CAN YOU DIG IT?

YES, WE CAN.

TD2 engineering & surveying

APPLYING THE PRINCIPLES OF SOIL MECHANICS TO ENGINEERING PROBLEMS.

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KNOWYOURDIRT

Do you have a construction project in mind? If so, a geotechnical investigation is one of the earliest and most important tasks when developing or redeveloping a site. An investigation gathers crucial information about the physical characteristics of the soil and whether the proposed site is suitable.

Why Test?

Clients may wonder why a geotechnical investigation is worth it. The "why" is that the ground beneath us is constantly moving. Soil is localized, changing from site to site, region to region. Testing can be the difference between long-term project success and expensive post-construction remediation.

Soil Mechanics

The soil comprises organic (decomposed plants and animals) and inorganic (rock and mineral particles) materials. It behaves differently depending on its composition, deposition, and location. Knowing the soil characteristics and predicting how it may react under different conditions is the science of soil mechanics. This knowledge of soil properties and behavior is the foundation for critical civil and structural engineering decisions. The soil is a primary consideration, and the subsurface soil sampling, testing, and reporting answer many of our civil and structural engineering questions:

- **Bearing capacity** - Can site soils support the load for the desired use?
- **Consolidation** - Will you need to surcharge or not? Will the structure settle excessively and need soil improvements?
- **Percolation -** Is a conventional wastewater treatment system suitable?
- **Slope Stability** - Can cut/fill slopes remain stable over time?
- **Foundation Analysis** - Can a shallow foundation be used, or is a deep foundation needed? Soil properties are necessary to structurally size foundation elements.

PROJECTEXPERIENCED

The geotechnical engineer's value is in their knowledge and experience of soil properties, to predict its behavior and plan for its use. They provide detailed recommendations tailored to the proposed development or building based on the data. They consider the most appropriate and cost-effective means and methods to achieve a successful outcome.

- Structures including residential, commercial, and industrial
- Land Development
- Infrastructure Design including roadways, railroad, bridge foundations, sewer, water line and water tower installations, shallow footings, mat foundations and deep foundations including driven wood, concrete and steel piles, auger-cast piles and drilled foundations, light gauge steel and vinyl sheet pile for erosion control and marina projects.
- Landfill Liner and Stability Designs
- Earthen Dam Design
- Electric Transmission and Cellular Tower Base Design

TEAM GEOTECH

TD2's geotechnical department capabilities have grown with both equipment and personnel.

DRILL RIG PROCESS

You don't know what is underneath the ground until you drill down and analyze the soil conditions. Soil samples are usually collected by the drill rig but could also be from test pits. The rig operators drill a hole/holes to the appropriate depths determined by the geotechnical engineer and recover soil samples. As samples are collected, they are preserved, and then transported to our soils testing laboratory in appropriate containers to reduce disturbance. During drilling, field boring logs record the soil types and characteristics as well as water levels if encountered.

GEOPROBE SUPPORT

TD2's geotechnical department expanded in 2021 to include a new Geoprobe to support the drill rig. It can access rugged terrain that the truck-mounted rig cannot. Small but mighty, it is efficient in a small footprint on wide tracks. The Geoprobe can perform the usual complement of geotechnical drilling and sampling, including; SPT, CPT, Auger, Rotary, and Diamond Core Drilling.

CPT or Cone Penetration Testing was performed recently on a commercial site proposed for a car dealership. The CPT test consists of pushing an instrumented cone into the ground at a controlled rate. The site had 20 feet of fill material, and the client needed to know the fill quality to ensure it didn't have to be removed and redone. Test outcomes determined a high quality fill that would not require removal which translates to a significant cost savings for the client.

LAB TESTING RESULTS

Our in-house lab tests the collected soils to complement the field tests and field boring log. Soils are analyzed to determine the geotechnical properties of the encountered conditions.

Depending on the project scope, lab tests may include the following:
Moisture Content - determines the amount of water in a sample.
Density Determination - determines the unit weight of a recovered sample.
Plastic Limit and Liquid Limit - determines the limits of fine-grained soil.
Proctor Compaction - determines the moisture-density relation of cohesive fill materials.
Shear Strength - determines the amount of shear stress a soil can sustain without excessive deformation.
Consolidation - determines one-dimensional compression behavior.
Grain Size Analysis and Hydrometer - determines particle size distribution.
Specific Gravity - determines the specific gravity of soil solids. (The ratio of the density of a substance to the density of a standard.)
Permeability - determines the ability of fluid (water) to flow through soils.
California Bearing Ratio (CBR) - determines the load-bearing capacity for roadways.

Tests run in the field include:
Standard Penetration - determines the relative consistency of soils during sampling.
Modified Infiltration - determines soil infiltration rates for "rain gardens".
Percolation - determines the soil percolation rate for septic field design.

After testing and analysis, a report summarizes the results with recommendations and conclusions.

TEAM GEOTECH

TD2's geotech personnel range from 27 years of experience to brand new student interns of months. Despite the length of tenure, their commitment to client and project success runs deep.

KURT ROHN PE

Geotechnical Engineer
Subsurface Soils Lead
Construction Services Lead

Kurt has an extensive background in geotechnical design, testing, and analysis. As the geotechnical department lead, his responsibilities are vast. His priorities are organizing field and laboratory testing programs for geotechnical investigations, ensuring personnel training and equipment maintenance, and tailoring explorations to client and project needs.

In 2004, it was just Kurt, Tom, and the drill rig. Over time, quality service, accurate and honest analysis, and communication with clients on their level have resulted in continuous growth. Kurt works with clients from all the TD2 disciplines. He emphasizes that geotechnical analysis and engineering set the tone for how a given project can move forward and succeed.

New digital or motorized and compact soil testing lab equipment acquired in 2018 replaced older and bulkier machines. As testing volumes have dramatically increased, these upgrades allowed us to speed up the process while maintaining precision.

18 years TD2

AARON CLOUSE PE

Geotechnical Engineer

Aaron brings his experience with soil mechanics and testing to support TD2's geotechnical department. In the field or the lab, you will find Aaron analyzing data, writing reports, managing projects, and training/supervising personnel to keep projects moving forward.

A big part of what Aaron does is work with new engineers and student interns. They usually come in without experience, and he starts with the basics on the tests we perform most often. Aaron emphasizes the importance of consistency and accuracy. Practice builds confidence as they master the steep learning curve.

Aaron passed his P.E. in 2020 and felt that shift in confidence about his 3rd year as an E.I. His most valuable learning experiences have come from working in the field. And from a firsthand understanding of the means, methods, and observation of the construction process.

5 years TD2

TOM EGGERT

Drill Rig Operator

Tom is responsible for the drill rig operations for all TD2's grading projects and conducts density testing of fill soils. He is an NDEE-Certified Soil Evaluator.

Tom loves working outside. Some days in the field can't be beaten, like the cover image of Tom operating the Geoprobe at the Lewis & Clark Lake in Crofton, NE. After 33 years of working on a drill rig on environmental and geotechnical projects in 11 states, it has become second nature. Tom has a career full of memories.

27 years TD2

ALEX LEROUGE

Drill Rig Assistant

In training to take over the drill rig heavy lifting, Alex joined TD2 in 2021 as a Construction Observer. Shifting to the drill rig to assist Tom, Alex has quickly proven his stamina and aptitude.

1 year TD2

COLTON CLAUSON EI

Engineer Intern

Colton came to TD2 in 2018 as a student intern. He is now a full-time E.I. and on the P.E. path. Of all the paths he could have taken after graduation, soils seemed the best fit for his personality, lifestyle, and career interests. Colton is still learning daily from special inspections, reports, and data analysis.

4 years TD2

RACHEL OSBORN

Fall Student Intern

One of TD2's 2022 fall student interns, Rachel has embraced the learning opportunities in the field with the Geoprobe and in the soils lab. "It has been a learn it and apply it experience."

WRAP IT UP

“Can you dig it? I knew that you could.”

DRILL RIG ASSISTANT

CAN YOU DIG IT?

We are always on the lookout for excellent employees. If you can dig working in this TD2 area, then take the first step and email your resume to Ken Tracy or fill out our online application on www.td2co.com.

Are you looking to work outside, are safety conscious, and have stamina and endurance? This may be the job for you.

Full-time
TD2 is looking to fill a full-time opening for a driller’s assistant. A working knowledge of soil test drilling operations, boring logs, and geologic descriptions is highly desirable but not required. A current driver’s license is required, and a commercial driver’s license (CDL) is a plus. (The willingness to obtain a CDL in the near future would also be considered.) The ability to pass a drug test is required.

Job Requirements:

- operating a drill rig and other mechanical equipment
- routinely lifting and carrying equipment, tools and materials up to 75 pounds
- shoveling soil
- standing throughout the work day
- working outdoors year round
- performing routine maintenance of equipment
- daily travel to job sites – a company vehicle will be provided for all work-related travel

We offer an excellent benefit package, competitive pay and a fun, casual work environment.

TD2 is a firm with many opportunities. Take a look at the TD2 Career Page, and see what is available on CareerLink.

ATTRACTIVE BENEFITS

- Competitive Salaries
- Health, Dental and Vision Insurance
- Life and Disability Insurance
- Vacation Pay, Sick Pay, and Paid Holidays
- 401(k) and Profit Sharing Plan
- Tuition Assistance

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