PLATIPUS
EARTH ANCHORING SYSTEMS
FEATURES & BENEFITS

KEY BENEFITS OF THE PLATIPUS® EARTH ANCHORING SYSTEM

- Simple and effective concept
- Lightweight corrosion resistant products to suit a range of design life requirements
- Fast and easy installation
- Immediate quantifiable loads
- Holding capacity up to 200kN
- Ideal for temporary and permanent situations
- Cost effective alternative to traditional anchoring techniques

ENVIRONMENTAL BENEFITS

- No grout
  - No curing time
  - No mess
  - No contamination
- Low environmental impact
- Can be suitable for Special Areas of Conservation (SAC’s)

ADDITIONAL SERVICES & PRODUCTS

- Design assistance including full indemnification
- Technical presentations
- Site surveys and anchor testing
- On-site training and demonstration
- Supply and installation service through a network of Approved Installers
- Large choice of hire equipment to install and proof test the system
- Latest information accessible to download from our website www.platipus-anchors.com
- Anchor specification software and additional information is available online
- Plati-Drain® - a unique solution to reduce pore water pressure within clay slopes and from behind retaining walls
- Platipus® Anchored Reinforced Grid Solutions (ARGS) - a low impact solution for surface erosion and shallow seated slip failures
There are three steps to the installation of an anchor system:

1. **Driving the Anchor**
2. **Removing the Rods**
3. **Loadlocking**

The same three basic steps apply to the installation of all anchor systems, from the smallest S2 to the largest B10.

**HOW A MECHANICAL ANCHOR WORKS**

**STRESS DISTRIBUTION & BEARING CAPACITY**

The stress distribution in front of a loaded anchor can be modelled using foundation theory. The ultimate performance of an anchor within the soil is defined by the load at which the stress concentration immediately in front of the anchor exceeds the bearing capacity of the soil.

Factors that will affect the ultimate performance of the anchor include:

- Shear angle of the soil
- Size of the anchor
- Depth of installation

Platipus® anchors perform exceptionally well in a granular soil, displaying short loadlock and extension characteristics, a broad frustum of soil immediately in front of the anchor and extremely high loads.

Stiff cohesive soils, such as boulder clays, can also give outstanding results. However, weaker cohesive soils, like soft alluvial clays, can result in long loadlock and extension distances and a small frustum of soil in front of the anchor. Consequently these conditions require a larger size of anchor and if possible a deeper driven depth to achieve design loads.

For further information please see the Anchor Selector section on our website.
TYPICAL ANCHOR BEHAVIOUR

LOADLOCK
The first stage is where a load is applied to rotate the anchor into its loadlocked position. Elements of both load and extension are present.

COMPACTION AND LOAD
The second stage is where the anchor system is generating a frustum of soil immediately in front of the anchor. At this point load normally increases with minimum extension. The soil type will affect the overall extension.

MAXIMUM LOAD RANGE
The third stage is where the anchor produces its ultimate load. As the anchor load approaches the bearing capacity of the soil, the rate of increase in load will reduce until bearing capacity failure of the soil takes place.

BEARING CAPACITY FAILURE
Caution: If the mechanical shear strength of the soil is exceeded, the residual load will decrease with continued extension as the anchor shears through the ground.

ANCHOR COMPONENTS
There are five components that make up an anchor system:

Anchor
Wire Tendon/Rod
Top Termination
Lower Termination
Top Accessory
The ‘Bat’ anchor is designed to achieve higher loads and also enhance anchoring in soft cohesive soils. Its ability to accept the T-Loc lower termination allows flexibility with regard to on-site anchor system assembly. It also means it can accept a wide range of wire tendons and solid rods.

Installation requires more powerful hand held hydraulic breakers or, in some cases, a wheeled or tracked excavator with a percussive breaker attachment.

The ‘Stealth’ anchor is designed to cover a wide range of lightweight anchoring. Its narrow profile means that it requires a single core hole to drive through a stone or masonry wall.

Its chisel drive point and streamline shape makes installation easy, in most cases, using simple hand or power tools. This also makes it an ideal choice when working in areas with restricted access.
**WIRE TENDONS & SOLID RODS**

To suit most specifications and load requirements we can offer a wide selection of wire tendons and solid rods. Whether it is round strand wire tendon for applications requiring lower loads, the flexibility of wire tendons make it possible to work in areas where access and space is restricted.

We can also supply high yield solid rods which have a number of advantages over wire tendon. They can provide a higher ultimate load, sacrificial corrosion resistance and allow the depth of installation to be varied on-site.

Both wire tendons and rods are available in a range of sizes and materials to suit temporary (up to 5 year) through to permanent (120 year) design life.

**TOP FITTINGS**

We can provide a wide range of top fittings to suit most applications and budgets.

A load bearing plate and wedge grip is a perfect low cost solution for installations that are perpendicular to an application. Tilt washers are also available for angled installations. If the finished appearance is of aesthetic importance we offer a near flush fitting load plate that accepts a recessed wedge grip and cap or an inverted pattress plate which includes a hemispherical washer to allow the angle of anchor installation to vary between 0°-30°.

Top fittings specifically designed for revetment blocks and reinforced geomesh are available. We can also provide a variety of soft and hard eye terminations to secure guyed structures and scaffolding.

Over the last 25 years we have developed a large choice of top fittings. If you have a specific requirement that is not covered by our standard range we can supply a custom made solution.

Some applications, such as historical structures, require all evidence of anchoring to be concealed. This can be achieved by recessing the anchor system top fittings within the structure. Once complete the facing brick or stonework can be replaced to provide an invisible repair.
The Platipus® anchor system can also be used in conjunction with other structural reinforcement products to provide an extremely effective solution on masonry walls with limited structural integrity.

All anchor system components are available in a range of materials to suit the design life. The selection of the project materials should be carefully chosen taking our advice for each individual project. The life expectancy of the anchor / tendon is dependant upon the corrosivity of the soil in which it is placed.

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<th>Anchor Materials</th>
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<th>5 years (temporary)</th>
<th>20 years</th>
<th>30 years</th>
<th>40 years</th>
<th>60 years</th>
<th>120 years (permanent)</th>
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The Platipus anchor system can also be used in conjunction with other structural reinforcement products to provide an extremely effective solution on masonry walls with limited structural integrity.
**OTHER PRODUCTS**

**PLATI-DRAIN®**

Water saturation, due to heavy rainfall and insufficient drainage, leads to the softening of clay soils within slopes and increases hydraulic forces behind earth retaining structures.

Plati-Drain® is a unique solution that reduces pore water pressure within clay slopes and behind retaining walls. Unlike conventional weep holes Plati-Drain® provides deep penetration, this can be in excess of 10 metres. It can also help prevent shallow or deep seated slope failures.

Available as a ‘Passive’ or ‘Active’ solution. The ‘Passive’ system uses a sacrificial anchor head to drive the Plati-Drain® into its optimum position providing an immediate channel for water to drain. The ‘Active’ system has an additional wire tendon attached to the anchor which allows it to be loadlocked, providing simultaneous draining and restraining capability.

**PLATIPUS ANCHORED REINFORCED GRID SOLUTIONS**

The Platipus® Anchored Reinforced Grid Solution (ARGS) is a perfect low impact anchoring solution for surface erosion problems and shallow seated slide failures. These lightweight systems can be used with most geosynthetic products including erosion control matting, membranes, geogrids, reinforced mesh, high density polyethylene coverings and cellular confinement systems.

Our S2, S4 and S6 Percussive Driven Earth Anchors (PDEAs) are particularly effective in situations where access is difficult, where scour protection is required for example flood prone areas, riverbanks and storm water channels. Benefits of the system include its speed and simplicity, in most cases requiring only hand held equipment for installation. The system provides immediate load bearing capability and when combined with geosynthetic products and an appropriate range of plant types it can retain the slopes surface integrity. Our solutions can incorporate products from all major manufacturers to provide the best complete solution.

*Please refer to our Platipus Anchored Reinforced Grid Solutions Brochure for more information or alternatively download this brochure from our website at www.platipus-anchors.com*
HIRE EQUIPMENT

Although all installation equipment and tools are available to purchase, we understand that some customers may only require equipment for one-off installations. As a result, we can provide a large choice of hire equipment to install and proof test the complete range of earth anchors.

We purchase all of our equipment and tools from the market’s leading manufacturers. Our hand-held hydraulic breakers and power packs deliver the lowest vibration and noise levels available.
**CORE APPLICATIONS**

The Platipus® anchor system can be used in many situations. Below are some illustrations of the most common circumstances.

**EROSION CONTROL**

1. Original Ground before Slippage
2. Apply reinforced geomesh
3. PLATIPUS
4. PLATI-DRAIN

**SHALLOW SLIP FAILURES**

1. Re profile the slope
2. Apply reinforced geomesh
3. Install Plati-Drain
4. Water trapped in slope
DEEP SEATED FAILURES

1. Potential Failure Zone
2. Apply Geogrid

CUT FACE SLOPES

1. Potential Failure Plane
   Soil to be removed
2. Potential Failure Plane
   Soil to be removed
3. Potential Failure Plane
   Soil to be removed
4. Potential Failure Plane
   Soil to be removed
TYPICAL EXAMPLES

The Platipus® anchor system delivers excellent performance for an increasing range of applications. The following pages show a portfolio of projects we have completed over the last few years and have been divided into specific areas.
SLOPE STABILISATION

- Temporary Support
- Permanent Rail
- Difficult Access
- Deep Excavation

BRIDGE REPAIR

- Bridge Abutments
- Spandrel Walls
- Wing Walls
- Deck Replacement
GABIONS

Additional Support

Rotating

Emergency Support

New Build

ROCK RETENTION

Railway

Difficult Access

Coastal

Highways
BUOYANCY CONTROL

Pipelines

Storm Water Tanks

Water Cascades

Buoyancy

DRAINAGE SOLUTIONS

Increase Soil Strength

Increase Slip Plane Friction

Dual Draining & Restraining

Deep Penetration
GUYED STRUCTURES

Leisure Balloons

Permanent Structures

Signal Gantries

Temporary Structures

SCAFFOLDING SECURITY

Temporary Support

Power Line Crossing

Rail

Historical Repair
Rapid Installation
Environmentally Friendly
Aesthetically Pleasing

Mooring Pontoons
Fence Posts
Handrail
Footbridge

LANDFILL CAPPING

Steep Gradients
Rapid Installation
Aesthetically Pleasing
Environmentally Friendly
GENERAL SECURITY

Aircraft

Pitch Cover

Safety Boom

Boat

PLUS MANY MORE

Utility Anchoring

Stages

Marine Anchorages

Rope Courses

Tree Anchoring

Winch Points