: Consultant agrees in connection with geotechnical engineering, engineering geology, and related services performed under this Agreement that such services are performed with the care and skill ordinarily exercised by members of the profession practicing under similar conditions at the same time and in the same or a similar locality. No warranty, expressed or implied, is made or intended by rendition of consulting services or by furnishing oral or written reports of the findings made. The economic or technical performance of any project cannot be guaranteed in any respect. Liability of Consultant or Subconsultant(s) for damages due to or arising from professional negligence, breach of contract, or any cause of action, shall be limited to the Consultant's fee for this project.

CORPORATE PROTECTION: It must be agreed to by all parties affiliated with this agreement that the services provided by the Consultant that are in any way connected to this project shall not connect Consultant's employees, owners, directors, or officers to any personal exposure for risks associated with any portion of this project. Therefore, and not withstanding anything to the contrary that may be contained herein or in any other document related to this project, the Client, future owners, future users, and/or any other trade or professional, agrees that as the sole and exclusive remedy for any claim, demand, or suit shall be directed and/or asserted against the Consultant, a Colorado Corporation, and not against any of Consultant's employees, owners, officers, or directors.

STANDARD OF CARE: In providing its services, Consultant shall perform in a manner consistent with that degree of care and skill ordinarily exercised by members of Consultant's profession practicing under the same or similar circumstances.

DEFECTIVE EQUIPMENT: Consultant cannot be held liable for any costs affiliated with defective equipment (regardless of the cause of such defects) because such defects are beyond our control. By utilizing our services with respect to this project, the client specifically indemnifies Consultant and its officers, principals, employees, and agents of any and all costs affiliated with any defect in the equipment and understand that their sole recourse with regard to defective equipment (including that which may have been caused inadvertently during installation) is that which is provided by the manufacturer.