Solutions matrix
The solution to any geotechnical challenge

- Deep foundations
- Earth retention/shoring
- Environmental containment
- Foundation rehabilitation
- Ground improvement
- Groundwater control
- Heave control
- Marine structure support
- Mine stabilization/void filling
- Railroad subgrade stabilization
- Seismic/liquefaction mitigation
- Sinkhole/karst remediation
- Slope stabilization
- Tunneling stabilization
- Underpinning
Earthquake drain programs are designed to limit uplift forces. Slab jacking is the controlled injection of grout through a concrete slab at strategic locations to relieve the slab.
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<th>CHALLENGES</th>
<th>DEEP FOUNDATIONS</th>
<th>SHIELD HYDROEJECT</th>
<th>EARTH RETENTION</th>
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<th>ADDITIONAL TECHNIQUES</th>
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<tr>
<td>Deep foundations</td>
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<td>Chemical grouting</td>
<td>Compaction grouting</td>
<td>Jet grouting</td>
<td>Fracture grouting / compensation grouting</td>
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<td>Injection systems</td>
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<td>Foundation rehabilitation</td>
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<td>Polyurethane grouting</td>
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<td>Ground improvement</td>
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<td>Cutter soil mixing</td>
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<td>Groundwater control</td>
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<td>Dry soil mixing</td>
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<td>Heave control</td>
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<td>Mine &amp; karst stabilization / void filling</td>
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<td>TRD – soil mix walls</td>
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<td>Vibro columns</td>
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<td>Tunneling stabilization</td>
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<td>Vibro Piers</td>
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<td>Vibro Replacement</td>
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</table>

This chart represents techniques that could apply to the listed geotechnical challenges. There are not applicable techniques listed above because the chart covers only those specific, unique techniques that Keller representative to discuss specific site conditions and appropriate Keller geotechnical construction solutions.

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- Deep foundations
- Earth retention/shoring
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- Marine structures support
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SOLUTIONS:
- Cement grouting
- Chemical grouting
- Compaction grouting
- Jet grouting
- Fracture grouting / compensation grouting
- Injection systems
- Jet grouting
- Polyurethane grouting
- Cutter soil mixing
- Dry soil mixing
- Dynamic compaction
- Earthquake drains
- Rapid impact compaction
- Rigid inclusions
- TRD – soil mix walls
- Vibro replacement
- Vibro columns
- Vibro Piers
- Vibro Replacement

INSTRUMENTATION & MONITORING:
- In combination with these techniques, we also provide automated instrumentation for monitoring the safety and stability of buildings, excavations, bridges, railways, roads, tunnels, dams, embankments, and slopes.