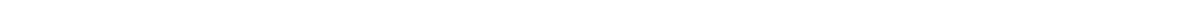


# **NORDIC GEO SUPPORT**

## **Deep Foundations**

**FOR**  
**CONSTRUCTION, TUNNELLING & MINING**



## Foundation Solutions Page



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NORDIC GEO SUPPORT works with the technology leaders to offer customers globally solutions for deep foundation applications. Nordic Geo Support also offers a comprehensive range of geotechnical solutions from injection technologies, meshes, anchors, spray and shocreting solutions, as well as cement and resin delivery systems. Working with leading certified suppliers in combination with experienced manufacturers that are employing leading edge product design and innovative production facilities, we offer high quality, high performance solutions to your project challenges.

## Nordic Geo Support Product Offer

### Drilling Consumables

High Performance rock drilling tools and consumables:

- DTH Hammers
- Bits
- Shanks
- Rods
- Drill Pipes
- Adapters
- Augers, Accessories

### Injection Grouts

Leading edge resin injection technology for demanding cases:

- Water Stopping
- Sealing
- Ground Consolidation
- Ground Stabilisation
- Construction and structural repairs

### Anchoring & Bolting Grouts

Grouting technologies offering ease of use, clean and fast setting:

- Capsules
- Cartridges
- Pumpable grouts
- Additives

### Anchoring & Bolting

A broad range of rock bolting and anchoring technologies:

- Double and single coated protected steel
- Steel Self Drilling Anchors
- GFRP bolrs of all types
- Standard bolts and meshes

### Cement-Based Additives

Cement based admixtures and additives:

- Concrete Repair
- Admixtures
- Modifiers
- Waterproofing
- Joint Sealants

### Pumps & Accessories

Cement and resin mixing and pumping technologies:

- Cement Pumps
- Resin Pumps
- Transfer systems
- Dataloggers
- Hoses, lances, packers

### Water control

Waterproofing, drainage and pumping:

- TunnelDrain innovative strip drainage system
- Drainage pipes
- Waterproofing grouts, additives and sealants
- A broad range of dewatering pumps

### Ventilation

Air quality, ventilation and safety solutions:

- Ventilation bags and systems, including Mecanicad's rigid ducts
- Fans & inline coolers
- Water atomisers

### Re-usable Hangers

Developed in the Nordics, fast, easy to use & reuse:

- Services Hooks for ventilation systems, water and pneumatic lines, electrical cables and distribution boards
- Blasting hooks

### Other products

A range of other products:

- Coatings & sealants
- Personal protective products
- Mining accessories

# Glossary

**Active Anchor:** An anchor which is post-tensioned from the external face of the ground immediately after installation and is usually designed to help prevent deformation of the ground or retained structure. It has a free length and a bonded length.

**Ground Anchor:** A ground or earth anchor is an installation in the ground which is capable of transmitting an applied load to a local bearing stratum. The tensile element of a ground anchor is typically a steel bar, FRP bar or strands.

**Passive Anchor:** An anchor which is not pre-tensioned. Applied loads are transmitted from the ground or ground structure directly. A passive anchor does not usually have a free (unbonded) length of tendon.

**Permanent Anchor:** An anchor with a design life greater than two years. The design life of "semi-permanent" anchors, should be defined by the consultant, but is usually in the range of five to ten years.

**Soil Anchor:** A ground anchor installed in "SOIL" (soft ground).

**Soil Nail:** A temporary or permanent, passive anchor, installed into the ground. A typical application is slope stabilization.

**TBM:** Tunnel Boring Machines

**Temporary Anchor:** An anchor with a design life less than two years

**Tie-Back:** An anchor, usually horizontal or nearly horizontal, used to reinforce retaining walls for stability. One end of the tieback is secured to the retaining wall, while the other end is anchored to a stable structure, such as a back-wall or anchored into earth with sufficient resistance (grouted bond length). A tie-down is the same kind of anchor but installed vertically or nearly vertically

**Soft-Eye:** Use Cut-able glass fibre reinforcement instead of conventional steel rebars in the D-Wall / Pile area where the TBM will break-through.

**Rock Anchor:** A ground anchor installed in "ROCK" (hard ground).

**Rock-Bolt:** A long anchor bolt, for stabilizing rock, which has usually been excavated. Rock bolts are often used in tunnels or rock cuts. They transfer loads from the unstable rock exterior, to the confined and much more stable interior of the rock mass.

**Rock Dowel:** Passive reinforcing elements inserted into predrilled holes in rock and bonded in place with grout. Can be temporary or permanent

**Single-Corrosion Protection (SCP):** Anchor A single layer of corrosion protection preventing the onset of corrosion during the designed life

**Double-Corrosion Protection (DCP):** Anchor Two protective barriers preventing the onset of corrosion during the designed life. Typical barriers include grout, a corrugated plastic duct, grease or epoxy coating.

**Soft-Eye:** Use Cut-able glass fiber reinforcement instead of conventional steel rebars in the D-Wall / Pile area where the TBM will break-through.

**Hollow Rock:** Bolt A rock-bolt using a hollow bar which acts both as an anchor and a grouting pipe.

**Self-Drilling Anchor:** A hollow anchor bar with end drill bit, allowing drilling, flushing, grouting and anchoring in one operation. Can be temporary or permanent.

**Expandable Friction Bolt:** A bolt made of a deformed steel tube that is expanded by injecting high-pressure water.

**Mechanical Bolt:** A non-grouted active anchor using an expansion shell to create a point-anchor at the bottom of the hole, while tensioning is performed at the top of the hole, usually using a plate and nut.

**Micropile:** Also known as minipiles, micropiles are deep foundation elements constructed using highstrength, small-diameter steel casing and/or threaded bars.

**Crosshole Sonic Logging (CSL):** This is an accurate method to determine the structural integrity and homogeneity of concrete within diaphragm walls, bored piles, drilled shafts, barrettes, concrete piles or augercast piles.

# Deep Foundations

**Nordic Geo Support** offers a comprehensive range of geotechnical solutions for deep foundations and basement works including:

**Ground stabilisation**

**Ground Consolidation**

**Water Sealing**

**Drainage Systems**

**Dewatering Pumps**

**Standard and Engineered Cement based mixers, pumps and delivery systems**

**Cement Additives**

**Resin Injection Systems**

**Injection resins, capsule resins and cartridge resin systems**

**Data Loggers**

**Drilling and Excavation Consumables**

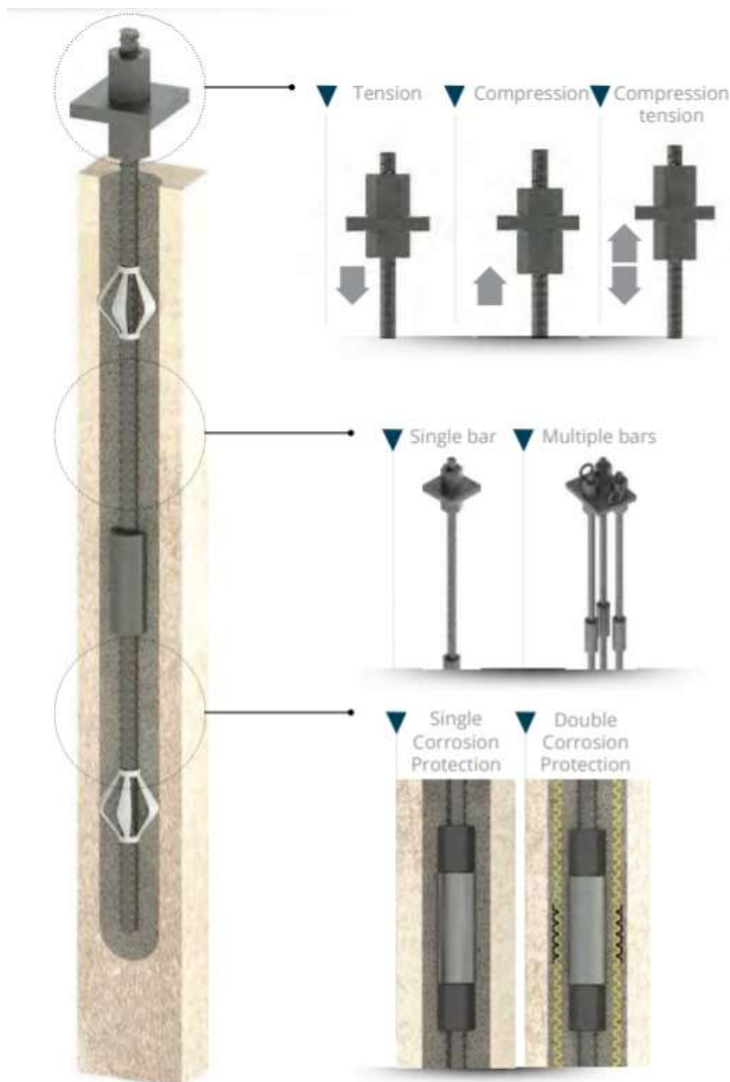
**Ground Support Solutions**

**Asset Repair Technologies**





# Micropiles



**Micropiles** are structural elements used to transmit an applied tension or compression load into soil or rock. As passive anchors, they do not require post-tensioning.

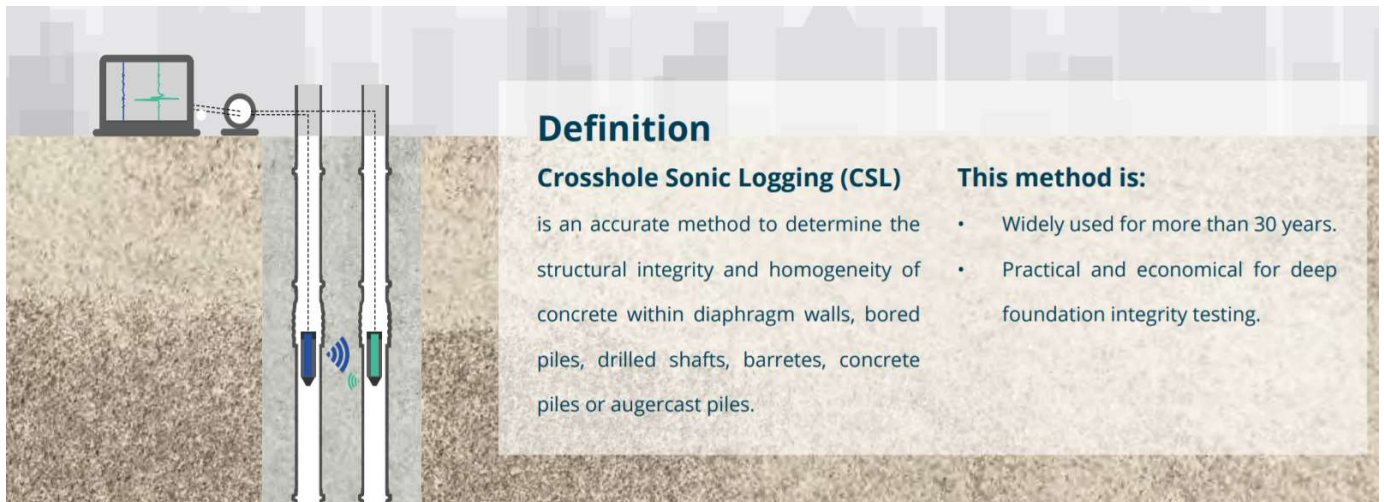
**Suitable for both compression and tension** applications thanks to customizable head accessories. For long tendons, couplers may be used to splice threaded bar segments together.

**Wide range** based on fully threaded bars available in different grades and diameters. Higher grades may be preferred to ease handling and reduce bored hole diameter.

**Corrosion protection** accessories (SCP / DCP) are fully part of the system and supplied by Dextra. Alternatively, Nordic Geo Support can also deliver the DCP assemblies pre-grouted.

**Multi-bar systems** available on request.

# Sonitec



**Sonitec by Dextra** is one of the most effective solutions for drilled shafts integrity check.

The **Sonitec System** comprises of thin black steel tubes available in different diameters with an enlarged end in a bell mouth shape. This makes the connection between 2 tubes an easy process and minimises labour cost.

The bell mouth and rubber gasket ensure a concrete-tight joint that will maintain the tube integrity and prevent the entry of foreign material.

**Product features and benefits:**

- Easy assembly with PUSH-FIT® concept.
- Fast and easy handling by operatives.
- No preparation time.
- No power / welding / threading required.
- No equipment required.
- Easy visual inspection at site with the PUSH-FIT® mark.

**Foundation Types:**

- Bored Piles
- Diaphragm walls and Barettes.

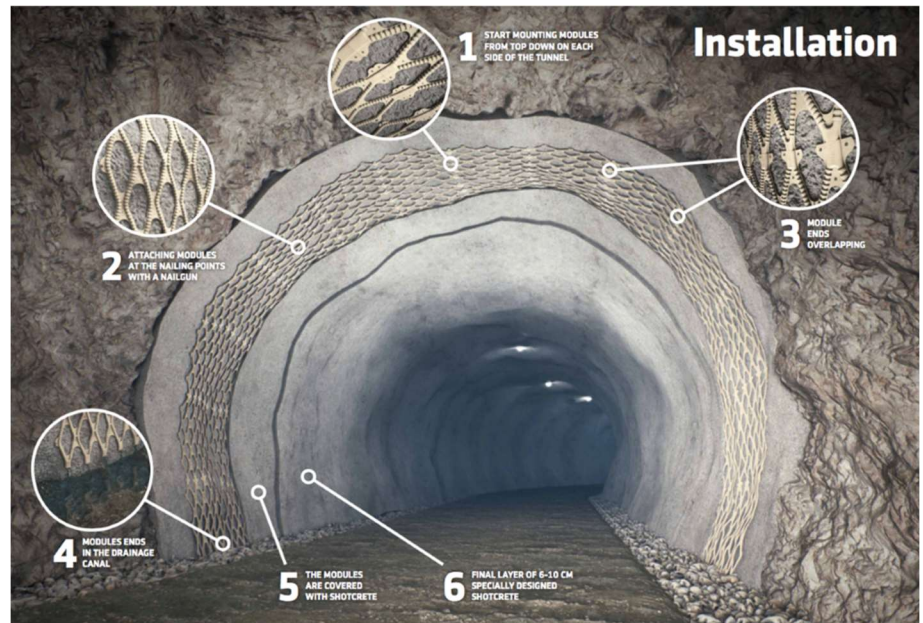




# Drainage systems

## Description

The smart Scandinavian design and philosophy of environmentally friendly recycling of materials features in the DTDS Tunnel Strip Drain Panel System. The drainage system is developed for the use of managing ground water in construction pits, basements, underground spaces and for draining tunnels. It operates by preventing built up pressure in the structure and to avoid accumulation of water behind the structure that can cause fractures and leaks.



## Fast Installation, less shotcrete required

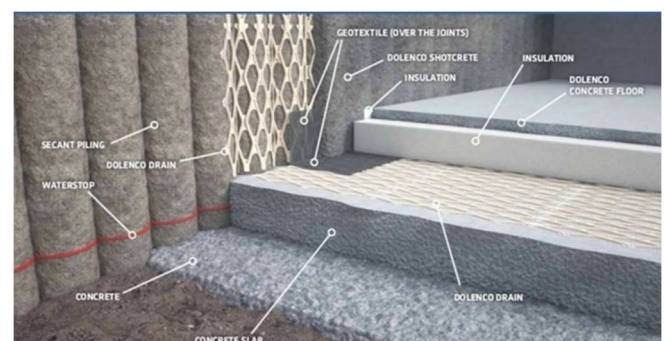
The strip drain modules are nailed to the minimum 3 cm shotcrete surface with a nail gun, one module at a time typically from a forklift. The modules are connected by nailing the top end over the bottom end, starting with the top module and working downwards to the drainage channel. After installation of the system, a layer of porous shotcrete is applied, completely covering. Finally, a ca 6-10cm layer of specially designed shotcrete is applied.

## Flexible in Applications

The strip drain modules are suitable for various applications including drainage of secant pile walls, sheet pile walls, basements and underground spaces as well as drainage for slopes and other drainage applications.

## Summary of advantages

- Secure permanent drainage
- Made from recycled material
- Makes concrete easy to recycle, no separation of materials
- No-pressure build-up security
- Easy click modular mounting system, no bolting
- Slim, monolithic solution
- Lower system cost
- Lower LCC cost
- No environmental impact
- Flexible, lightweight
- No fire hazard







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