

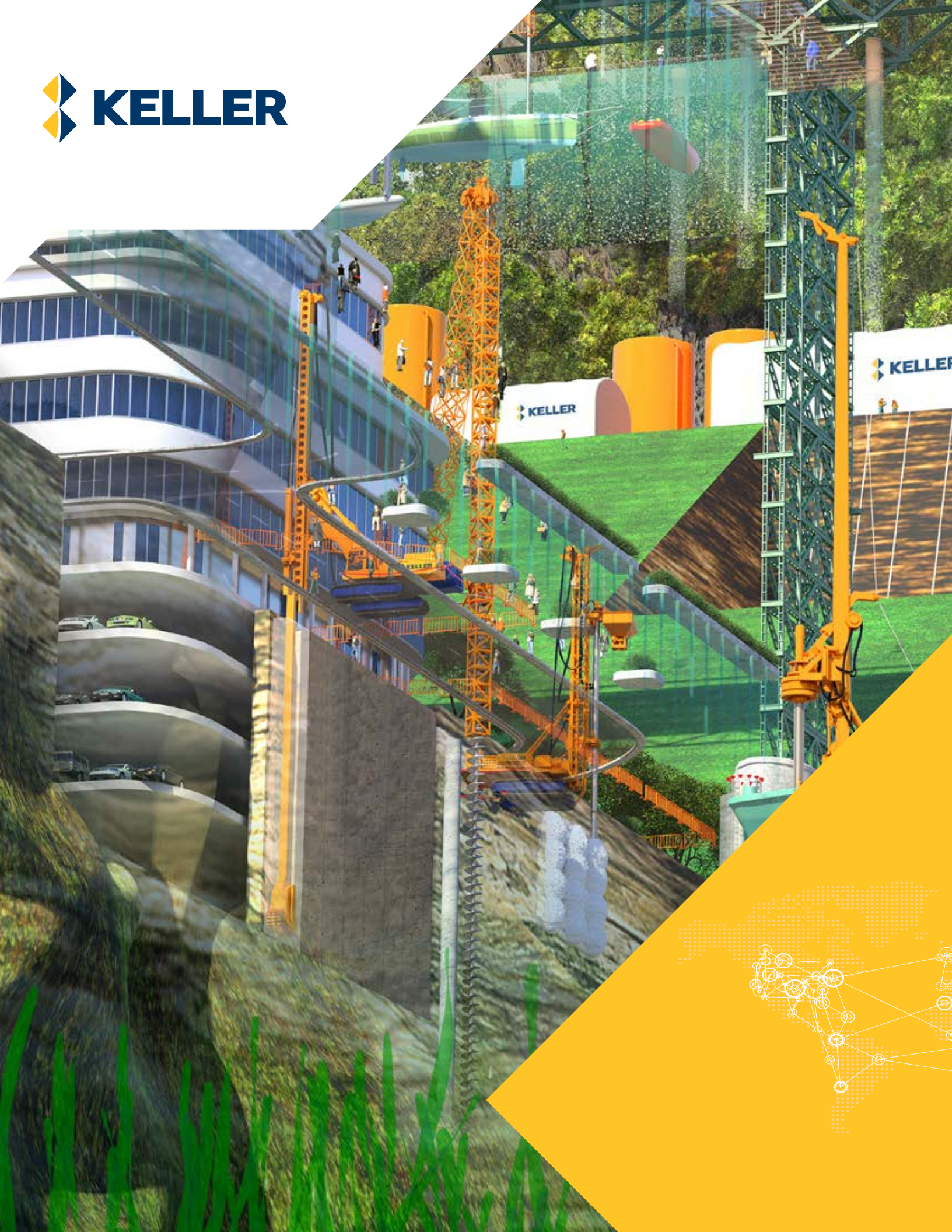
## The world leader in geotechnical solutions

- Bearing capacity/settlement control
- Excavation support
- Heavy foundations
- Liquefaction mitigation
- Releveling structures
- Seepage control
- Slope stabilization
- Underpinning



Global strength and local focus







**6**

continents

**40+**

countries

**10k**

people

**7k**

projects/year



## The world leader in geotechnical construction

Every day, people around the world live, work, and play on ground prepared by Keller.


Leveraging our full range of techniques, we provide solutions to geotechnical challenges across the entire construction spectrum.

We have the expertise, experience, and product range to respond quickly with the optimum solution, execute it safely, and see it through to a successful conclusion, no matter the size of the project.

## Global strength and local focus

The strongest local construction projects are built on a foundation of connected global experience. Our in-depth knowledge of local markets and ground conditions enables us to understand and respond to specific project challenges.

We harness the power of our global network and knowledge base to safely deliver the optimum solution, no matter the size or location.









# OUR PURPOSE

To help create infrastructure that improves the world's communities.

Every day we help create projects that range from prominent structures to routine roads, bridges, and buildings—everything society needs.

# OUR VISION

To be the leading provider of specialist geotechnical solutions.

We strive to lead in quality, product range, safety, and customer service. We are the world leader today and to maintain our leadership we always endeavor to improve—to get even better.

# OUR VALUES



## Integrity

We always behave with integrity towards our customers, colleagues, and the communities in which we work.



## Collaboration

Our teams collaborate across borders and disciplines to bring our customers the best of Keller and build a stronger business for the future.



## Excellence

In all that we do, we target excellence. Whether it's geotechnical engineering, project management, safety, or people development, we strive to deliver to the highest standards.





# EXPERTISE TO GET THE JOB DONE

**At Keller we have the experience to get the job done and the track record to prove it.**

Whether large or small, complex or simple, we take the time to understand every subsurface problem and provide the optimal, tailor-made solution. The size of the project is irrelevant to us—what drives us is sharing in our client's satisfaction of a job well done.

If you want faster and more effective results, ask us to work on your specific problem—we've likely solved a similar one before.



## THE WHARF

### **Excavation support, bearing capacity/settlement control**

Keller provided a full foundation package to facilitate excavation of up to three levels of underground parking for five high-rise buildings constructed along the Potomac River waterfront in Washington D.C. Support of excavation included sheet piles, soldier piles, displacement piles, tiebacks, internal bracing, and jet grouting. Rigid inclusions provided ground improvement beneath a portion of one garage. Keller also performed dewatering/water treatment for the project.

**OWNER:** Wharf District Master Developer LLC (dba Hoffman-Madison Waterfront)

**ENGINEER:** GEI Consultants & Meuser Rutledge Consulting Engineers

**MAIN CONTRACTOR:** Balfour Beatty Construction



## ELLIOTT BAY SEAWALL

### **Seismic hazard mitigation**

The seawall and adjacent supporting structures protecting downtown Seattle were in poor condition and vulnerable to a major earthquake. Keller implemented one of the world's largest jet grouting solutions to support the waterfront structures and mitigate the seismic risk.

**OWNER:** City of Seattle DOT

**ENGINEER:** Shannon & Wilson, Inc.

**MAIN CONTRACTOR:** Mortenson/Manson, A Joint Venture



**60+**  
**LOCAL OFFICES**  
**IN NORTH AMERICA**



## **ASTON MARTIN RESIDENCES**

**Heavy foundations, seepage control, excavation support**

Keller used multiple techniques to create a basement and provide heavy foundations for the luxury high rise building on the Miami River. Techniques included: permeation grouting, soil mixing, secant pile walls, tremie seals, jet grouting, and tangent bearing elements, a technique developed by Keller.

**OWNER: G and G Business Developments LLC**

**ENGINEER: Desimone Consulting Engineers (structural) & NV5 (geotechnical)**

**MAIN CONTRACTOR: Coastal Construction**



## **WRIGLEY FIELD**

**Excavation support, heavy foundations, underpinning, instrumentation & monitoring**

Keller provided a unique, schedule-saving, top-down construction proposal which included multi-technique excavation support, heavy foundations, stadium underpinning, and real time structural monitoring for an expansion and upgrade to the stadium and facilities.

**OWNER: Chicago Cubs**

**ENGINEER: GEI Consultants**

**MAIN CONTRACTOR: Pepper Construction Company**



## **LOUISIANA OFFSHORE OIL PORT (LOOP)**

**Bearing capacity/settlement control**

Over the course of nearly two decades, Keller has provided foundation solutions for new construction of many above ground storage tanks at the southern Louisiana facility. Solutions provided include increased bearing capacity, controlled settlement, and improved stability.

**OWNER: LOOP LLC**

**ENGINEER: various**

**MAIN CONTRACTOR: various**

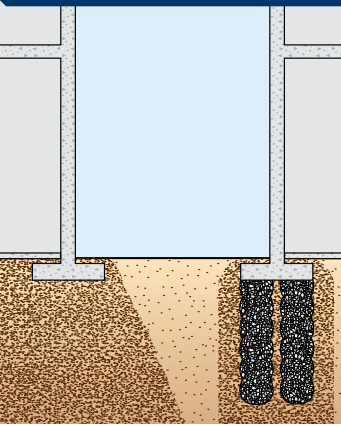




# SOLUTIONS

Keller provides the optimal solution, leveraging our experience and expertise with our comprehensive suite of techniques to get the job done right the first time.

## Bearing capacity/ settlement control

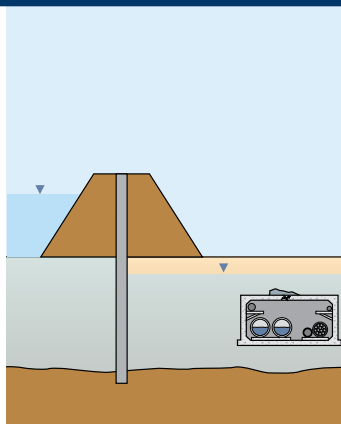


Bearing capacity/settlement control involves modifying soil properties or reinforcing the soil to achieve a designed performance.

### Common uses

- Increase bearing capacity
- Reduce settlement
- Mitigate liquefaction
- Collapse/fill voids
- Stabilize mines/karst
- Compress soils before construction
- Treat expansive or collapsible soils
- Stabilize soft ground

## Seepage control

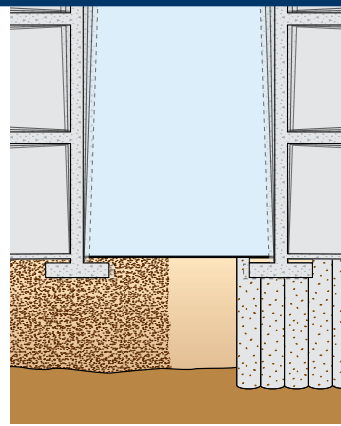


Seepage control involves the construction of barriers in soil and rock, sealing below-grade structures to restrict the movement of water, or dewatering for excavations.

### Common uses

- Provide seepage cutoff below dams and levees
- Prevent migration of contaminants
- Seal concrete joints or cracks in below-grade structures
- Restrict groundwater flow into excavations
- Dewater for excavations

## Liquefaction mitigation

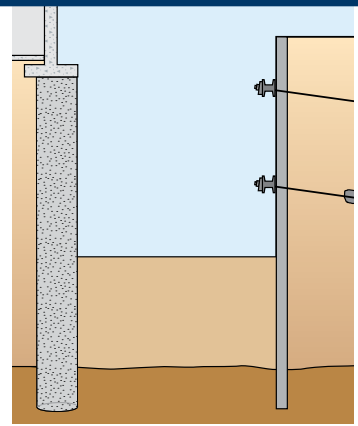


Liquefaction mitigation is achieved by densifying loose granular soils or constructing subsurface reinforcements to resist seismic forces.

### Common uses

- Prevent liquefaction-induced bearing capacity failure
- Control seismic settlement
- Prevent lateral spreading
- Reduce scope of deep foundation elements

## Excavation support



Excavation support involves retaining soil whose stability is impacted by a man-made excavation or fill. Existing adjacent structures may also require support.

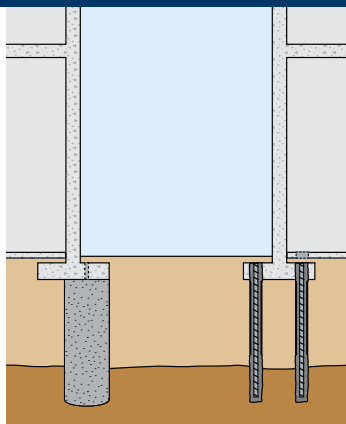
### Common uses

- Support of excavation
- Shore existing adjacent structures
- Laterally support placed fills
- Bulkhead/wharf support and remediation





## Underpinning

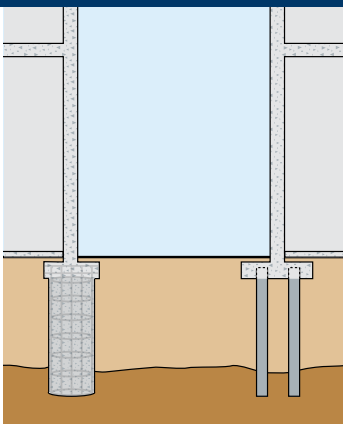


Underpinning provides additional support to existing foundations that are unable to safely support existing or additional planned loads or that experience reduced support.

### Common uses

- Improve weak underlying soils
- Underpin with deep foundation elements

## Heavy foundations

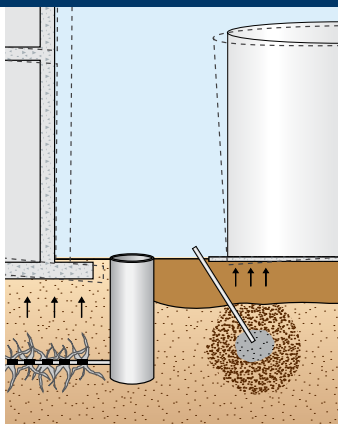


Heavy foundations are structural elements that transfer loads through soils with insufficient strength and/or stiffness to underlying competent soils or rock.

### Common uses

- Support new or existing structures
- Support static and seismic loads

## Releveling structures

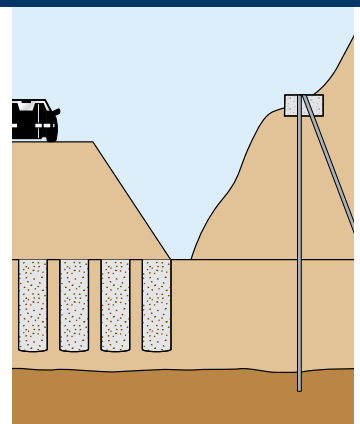


Releveling structures is achieved by either lifting through a direct connection to the structure or by injecting grout at depth to raise both the overlying soil and the structure it supports.

### Common uses

- Reverse settlement experienced by a structure

## Slope stabilization



Slope stabilization involves the strengthening, reinforcing, or supporting of soil slopes to produce a sufficient stability factor of safety.

### Common uses

- Stabilize man-made slopes
- Stabilize natural slopes adversely affected by natural or man-made influences

## DESIGN-BUILD

Our decades of research and development have supported design methods in line with fundamental geotechnical engineering theory. Our experience and knowledge lead to the optimal solution for each loading configuration, subsurface condition, and project objective.





# WHY CHOOSE KELLER?

**You can be assured you have a strong partner with Keller.**

## **Excellence in performance**

We have a strong reputation for leading safety culture and operational excellence. Keller is dedicated to fostering a healthy, safe work environment. The goal of our global Keller Think Safe program is zero incidents. Management and employee commitment to this health and safety framework has rewarded us with many safety awards from our clients and industry organizations. Our industry-leading focus on training and development enables our employees to achieve their full potential and achieve operational excellence.

## **Product leadership**

Our global product teams comprise industry experts focused on advancing the safety, quality, and productivity of the work Keller performs. These teams are resources for each of our customers' projects.

## **Value engineering**

Keller employs about 1500 engineers worldwide with over 200 focused purely on design. With this in-house capability, half of our projects are design-build, enabling our value engineering to reduce cost and schedule.

## **Innovation**

Keller has a culture of creativity and innovation. Our research and development programs are fueled by ideas submitted by our employees and product teams. Examples include our in-house developed KDAQ and InSite systems.

KDAQ is a data acquisition system that collects performance data from our equipment and provides real-time, actionable feedback to our field and office staff to monitor and control quality, efficiency, material usage, and productivity.

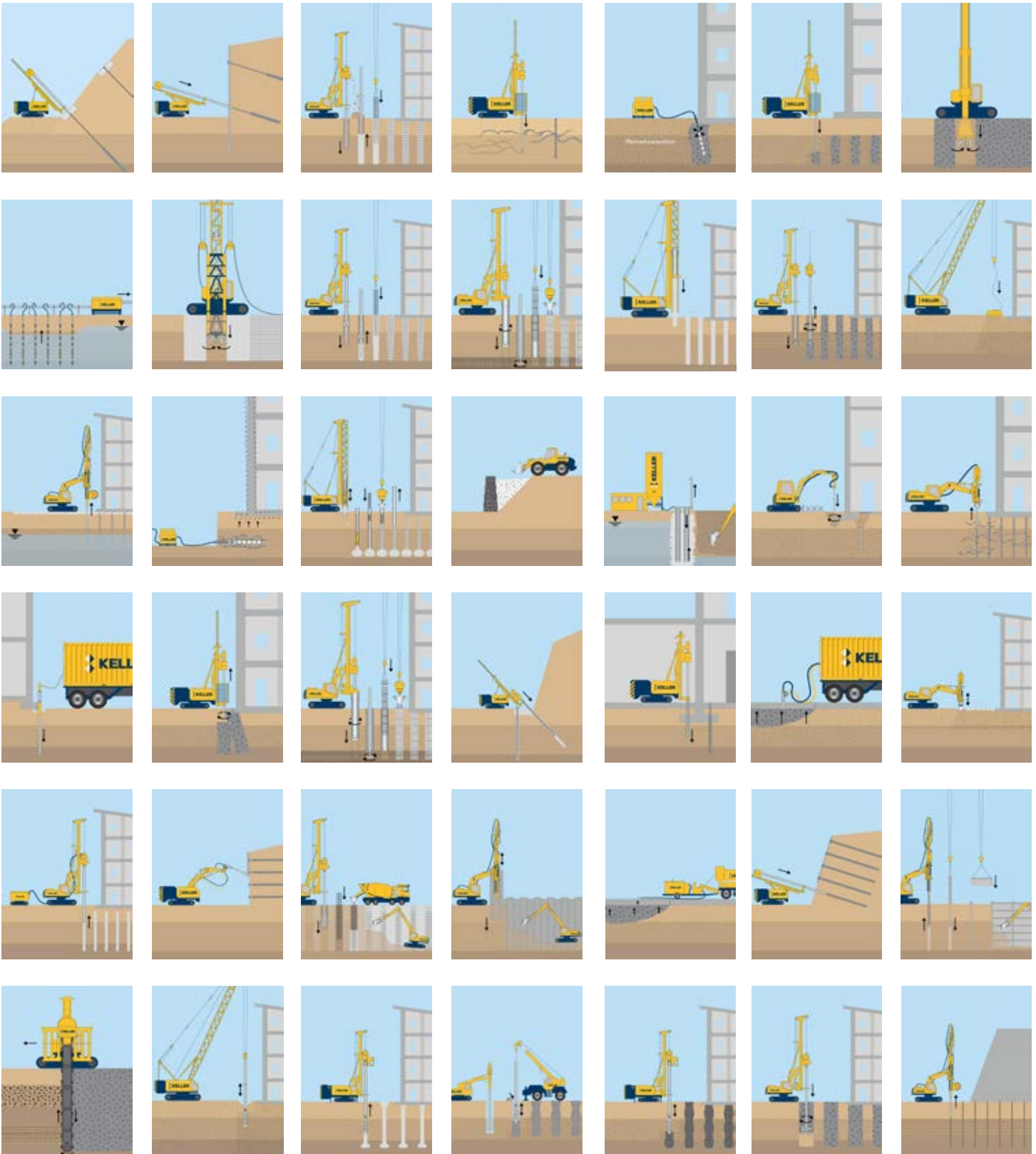
InSite is an app our field personnel use on handheld and mobile devices to access the most up to date project data and efficiently complete required daily documentation related to employees, materials, equipment, and safety.





# SOLUTIONS MATRIX

The solution to any geotechnical challenge





CHALLENGES	TECHNIQUES	GROUTING							GROUND IMPROVEMENT												
		Fracture grouting / compensation grouting	High mobility (rock/fissure) grouting	Injection systems	Jet grouting	Low mobility (compaction) grouting	Permeation grouting	Polyurethane grouting	Cutter soil mixing	Dry soil mixing	Dynamic compaction	Earthquake drains	Rapid impact compaction	Rigid inclusions	TRD - soil mix walls	Vibro compaction	Vibro concrete columns	Vibro piers®	Vibro stone columns	Wet soil mixing	Wick drains
Bearing capacity / settlement control		●	●	●	●	●	●	●		●	●		●	●		●	●	●	●	●	●
Containment				●	●				●	●					●					●	
Excavation support					●		●		●						●					●	
Heave control/ expansive soil treatment				●						●										●	
Heavy foundations																					
Marine structures support					●									●		●		●	●	●	●
Mine stabilization/ void filling			●			●		●													
Railroad subgrade stabilization				●		●															
Releveling structures		●				●		●													
Seepage control			●		●		●	●	●						●					●	
Seismic/liquefaction mitigation					●	●	●		●	●	●	●	●			●		●	●	●	
Sinkhole/karst remediation			●			●					●					●			●		
Slope stabilization					●				●	●								●	●	●	●
Tunneling stabilization		●	●		●	●	●													●	
Underpinning					●		●														

This chart represents techniques that could apply to the listed geotechnical challenges. Consult with your local Keller representative to discuss specific site conditions and appropriate Keller geotechnical construction solutions. The actual applicability of a particular technique depends upon the soil character (soft, loose, stiff, dense, organic, collapsible, etc.) and its composition (clay, silt, sand, cobbles, boulders, etc.). Occasionally, multiple techniques used simultaneously could provide a more economical solution. Other considerations include accessibility, availability of materials, presence of utilities or other underground obstructions, and many other internal and external influences.



Whether with one or a combination of techniques, Keller provides the optimal solution tailored to each project’s specific circumstances and requirements.

EARTH RETENTION										DEEP FOUNDATIONS								ADDITIONAL TECHNIQUES				
Anchors	Anchor block slope stabilization	Gabions	Micropile slide stabilization system (MS³)	Sculpted shotcrete	Secant or tangent piles	Sheet piles	Slurry wall – structural or cutoff	Soil nails	Soldier piles & lagging	CFA piles (auger cast)	Displacement CFA piles	Drilled shafts	Driven piles	Franki piles	Helical piles	Jacked piers	Macropiles®	Micropiles	Dewatering	Ground freezing	Pit underpinning	Slab jacking
										●	●	●	●	●	●	●	●	●				
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INSTRUMENTATION & MONITORING

In combination with these techniques, we also provide automated instrumentation for monitoring all aspects of construction, including the safety and stability of buildings, excavations, bridges, railways, roads, tunnels, dams, embankments, and slopes.





Keller's team of engineers, project managers, and construction experts are available to provide the optimal solution to your geotechnical challenge.

Contact us today  
**800-456-6548**  
**keller-na.com**

**Global strength and local focus**