GROUND ANCHORS

RETAINING STRUCTURES



Ground anchors are structural elements installed in tension to resist uplift, overturning and lateral forces in foundations and earth-retaining structures.

They provide a cost-effective solution across a wide range of ground conditions and can offer a space-saving alternative to other forms of structural support, particularly where working space is restricted.

Ground anchors can be used to support retaining structures, stabilise slopes and excavations, and resist uplift and overturning forces.

UNDERSTANDING GROUND ANCHORS

Ground anchors can be formed from solid or hollow threaded bars, or from multiple high-tensile wire strands connected in groups to form strand anchors.

Each ground anchor comprises a fixed length and a free length. The fixed length, or anchor section, is bonded into the ground using cement grout, providing the primary restraint. The free length passes through low-strength overburden or the active zone of the ground being restrained.

The restraint developed within the fixed length is transferred through the free length to the surface structure via the anchor head assembly.



We offer a range of ground anchor systems to suit different ground conditions, loading requirements and project applications, including:

- **Bar anchors** – suited to hard or stiff cohesive ground and commonly used for retaining structures and slope stabilisation (LC 111–4,418 kN)
- **Hollow bar (self-drilling) anchors** – suited to softer cohesive or non-cohesive ground and useful where unstable ground conditions make pre-drilling difficult (LC 210–9,601 kN)
- **Strand anchors** – multi-strand systems suited to higher loads and weaker ground, often used for heavily loaded retaining structures and deep excavations (LC 300–3,600 kN)
- **Removable anchors** – suitable for temporary works or locations where the tendon needs to be partially removed once it is no longer required
- **Duck-bill anchors** – percussively driven anchor systems suited to applications where rapid installation is required and access is restricted

PROJECT ADVANTAGES

- Robust and corrosion-resistant
- Can be accurately stressed to the required capacity, supporting heavy loads
- Minimal soil disturbance and low environmental impact, ideal for sensitive sites
- Can reduce the size of retaining structures
- Compatible with a wide variety of drilling rigs, accommodating access restrictions, ground conditions, and slopes

EXAMPLE APPLICATIONS

- Permanent retaining structures, including retaining walls, underpasses, harbour quay walls, and marine bollards/dolphins
- Temporary retaining structures, such as piled basement excavations or embankment cuts
- Anti-floatation measures within foundation structures
- Foundation support for high-rise structures, including wind turbines and tower cranes

TECHNIQUE CAPABILITIES

- **Specialist installation equipment** – Casagrande and Soilmec rotary-percussive drilling rigs, excavator-mounted drill masts and specialised access equipment can be used for anchor installation across a range of ground conditions and site constraints.
- **Corrosion protection** – a range of options available to suit ground conditions and design life, including unprotected bar, hot-dip galvanising, double corrosion protection (DCP), sacrificial thickness and combi coating.
- **Full package support** – from contiguous walls and sheet piles through to ground anchors and associated finishes.