Self-Drilling Hollow Bars: Ground Anchor, Tension Pile or Soil Nail?
Soil Nails

- Lightly loaded (i.e. 60-100 kN)
- Fully Bonded
- Passive (i.e. not prestressed)
- Lower Risk, lower levels of corrosion protection
Hollow Bar Soil Nails - Road Widening
Rock Bolts / Rock Dowels

- Passive Installation
- Lightly Loaded
- Used for face stabilisation, netting, pinning etc.
- Not to be confused with Rock Anchors (see Ground Anchors)
Hollow Bar Rock Bolts - Tunnel Portal Stability
Micropiles (compression)

Compression loading

Passive Installation

Buckling resistance requires careful evaluation

Corrosion Protection
Compression Micropiles - External Tube for Buckling Resistance
Micropiles (Tension)

Passive Installation

Often Heavily Loaded

Often used for Uplift Resistance

Corrosion Protection dependant on loading and level of risk.

Low risk: plain bar or galvanized bar

High risk: Double Corrosion Protection
Hollow Bar Tension Micropiles for Sheet Pile Tieback
Micropile Reinforcement / Injection Conduit with Pregrouted Section
Jet Grouted Micropile with Hollow Bar Reinforcement / Injection Conduit
Ground Anchors

Active (i.e. prestressed)

Debonded Free Length

Typically Heavily Loaded

Lengths Often in Excess of 20m

Corrosion Protection dependant on loading and level of risk.

Low risk: plain bar or galvanised bar

High risk: Double Corrosion Protection
Difference Between Ground Anchor and Tension Pile

a) Anchor is Stressed - Zero Extension under Service Loadings

b) Tension Pile is Passive - Extension under Service Loadings
Stabilisation of Existing Structures
Ground Anchors - Retaining Wall Tieback
Double Corrosion Protection - Bar Anchors
## Corrosion Protection Options: Classification of Application

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<th>Application</th>
<th>Load Classification</th>
<th>Risk Corrosion protection Design Code</th>
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<tr>
<td>Soil Nail</td>
<td>Lightly Loaded Fully Bonded Passive</td>
<td>Low Risk Plain or Galvanized EN 14490 BS 8006-2</td>
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<tr>
<td>Rock Bolt / Dowel</td>
<td>Lightly Loaded Fully Bonded Passive</td>
<td>Low Risk Plain or Galvanized</td>
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<tr>
<td>Mini Pile (compression)</td>
<td>Low to Medium Loading (Compression) Fully Bonded Passive</td>
<td>Low to Medium Risk Plain or Galvanized EN 14199</td>
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<tr>
<td>Mini Pile (tension)</td>
<td>Medium to High Loading (Tension) Fully Bonded Passive</td>
<td>Medium Risk Plain, Galvanized or DCP (for higher risk installations) EN 14199</td>
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<tr>
<td>Ground Anchor</td>
<td>Medium to Heavy Loading Debonded (i.e. Prestressed) Active</td>
<td>Higher Risk Plain, Galvanized or Double Corrosion Protection EN 1537 BS 8081</td>
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</table>
Installation of Hollow Bars (Soil Nails) - Long reach excavators
Installation of Hollow Bars - Large Bars, Deep Micropiles 13t Crawler Rig
Installation Can Be Challenging! -Thank You for Your Attention