



Global Strength &
Local Focus

HAND AND ARM INJURY PREVENTION

Common Causes of Hand and Arm Injuries

POOR COMMUNICATION



LACK OF CONCENTRATION



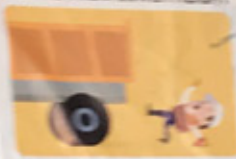
LACK OF AWARENESS



USING THE WRONG TOOL



FALLING FROM LOWER HEIGHT



© PHARMACIA © KELLER © HANSON © HANSON





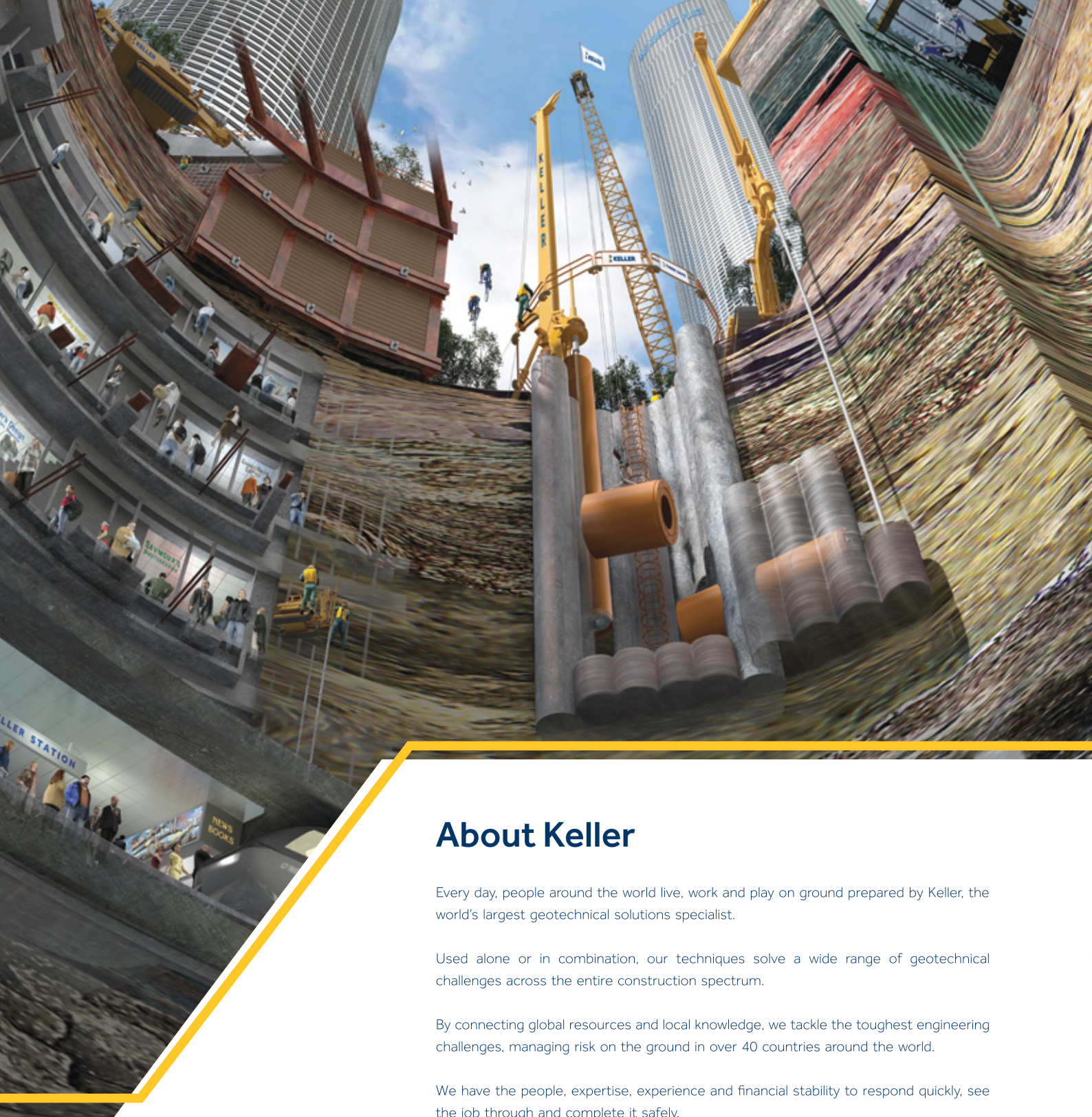
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About Keller

Every day, people around the world live, work and play on ground prepared by Keller, the world's largest geotechnical solutions specialist.

Used alone or in combination, our techniques solve a wide range of geotechnical challenges across the entire construction spectrum.

By connecting global resources and local knowledge, we tackle the toughest engineering challenges, managing risk on the ground in over 40 countries around the world.

We have the people, expertise, experience and financial stability to respond quickly, see the job through and complete it safely.

Our global strength comes from the connected companies of Keller, where local construction projects are built on a foundation of connected global experience.

Keller in ASEAN

In ASEAN, Keller combines geotechnical design and construction experience with our core expertise in ground improvement and foundations.

We have built a strong presence in Singapore and Malaysia since the 1970s, providing ground improvement solutions. We have also expanded our operations across the region into Indonesia, Vietnam, Hong Kong and the Philippines.



We have local offices with experienced design and construction personnel who are skilled in the use of a wide range of specialised rigs, equipment and tools. As part of the Keller Group, we also have access to global expertise and resources. This enables us to provide cost-effective, fit-for-purpose geotechnical solutions in different markets.

Over the years, targeted acquisitions have added capability and experience to the group. In 1998, Keller Franki Indonesia (formerly Frankipile Indonesia) joined the Keller Group and enabled us to provide piling solutions to our customers in Indonesia.





Where we operate

Keller has experience in nearly every construction market, and a deep understanding of the unique challenges and requirements of each. We design and build tailored solutions to meet the challenges of the most complex ground conditions, using local experience backed by global expertise in a comprehensive range of geotechnical engineering techniques.

Commercial and Residential



Urban Infrastructure



3. Public/Institution



Industrial and Manufacturing



Oil, Gas and Chemical



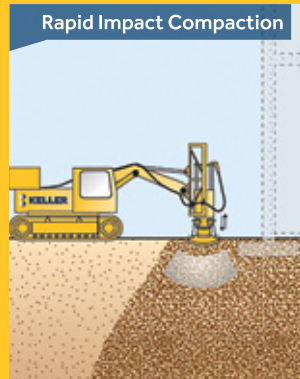
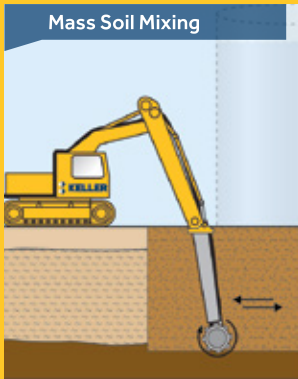
Power



Our Projects



Geotechnical Solutions



Ground Improvement

Keller was the first company to develop methods and equipment for the successful deep compaction of soil in the 1930s and has continued to develop the equipment and widened its application. We have unrivalled experience in delivering ground improvement solutions in the ASEAN region, improving the engineering properties of soils to enable construction of new buildings and infrastructure and to protect existing assets.

Ground improvement techniques are used to:

- Increase bearing capacity
- Reduce settlement
- Reduce permeability
- Reduce liquefaction potential
- Increase slope stability
- Collapse or fill voids Accelerate surcharging

► Deep Vibro Techniques

Vibro Compaction

Vibro Stone Columns

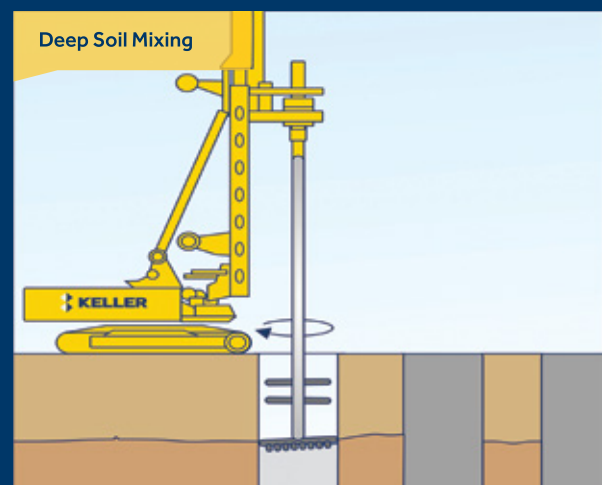
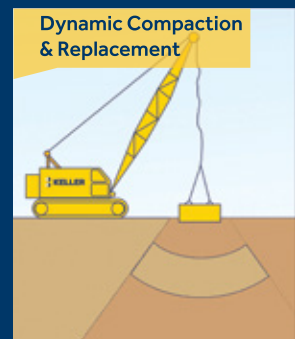
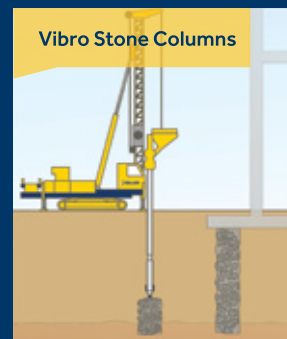
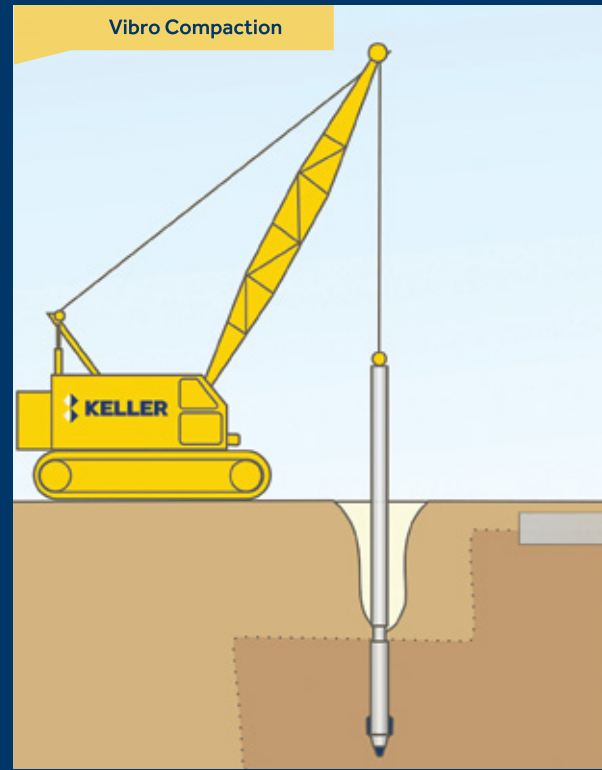
Vibro Concrete Columns

► Deep Soil Mixing

► Mass Soil Mixing

► Rapid Impact Compaction

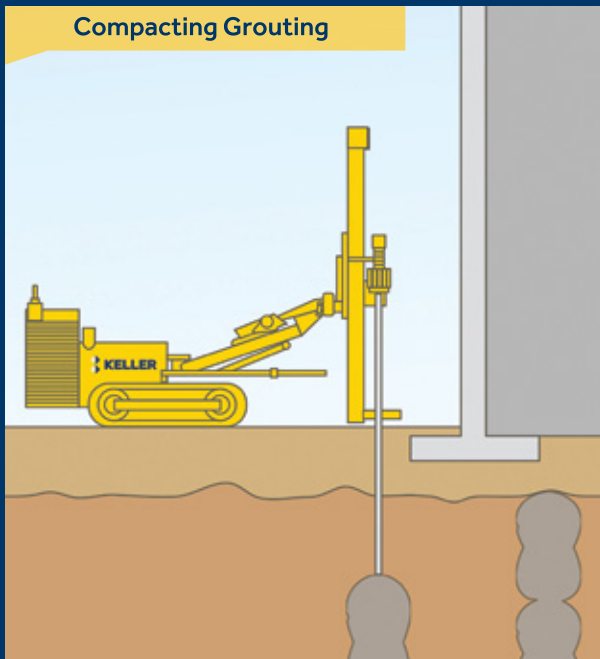
► Dynamic Compaction and Replacement





Specialty Grouting

Compacting Grouting

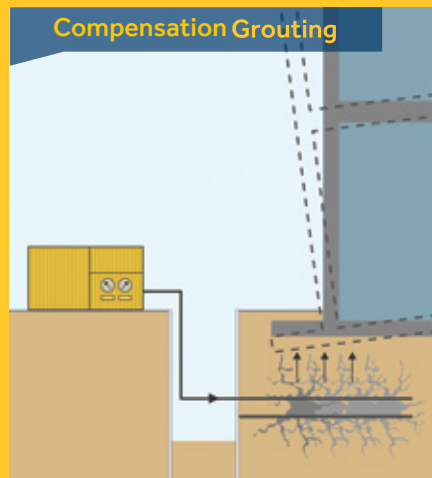


Specialty grouting strengthens target areas in the ground and controls ground water flow through rocks and soils by reducing their permeability.

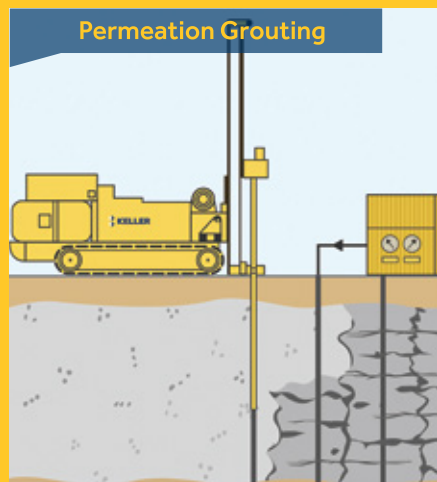
Specialty grouting is applicable to both new construction projects and to repair and maintenance work. Other applications include excavation support, settlement control and geo-environmental products such as diaphragm (slurry) walls to protect adjacent ground from contamination.

- ▶ **Compaction Grouting**
- ▶ **Jet Grouting**
- ▶ **Compensation Grouting**
- ▶ **Rock Fissure Grouting**
- ▶ **Permeation Grouting**

Compensation Grouting

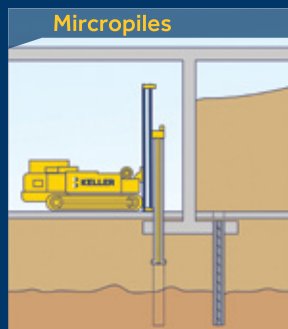


Permeation Grouting



Jet Grouting





Piling

Keller is expert in every type of piling technique on the market, choosing the optimal solution (in terms of technical performance, efficiency and cost-effectiveness) to transfer heavy loads through compressible or weak soils to competent strata, such as rock beneath. Load is transferred through end bearing and/or side friction.

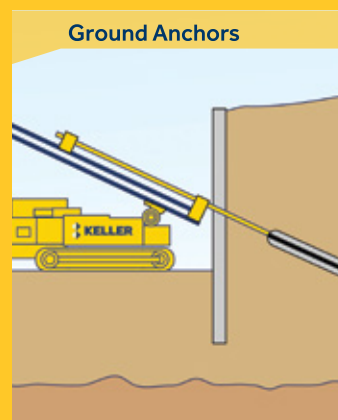
Piling is used to:

- Support new or existing structures
- Support compressive, tensile, or lateral loads
- Support static and seismic loads

Earth Retention

Keller understands the hazards associated with earth retention and has experience in a wide range of techniques, including the design and installation of anchors and bracing to provide additional lateral support to excavations. We have a proven track record in the design and construction of complex retaining systems and stabilisation solutions using a single or a combination of geotechnical products.

Ground Anchors, Soil Nailing



Instrumentation & Monitoring

Keller provides systems and services for monitoring the safety and stability of buildings, excavations, bridges, railways, roads, tunnels, dams, embankments and slopes. We help owners, infrastructure operators and construction engineers identify and mitigate risk, optimise designs and methods, and document regulatory compliance.

Testing

Various tests are performed on piles and improved ground to ensure quality. On piles, static load tests, dynamic tests and pile integrity tests are often performed. For ground improvement an array of tests such as cone penetration tests, coring and unconfined compressive strength testing, plate load tests and water pressure tests are performed, depending on the ground improvement method employed.



Our Projects





Karimun Petroleum Storage Terminal

Keller designed and built a foundation solution using Vibro Stone Columns to support 30 tanks that ranged from 20m to 62m in diameter. Using the wet method, 108,000 linear meters of Stone columns, 1m in diameter were installed down to 25m.



Jurong Shipyard, Singapore

Working directly for the owner, Keller designed and executed a ground improvement scheme for a hull block workshop in Tuas, Singapore. Vibro Compaction was carried out and Prefabricated Vertical Drains were installed to improve the subsoil for a 126,000 square meter ship hull block fabrication facility.



Conlay Station, Malaysia

For the Conlay Station, Mass Rapid Transit 2 project in Malaysia, Keller provided a retaining system for the station which involved installing 550 temporary Ground Anchors down to 25m. Drilling and Grouting works for the station box were also carried out.



Changi Airport Expansion, Singapore

Keller is involved in the expansion project of Singapore Changi Airport Terminal Five, compacting 33 million cubic meters of sand. A telescopic Vibro compaction rig was used in areas with air height restriction. This project once again proves Keller's strength in innovative technologies and our extensive experience working in an active airport environment.



MRT Retaining System, Malaysia

Keller is involved in the development of an underground Mass Rapid Transit Station at Chan Sow Lin, Malaysia. We provided a Geotechnical solution package for a retaining system consisting of Deep Soil Mixing, Curtain Grouting and Secant Bored Piles.



Petrochemical Complex, Malaysia

Keller, in collaboration with Ansah Asia installed over 36,700 pre cast Spun Piles of various diameters and performed various foundation civil works for the development of a large petrochemical project in South East Johor, Malaysia.



IVS2, Malaysia

For Malaysia's Klang Valley Mass Rapid Transit 2 project, Keller provided a more efficient alternative solution using Deep Soil Mixing for the retaining wall of intervention shaft 2. Rock Fissure Grouting work was also carried out in this project.



Jurong Island land preparation, Singapore

Keller improved an area approximately 2,000,000 square metres on Jurong Island using Rapid Impact Compaction, it's first application of this technique in Singapore.



Link Road, Hong Kong

The Hong Kong Link Road project comprises of sea viaducts in the Western waters of Hong Kong, tunnels through scenic hills and underneath the Airport Road and Airport Express Line, and at-grade roads on reclamation along the East-coast of airport island. 200,000 linear meters of Vibro Stone Columns were installed in this project, some under air height restrictions because of the nearby airport.



Nghi Son Refinery, Vietnam

Nghi Son petrochemical refinery complex situated in Thanh Hoa province is the country's second refinery and the largest project so far. Keller constructed Stone Columns to treat the area approximately 50,000 square meters. Using Keller's bottom-feed method, over 100,000 linear meters of Vibro Stone Columns were installed to depths of 18m, supporting 12 tanks up to 90m in diameter and 19.9m in height.



Biodiesel Plant

In Tuas Singapore, Keller improved an area of 88,000 square metres using Deep Vibro Techniques for the development of the world's largest biodiesel plant. Several structures including heavy tanks and pipe racks, were built on improved ground.



Ground Improvement for Expressway, Malaysia

On a very deep, soft alluvium soil, Keller installed Vibro Stone Columns for a road embankment in Klang, Malaysia.



Health, Safety & Quality

At Keller, safety is a significant part of how we work. We hold our managers and supervisors accountable for the safety of our people and expect them to demonstrate effective safety leadership. However, all employees are responsible for preventing and correcting unsafe behaviour or work conditions.

We firmly believe that all accidents are preventable. Our workplaces are regularly checked to better understand work practices and devise more effective ways of managing risks. Accidents and high potential near misses are investigated and corrective action taken.

Our aim is to create a permanent behaviour change. We are committed to the group's "Think Safe" program and strive to continually improve our health and safety standards. Our ultimate safety goal is Zero Injuries in all our operations.

We look to continuously improve the way we deliver our products, services and solutions.

Exceptional quality creates lean operations, reduces waste and improves efficiency, leading to more efficient, economical operations, minimising our carbon footprint.

Keller leads the way in developing and implementing digital quality monitoring and control as well as conventional quality control programmes.



Toolbox Meeting



 **THINK SAFE**
WORK SAFE, GO HOME SAFE

Community & Environment



Our goal is to minimise the impact of our operations on the community and the environment. We achieve this through efficient use of resources – minimising material and fuel waste, using appropriately sized equipment and properly disposing of waste. We also encourage the use of alternative construction methods, including low-carbon solutions, supporting our clients in making informed choices by providing them calculations to show the relative carbon footprint of different solutions.

We act responsibly and respectfully towards the communities in which we work – because we are part of them.

We want our work to bring value to communities. We are aware of the impact of our activities, and endeavour to carry them out considerably, with minimal disruption.



**We Deliver,
You Benefit**



Our global strength:

- ▶ empowers us to continuously improve established processes
- ▶ gives us the ability to draw on alternative solutions from other country
- ▶ means greater shared resources across borders
- ▶ enables the delivery of leading health, safety and environmental performance



Our local focus:

- ▶ allows us to draw on the in-depth knowledge of our local staff
- ▶ provides local contacts for customers and suppliers
- ▶ means familiarity with specific ground conditions
- ▶ gives you the best value



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