GeoTesting Express, Inc. (GTX) provides mechanical and physical properties testing services on soils, rocks, and geosynthetics with the fastest turnaround time available.

GTX can help prevent structural problems on every kind of construction project – from tunnels, bridges, and offshore oil rigs, to skyscrapers and landfills – by carefully testing what’s used beneath the surface. We offer worldwide service and maintain a license with the United States Department of Agriculture, so we can accept samples, regardless of where they originate.

Tools for Soft Ground Tunneling - Soil Abrasivity Test

The abrasivity of soil is determined using the same testing apparatus used for rock. The test for soil uses a wider cutter steel test piece. The abrasivity of a soil is classified based on the amount of wear measured.

Reference: GTX’s drillability testing suite is based on NTNU’s 13A-98 DRILLABILITY Test Methods, Dept. of Civil and Transport Engineering B SINTEF’s DRI, BWI, CLI Standards, January 2003.

The trademarked acronyms and terms DRI™, Drill Rate Index™, Bit Wear Index™, BWI™, Soil Abrasion Test™, SAT™, and Cutter Life Index™ are unique for test results and calculated indices originating from NTNU/SINTEF and can only be obtained by testing samples at their reference laboratory in Trondheim, Norway.
### Tunnels

#### Characterization and Testing

**Rock Testing**

- Air permeability
- Cerchar abrasivity
- Direct and indirect - (Brazilian) tensile
- Direct shear/sliding friction
- Drillability Test Suite
- Elastic moduli
- Freeze/thaw
- Hardness
- Hydraulic conductivity
- Petrographic analysis
- Point load index
- Pulse velocities and ultrasonic constants
- Punch penetration
- Slake durability
- Triaxial
- Unconfined compression
- Wet/dry

**Soil Testing**

- Consolidation (incremental, $K_o$, constant rate of strain)
- Soil Abrasivity Test
- Cyclic simple shear
- Direct and residual shear
- Direct simple shear
- Index
- Permeability
- Resilient modulus
- Resonant column/Torsional shear
- Triaxial (UU, CU, CD, cyclic, extension)

**Sample of Tunnel Project Experience**

<table>
<thead>
<tr>
<th>Project Description</th>
<th>Responsible Parties</th>
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</thead>
<tbody>
<tr>
<td>Hudson Tunnel - Surface &amp; Tunnel Alignment, NJ Fan Plant, NY-NJ; The Gateway Trans-Hudson Partnership; 2017-2018</td>
<td>NEIS-GBIS Sewer Tunnel, NEIS2 and NEIS2A, Los Angeles, CA; NATEC, AMEC, and AECOM/URS; 2008-2013</td>
</tr>
<tr>
<td>Snowy 2.0 Pumped Hydro Expansion Tunnel, Australia; GHD Engineering; 2018</td>
<td>Baltimore &amp; Potomac Tunnel, MD; PB/P JV; 2015-2016</td>
</tr>
<tr>
<td>Second Avenue Subway Phase 2, NY/NJ; Phase 2 Partnership; 2018</td>
<td>South Hartford Conveyance and Storage Tunnel, CT; AECOM; 2013-2014</td>
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<tr>
<td>Roundout West Branch Bypass Tunnel Phase 2, NY; Jacobs; 2014</td>
<td>The Third Catskill and Delaware Aqueduct, NY Mott MacDonald/Malcolm Pirnie J.V.; 2011-2013</td>
</tr>
</tbody>
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