Statement of Qualifications

Geotechnical Construction and Environmental Remediation

www.geo-solutions.com
General Corporate Information

Company Background


In December of 2012, Geo-Solutions acquired Geo-Con, this acquisition reunited many of the same employees who worked together in the 1980s and 1990s and resulted in one of the top specialty geotechnical/geoenvironmental contracting companies in the business.

In January of 2013, Bob Schindler assumed the role of President/CEO, and Pete Maltese and Ken Andromalos assumed Vice President roles. Bob, Pete and Ken form the current Executive Team. Chris and Steve officially retired in the Spring of 2016.

Geo-Solutions has experienced much success and has been involved with some extraordinary projects over the past four decades. The combined Geo-Solutions/Geo-Con team has completed projects on over 1,500 sites in the United States, and has gained international experience in over 14 countries including significant experience in Australia, Canada and Brazil.

Introduction

Geo-Solutions is a national leader in the specialty construction industry providing full service geotechnical and environmental contracting services. Geo-Solutions offers innovative, cost effective, and practical solutions to problems with soil and groundwater working across the US and internationally in the areas of subsurface stabilization/solidification, site remediation, groundwater control, and subsurface improvement. Geo-Solutions has completed projects in nearly all 50 states and 7 of the 10 Canadian provinces.

Health, Safety and Environment

Every Geo-Solutions’ employee is empowered with the authority to take all necessary actions to work safely and to provide for a safe work environment. Geo-Solutions develops its own site specific Health, Safety and Environmental Plan(s) or provides task specific addendums to existing plans for all of its projects. At the jobsite level, Geo-Solutions participates in any site specific training and performs daily jobsite safety meetings with the Owner/Engineer/Client and follows any protocols required with respect to any existing Substance Abuse Policy or site specific Health, Safety and Environmental Plan(s).
Quality Control (QC)

Geo-Solutions is committed to providing quality work products to its clients with a QC program based on the principle that quality is jointly defined by Geo-Solutions and its customer(s). All actions and services are designed to provide a satisfactory work product to these customers. Geo-Solutions has a QC representative on all of its jobsites who provides technical input to line management in matters regarding quality.

Sustainability

At Geo-Solutions, sustainability is centered on promoting practices that improve the well-being of its employees, its clients, the general public, and the environment. Ultimately, it’s the right thing to do and Geo-Solutions is therefore committed to promoting sustainable practices for improving sustainability performance over time. Geo-Solutions also understands that there is often a tangible financial benefit associated with sustainable practices which makes Geo-Solutions’ commitment to sustainability a “win-win”.

Employee Training

All of Geo-Solutions’ project staff have completed, at a minimum, the 40-hour OSHA HAZWOPER training with current 8-hour updates and are enrolled in a medical monitoring program including yearly physicals. Many of our staff members have additional training, including: OSHA HAZWOPER supervisory training, general OSHA 30 and 10-hour courses, confined space, excavation safety, lifts and rigging, first aid, and radiological hazard training.

In addition to OSHA safety related training, Geo-Solutions performs in-house training for equipment operation, technical aspects related to our technologies, quality control, general safety, estimating, and project management. New hires are put through an informal new-employee orientation that defines their role(s) in the company and an overview of our policies.

Bonding and Insurance

Geo-Solutions has been a valued client of Westchester Fire Insurance Company since 2012. Geo-Solutions’ ability to obtain bonding with a treasury-listed surety permits us to be a strong contender in the environmental and geotechnical construction fields.

Geo-Solutions also has an all-inclusive insurance agreement that covers its entire operations with coverage and limits that exceed most industry requirements.
Experience

Geo-Solutions has one of the strongest teams in the industry today which makes successful implementation of its projects possible. Geo-Solutions’ team is ever-changing and increasing, but currently includes the following key resources: 3 Executives with 96 years of combined experience, 10 Project Managers with 125 years of combined experience, and 11 Site Supervisors with 295 years of combined experience. Geo-Solutions’ team consists of a unique blend of exceptionally qualified managerial, technical, and field personnel with significant experience with specialty construction services. Many of the management and field staff have over 25 years of construction experience, specifically in the fields of geoenvironmental or geotechnical design and construction. Drawing from this deep experience pool, Geo-Solutions has the qualifications and expertise to handle even the most difficult project challenges.

Slurry Trenches. The staff at Geo-Solutions have been involved in the construction of slurry trenches since the late 70s. Throughout more than four decades, members of Geo-Solutions’ staff have been involved with the installation of over a 1,000 slurry trenches and have authored or co-authored dozens of publications on various topics related to this construction approach.

Soil Mixing. The principals of Geo-Solutions were instrumental in the development and expanded use of the soil mixing technology in both the US geotechnical and environmental markets. Geo-Solutions’ current and former principals reintroduced the soil mixing technology into the US market on the Jackson Hole Lake Dam project in the late 1980’s and oversaw the construction of the first U.S. manufactured deep soil mixing (DSM) multi-auger drill rig. Geo-Solutions’ staff was also involved in the earliest applications of soil mixing for the purpose of hazardous waste remediation and for much of the equipment modification and development that has made soil mixing the preferred choice for many remediation projects. Most recently, Geo-Solutions has been actively involved in the widening application of soil mixing for the delivery of oxidizing and reducing agents for the in-situ treatment of difficult contaminants in lithologies that would be impossible to treat otherwise. Geo-Solutions has an impressive soil mixing resume that spans both the environmental and geotechnical construction markets.

Bio-Polymer (BP) Trenching and Permeable Reactive Barriers (PRBs). Geo-Solutions has been involved in the development of the reactive barrier wall technology since the late 1980’s having pioneered the application of soil mixing and BP trenching to reactive media barrier installations. Geo-Solutions remains active in the advancement of reactive barrier technologies maintaining close working relationships with the inventors, scientists, and engineers who study and design these barriers.

Project Team

Project Team members are selected specifically for each project to provide the client with the highest quality service available in three main areas: 1) technical capability; 2) knowledge and experience of the scope of work and client requirements; and 3) cost-benefit value. Each member of the Project Team brings specialized skills and/or knowledge proven by direct application at similar sites, within the applicable regulatory environment, and relevant to the scope of the project. A typical project team consists of:
Project Manager - responsible for remotely overseeing and managing all aspects of the work by establishing project procedures, lines of communication, reporting requirements, etc.

Site Manager/Superintendent - responsible for overseeing and managing all aspects of the day-to-day work at the jobsite, including on-site subcontractor coordination, direction of the site workforce (e.g. laborers, operators, etc.), completion of required paperwork, maintenance of a safe and healthy work environment, and maintenance of the QC program.

Site Engineer/Technician - responsible for the implementation of the QC components of the work, including performing inspections, testing, surveying, and reporting. In addition to leading GSI’s QC efforts, the Engineer / Technician often assists the Project Manager with onsite management and administrative responsibilities.

Site Health and Safety Specialist - responsible for the implementation of the Safety components of the work, including adherence to site-specific H&S Plan(s), GSI’s Corporate Safety Procedures, and reporting.

Technologies

Slurry Trenches (a.k.a Slurry Walls)

Strictly speaking, the terms Slurry Wall, Slurry Trench, or Slurry Cutoff Wall refer to slightly different construction techniques, but many in the industry use these terms synonymously to refer to non-structural vertical cutoff walls constructed using the slurry trench installation method. For those in the industry, the term “Slurry Wall” (aka Diaphragm Wall) is generally reserved for structural element installations that are installed in discrete elements. The terms Slurry Trench and Slurry Cutoff Wall are widely recognized to refer to the installation of non-structural walls using long, continuous slurry supported excavations. The slurry trench installation method refers to construction practices that utilize an engineered fluid (normally consisting of some mixture of clay and water) to hold open the sidewalls of an excavation, thereby permitting the excavation of deep and narrow trenches without the need for other conventional excavation support systems. These cutoff structures are mainly constructed to slow the flow of groundwater or to slow the migration of subsurface contaminants, namely by slowing the flow of the groundwater carrying the contaminants. Slurry trench cutoff walls have been employed at thousands of sites across the United States and internationally in a variety of applications, including at waste sites to contain contaminated groundwater, at "clean" sites to dewater excavations, and at dams, levees, and similar structures. There are various types of slurry trenches:

- Soil-Bentonite Slurry Trench Cutoff Walls (SB)
- Soil-Cement-Bentonite Slurry Trench Cutoff Walls (SCB)
- Cement-Bentonite Slurry Trench Cutoff Walls (CB)
- Composite and Combination Systems

Most slurry trenches are excavated with excavators which can be modified to dig up to 90 feet deep and deeper depths are possible with clamshell excavators. When the excavation is complete, the trench is filled with a low permeability mixture (normally less than $1 \times 10^{-7}$ cm/sec) called backfill. Conventionally, the backfill consists of a
blend of soil and bentonite; soil, cement, and bentonite; or cement and bentonite, but barriers with synthetic materials (such as HDPE liners) or composite trench systems are also possible. Geo-Solutions has installed some of the longest (up to 11 miles long) and deepest (up to 185 feet deep) slurry trench cutoff walls in North America.

**Soil-Bentonite Slurry Trenches**

In the installation of soil-bentonite (SB) slurry trench cutoff walls, the trench is excavated under slurry followed by a distinct backfilling step wherein the slurry is displaced by a mixture of soil and slurry. This is sometimes referred to as a two-step or two-stage slurry trench installation. SB cutoff walls are the most common type of non-structural slurry trench. These walls were sporadically used in the United States between the 1940’s and 1970’s after which their use became commonplace. Thousands of these walls have been constructed in a number of purposes.

SB backfill may be blended using a variety of equipment, but the most common and convenient method is to mix batches of backfill alongside the slurry trench using small excavators and/or dozers. The resultant mix looks like wet concrete (i.e. low to moderate slump) and is normally placed in the trench with an excavator. The mixture is placed in a semi-fluid state which allows it to flow into the trench and displace the trench slurry. Once the backfill operation is complete, the SB backfill consolidates slightly ultimately behaving like a soft clayey soil. The most important property of the SB backfill is low permeability. Typically SB backfill has a permeability in the range of $10^{-6}$ to $10^{-5}$ cm/sec. Environmental projects often require a permeability less than $1x10^{-7}$ cm/sec, but a levee or dewatering project may require a permeability less than $1x10^{-6}$ cm/sec. Either value is achievable with the right mix of materials. SB backfill has low strength and will remain soft (in the range of 0 to 300 psf (0 to 15 kPa)) for the design life, but this is nearly always sufficient to maintain a vertical cut through the wall for subsequent installation of utilities and other light structures. The most important variables in a SB mix design are bentonite content and grain size distribution.

Surface loadings that span across SB walls, like roads and structural foundations, require the removal and replacement of the top few feet of the wall. Sometimes geogrids are used to distribute the loads above the wall to the soils adjacent.

In general, SB backfill performs well when exposed to pure phase contaminants or impacted groundwater due mostly to the fact that most of the matrix is composed of inert soil particles.

**Advantages of Soil-Bentonite Slurry Trenches**

Compared to other barrier wall types, SB slurry trenches offer the following advantages:

- Low cost
- High productivity
- Very low permeability
- Verifiable continuity and depth
- Resistance to contaminated groundwater
- Ability to easily flex with ground movements, even small earthquakes
- The slurry remains fluid, allowing time for penetrating difficult layers or obstacles
- Re-use of most of the excavated materials

**Soil-Cement-Bentonite Slurry Trenches**

Soil-Cement-Bentonite (SCB) Slurry Trenches are a variation of the more common SB slurry trench. In this method, the soils excavated from the trench are generally blended with bentonite via slurry as well as Portland cement to provide additional strength to the final backfill mixture. SCB walls are excavated using the same general methods as a SB wall installation except that SCB backfilling requires some additional equipment for handling the cement and for making cement grout which is added to the backfill. Cement is added to the backfill most often in a water based grout, but it can be added in dry powder form. Because the grout must be added in small yet fairly precise ratios, mixing is often done in a mixing box rather than on the ground. Mixing is usually accomplished using an excavator, much the same as for an SB wall. Backfill can also be placed with the excavator.

Adding the cement grout to the backfill generally means a higher (less desirable) permeability than could be obtained with the same material without the cement. This is because the Portland cement interferes with the bentonite and prevents it from achieving its full swelling potential. Typical permeability values for SCB backfill are in the range of 10⁻⁷ cm/sec. Typical unconfined strengths are in the range of 30-150 psi (0.2 to 1 MPa). SCB permeability remains relatively unchanged over long time intervals, but SCB strength continues to improve over time.

SCB, as a material, has also been used to provide a protective encasement for critical foundations and a replacement for compacted clay when construction must take place in wet and cold conditions. SCB has similar properties to roller compacted concrete and soil cement.

**Advantages of Soil-Cement-Bentonite Slurry Walls**

- Most of the advantages of SB slurry walls apply to SCB walls
- Higher strength than SB or CB walls
- Greater trench stability is possible because the SCB backfill creates a shorter backfill slope, resulting in less open slurry-filled trench at a given time, especially with deeper walls.
- More resistant to erosion and burrowing animals - extremely important in levee applications

**Cement-Bentonite Slurry Trenches**

Cement-Bentonite (CB) slurry trenches represent a smaller and more specialized type of slurry trench installation method used in the US since the early 1970s. Alternatively, in Europe and other international locales, CB walls are the more common barrier wall choice. In this method, the wall is excavated through a slurry that typically consists of water, bentonite, cement, and occasionally other additives such as blast furnace slag cement or attapulgite clay. The trench slurry hardens in place, normally overnight. The hardened CB slurry serves as the final barrier wall. CB installations do not require a separate backfilling operation and it's for this reason that this technique is sometimes referred to as one-step slurry trench construction.
CB walls are excavated using hydraulic excavators and/or clamshell excavation equipment, the same equipment used for other slurry trench installations. At the slurry plant, cement, or some other setting agent, is added to the bentonite slurry. The slurry is then pumped from the mix plant to the excavation. Once the excavation is completed to full depth, the bottom is cleaned and the process moves on. The viscosity of the mixed slurry is designed to be in the fluid range during the excavation process. The slurry stays in the trench and is allowed to set. Typical CB slurry will attain a butter-like consistency overnight and a clay-like consistency after fully hardening (generally 28 to 56 days).

The properties of interest for most CB slurry walls are strength and permeability. CB slurry has a relatively high water content and because of this there are more water-filled voids than in a SB or SCB backfill. This higher void ratio results in typical permeability values that are higher than SB or SCB backfill, generally in the 10⁻⁶ cm/sec range. CB can take months to fully harden, and long term tests have shown CB permeability gradually decreases (improves) over long (years) timescales. CB material generally attains 75% of its ultimate strength after 28 - 56 days of curing and close to 100% after 90 days of curing. The addition of blast furnace slag typically results in a higher strength, lower permeability material, but it takes much longer to achieve the final properties with properties shown to improve beyond 180 days. Chemical compatibility is also an important parameter when designing containment systems for impacted groundwater. CB has a pore size that is particularly well-suited to resisting certain oils and petroleum products, and thus, it is often preferred on sites with heavily contaminated groundwater.

**Advantages of Cement-Bentonite Slurry Trenches**

- Useful on smaller projects with limited access or narrow work zones because of the smaller equipment footprint.
- No excavated soils are used in the final barrier wall, which is beneficial in areas with undesirable backfill soils.
- Since CB slurry is heavier than bentonite slurry and self-hardens, this method can provide improved trench stability and more easily overcome weaker ground conditions.
- Since the slurry sets after ~1 day, overlapping segments can be constructed in any direction or order to form a continuous barrier.
- Segments can be used to traverse up or down moderate slopes (5-15%) with minimal earthwork construction.
- Construction of walls through porous ground conditions is possible.
- Can be used to remove unsuitable materials below the groundwater without shoring or dewatering.
- CB backfill, once set, has a higher strength than SB backfill.
Bio-Polymer Slurry Trenching

Bio-polymer (BP) slurry trenching is a method used to install high conductivity vertical barriers. These trenches are installed with a bio-degradable slurry and can be backfilled with a variety of permeable materials (e.g. gravel). The goal on these projects is to form permeable zones in the earth to serve as toe drains in dams; recovery trenches for contaminated groundwater; French drains; permeable reactive barriers (see separate PRB references); leachate collection trenches; and other types of active groundwater control structures. BP trenching is similar to slurry trenching with bentonite, but a degradable polymer slurry is used instead of a bentonite slurry. The polymer slurry serves to eliminate dewatering, shoring, unhealthy odors, and it stabilizes the trench walls as the excavation and backfill are completed below the groundwater surface. In some cases, i.e. bio-treatment schemes, the bio-polymer slurry can actually increase the reactivity of the media. Depending on project goals, BP slurry trench drains (or BP Drains) may be equipped with wells, filter fabrics (although not recommended), liners (e.g. HDPE), sumps, horizontal pipes, and any of a variety of other features. When construction is complete and the trench is backfilled with gravel, sand, or other permeable material, the slurry is degraded to water, and minute amounts of environmentally-friendly material thereby becoming an active drain. Installation of a BP Drain may require the use of long stick attachments, tremie pipes, end stops, special weights, and other tools that GSI possesses.

Soil Mixing

The term Soil Mixing loosely refers to any construction approach used to mix soils with or without a reagent additive. In the fields of geotechnical and environmental contracting, the term often refers to methods of soil mixing performed in-situ for the addition of a cementitious reagent, most commonly Portland cement. The concept for soil mixing originated in the US, but much of the early technological development took place in Europe and Japan until the technology was reintroduced into the US market (by GSI’s current and former principals) in the late 1980’s on the Jackson Hole Lake Dam project. Other terms used to describe this process include, in-situ soil mixing (ISSM), auger mixing, deep soil mixing (DSM), shallow soil mixing (SSM), deep mixing method (DMM), soil cement columns / piles, cement soil mixing (CSM), large diameter auger (LDA), and rotary mixing. The most common use of soil mixing in the environmental market is for the in-situ stabilization / solidification (ISS) of wastes, but the method can also be used to deliver treatment reagents to the subsurface. Soil mixing is used in the geotechnical market for the installation of rigid elements for bearing capacity and slope stability improvement, for installation of low hydraulic conductivity cutoff walls, and for excavation support systems. There are many equipment configurations and processes that can be used for the successful completion of soil mixing, but the goal is almost always the efficient creation of a soil-reagent mixture with improved properties relative to the soils alone. The most common type of soil mixing used on environmental sites is large diameter single auger soil mixing.
in which a large diameter (typically 3 to 12 foot diameter) tool with cutting edges, mixing paddles, and grout ports is drilled into the ground as a fluid grout is pumped through the hollow shaft and out the grout ports. The fluid (which usually contains additives) acts as an aid to drilling and is mixed into the soil column, creating the soil-reagent mixture. Large diameter mixing can also be used to install geotechnical elements. The term deep soil mixing (DSM) often refers to the use of multi-auger soil mixing rigs that are most commonly used to install linear elements, such as cutoff walls or shear panels. DSM auger configurations are specific to each contractor, but typically include 3 or 4 relatively small (3’ to 4’) diameter augers spaced evenly apart. Very shallow soil mixing, typically less than 15’ or 20’ can be performed using excavator buckets with or without rotary blending tools (think: large rototiller). These methods are more primitive than some of the other approaches, but can be performed at a significantly reduced cost. Another method of soil mixing for the installation of linear elements is chain trenching. Geo-Solutions “Geo-Trencher” is essentially a large chainsaw mounted on a tracked chassis. The Geo-Trencher can be used to mix linear elements down to 45’ below ground for the efficient creation of 2-ft+ wide cutoffs or shear panels.

As discussed, soil mixing may be used for a variety of purposes: creating structural elements for foundations and retaining walls, soil improvement, groundwater cutoff walls, and in-situ treatment of buried contaminants. It is also used with specialized cementing and chemical reagents for hazardous waste treatment, sludge stabilization / solidification, lagoon stabilization, in-situ chemical oxidation (ISCO), and in-situ chemical reduction (ISCR). Geo-Solutions has more soil mixing experience than any other firm and is the oldest soil mixing contractor in North America.

**Advantages of Soil Mixing**

- Limited handling of contaminated soils (some handling of mixing spoils which are typically 15-20% of the mixed volume)
- High strengths, 50-200 psi
- Low hydraulic conductivity, ~5x10⁻⁷ cm/s
- Mixing is performed *in-situ*
- Advantageous in weak soils / adjacent to large structures because there is no open trench and columns can be alternated
- Advantageous on sloped sites with difficult access because the drill can be angled to achieve a vertical wall

**Grouting**

Grouting is a means by which subsurface voids, such as open cavities, soil pores, and open fractures in rock are filled with mixtures in order to accomplish site specific objectives (typically reduced permeability or increased strength). Typical grouting involves the installation of a hollow casing to the depth of interest. A grout is then injected into the subsurface through the casing as the casing is simultaneously pulled out of the ground. Grout is typically injected until a noticeable increase in pressure is observed at the surface which indicates that all of the voids have been filled. Grouting can also be done under high pressure which is commonly referred to as jet grouting.
Jet Grouting

Jet grouting is a technique in which an ultra-high pressure (up to ~6,000 psi) fluid stream is used to erode, mix, and replace soils. This technique is actually a combination of soil mixing and grouting. Generally, jet grouting is performed by injecting a cement-water grout and can be performed with jets of grout alone (a.k.a. jet mixing or single fluid), with jets of grout and air (a.k.a. double fluid); or jets of air, water, and grout (triple fluid). Jet grout construction uses a rotating and rising drill rod with small nozzles that direct the grout horizontally to form columns of soilcrete or soil-cement. Jet Grout columns are typically formed from the bottom up providing a column of fully mixed soil. Typical column diameters are 2 to 6 feet (0.6 to 2 m). Jet grouting is the only type of grouting that is capable of treating all types of soils from clays to gravel, but is most effective in highly erodible soils. Jet grouting is also useful for mixing isolated zones of soil and for mixing around and below buried structures and utilities. Jet Grouting is commonly used in conjunction with other techniques, e.g. slurry trenching or soil mixing, to complete sections of barrier or a monolith in areas with difficult or limited surface access, subsurface obstructions, or sensitive utility locations. Jet Grouting is also particularly effective in structural underpinning and foundation rehabilitation. Members of Geo-Solutions’ staff have been performing jet grouting since the mid-1980’s when this technique was first introduced into the United States.

Pressure Grouting

Pressure grouting is a proven methodology for installing seepage barriers or curtains to eliminate, or minimize, problematic water flow through karstic, fractured, or otherwise pervious bedrock. This technique is commonly applied for reducing seepage beneath dam foundations through the installation of “grout curtains”. Grout Curtains are typically installed by injecting cement-based grout into the underlying bedrock, under pressure, through grout-pipe and borehole packers. Geo-Solutions has performed extensive laboratory testing to develop a comprehensive suite of state-of-the-art balanced, stable grouts that can meet today’s stringent specifications. Geo-Solutions can also employ real-time computerized monitoring systems for continuously measuring and recording grout injection parameters during construction.

Pipe or Void Grouting

Pipe or void grouting is an application of pressure grouting that can be used to fill underground pipes, abandoned utilities, or voids to prevent future collapse. This application involves the use of grout that is capable of flowing the length of the pipe or void and that will meet the specific strength and permeability requirements. This application is highly specialized and typically requires a bench scale study to determine an appropriate grout mixture. Geo-Solutions’ resume includes some of the longest pipe grouting projects (over 10 miles of pipeline) and the largest void grouting projects (11,000 cubic yards) in the United States.
Permeable Reactive Barrier (PRB) Walls

Permeable reactive barrier walls, sometimes called passive reactive barriers or PRBs, are vertical elements used to passively remediate contaminated soil and groundwater. This technology does not require any mass excavation, disposal or conventional "pump and treat" methods. Generally, a treatment media or reactive barrier, is buried in a narrow trench beneath the ground surface so that contaminated groundwater can pass through the media passively. After the contaminated groundwater passes through and reacts with the media, the groundwater exits the other side of the wall "clean". Typical treatment media used in PRBs includes granular iron, activated carbon, engineered bacteria, chemicals, and special clays. PRBs can be installed using the BP slurry excavation method, soil mixing, or a chain mixing tool (e.g. the Geo-Trencher). Zero-valent iron is the most common reactive material used in PRBs and was initially developed in the 1990’s by the University of Waterloo. Geo-Solutions was instrumental in working with the University in developing this technology back then and remains the preferred installer of deep PRBs in the industry.

Combination Systems

Many of Geo-Solutions’ construction techniques are complimentary, i.e. multiple are routinely used on the same construction site. For instance, slurry trench cutoff walls are occasionally used to funnel groundwater toward a PRB. This type of installation is often called a "funnel and gate" system. Another example of a combination system is the use of jet grouting to supplement soil mixing or slurry trenching in difficult areas of a site. Geo-Solutions is one of the few contractors that has the in-house capabilities to install such combination systems.

Services

Geo-Solutions can provide a range of services from method evaluations to treatability studies to design/construction.

Traditional Contracting

Geo-Solutions has the ability to bring all of the labor, equipment, materials, and experience to work directly for the Owner or General Contractor in the execution of a project. This is Geo-Solutions’ primary service model.

Technical Assistance

In select markets or for select clients, Geo-Solutions may be willing to bring skilled supervisors, specialized materials, and specialty equipment to the job site to assist another contractor in the execution of its specialized work.
Consulting

Geo-Solutions is routinely engaged by Owners, Engineers, and Contractors to assist in the design or development phase of a project. As consultants, Geo-Solutions’ staff can draw upon their construction experience to guide projects successfully through the design phase. Geo-Solutions’ consulting includes feasibility studies, project cost estimating, method evaluation, and design mix studies. Geo-Solutions’ consulting arrangements often center on a bench scale design mix study. Given the subtleties of slurry trenching and soil mixing, design mix studies are frequently required to determine if a selected methodology can successfully and cost effectively meet the project objectives. Geo-Solutions has a detailed understanding of grouting; slurry trenching, and soil mixing which allows it to develop its bench scale studies in a way that makes the results valuable for the full scale implementations. Geo-Solutions has completed hundreds of such studies.

Equipment

Geo-Solutions maintains an impressive equipment fleet that is specifically tailored to our specialty geotechnical and geoenvironmental projects. In order to keep mobilizations costs at a minimum, Geo-Solutions rents as much standard equipment (i.e. forklifts, generators, backhoes, etc.) as possible from local vendors and supplements with its specialized equipment. Much of Geo-Solutions’ equipment fleet was custom designed and built or modified for its specialized work.

Geo-Solutions’ fleet includes:

- Large excavators (including a 40, 80, and 125 MT) suited for Geo-Solutions’ long stick / booms
- Track mounted soil mixing drill rigs capable of mixing with 8’ to 12’ augers down to a depth of 70’
- Crane mounted soil mixing drill rigs capable of mixing with 8’ to 12’ augers to depths greater than 70’
- Jet grout drill rigs
- The Geo-Trencher, a chain trencher capable of mixing down to a depth of 45’
- Custom long sticks and booms for excavators which allow for the excavation of slurry trenches down to depths of 90’
- Rotary mixing tool for the cost effective implementation of soil mixing down to a depth of 20’
- Automated, continuous, and batch type slurry and grout mixing plants, including bulk pneumatic tanks and various size silos for the storage of bulk cement, bentonite and other reagents
- Jet pumps for jet grouting
- Clamshells for deep excavations
- Automated data acquisition systems, flowmeters, GPS devices, and other QC equipment
- Specialty soil mixing attachments, including augers, Kelly bars, centralizers, rotary heads, etc.
- An assortment of smaller support equipment and tools including forklifts, manlifts, pumps, excavators, dozers, loaders, VFDs, storage boxes, tools, etc.

Contact Us

Our strong, highly experienced team of professionals is available to help you with questions concerning environmental remediation or geotechnical construction. Contact us through our website, via email or directly at any of our offices located throughout North America.

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