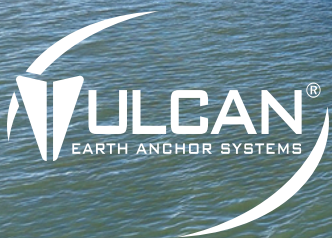
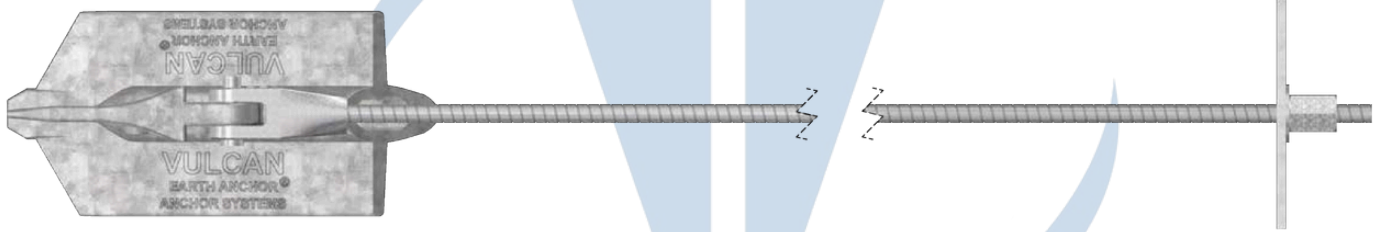




Vulcan Earth Anchors

Load Range 1 - 450 kN





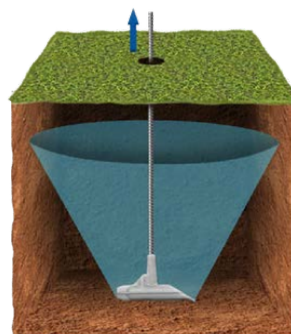
World's Largest Ground Anchor Range

The Vulcan Earth Anchor range was designed by Anchor Systems (International) Ltd as a simple, reliable and cost-effective ground anchoring solution with the ability to provide immediate loading capacities from 1 - 450kN in displaceable ground conditions with extensive applications.

The concept involves a specially designed earth anchor with a larger surface area, attached to high yield tie bars or tendons to suit a variety of conditions, being driven into the ground where it is locked in position. The tensile load is applied, and the exposed end locked off and terminated.

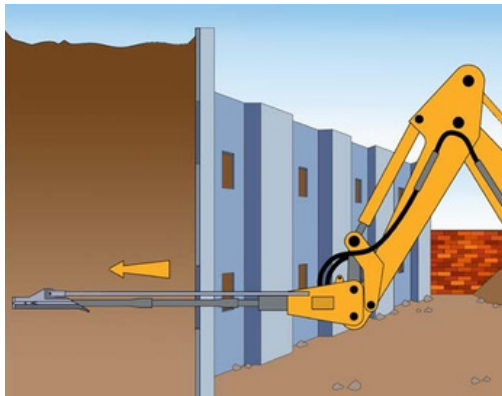
With their ease of use and speed of installation, Vulcan Earth Anchors provide a time and cost saving alternative to more traditional means of anchoring, particularly where tight programme schedules are involved. This, combined with the wide range of sizes available, means that the Vulcan Earth Anchor has gained recognition across a vast array of applications internationally.

- Larger surface area allowing the Vulcan Earth Anchor to achieve the greatest holding capacity in all ground conditions
- Our ground anchors range from 1 - 450kN
- Huge stock of plant and products with next day delivery available
- We are the only company globally to manufacture and stock fully stainless-steel systems
- Rapid installation
- Bespoke design available

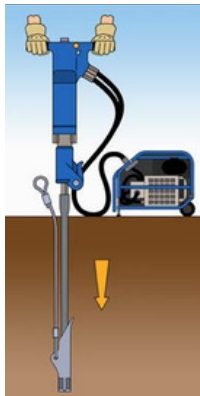


Installation

MACHINE MOUNTED

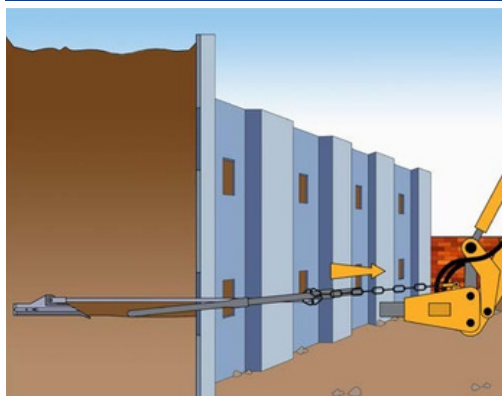


HAND HELD

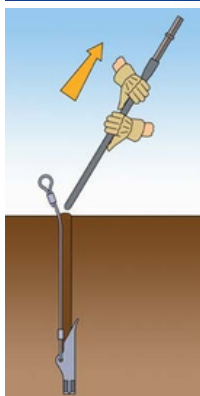


Vulcan Anchors are designed to be driven into the ground using hydraulic or percussion equipment, with little or no disruption to the structure or surrounding area.

MACHINE MOUNTED

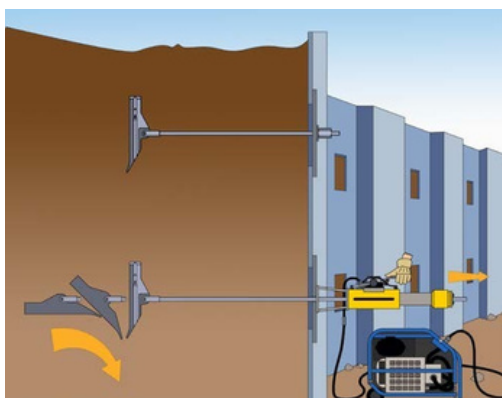


HAND HELD

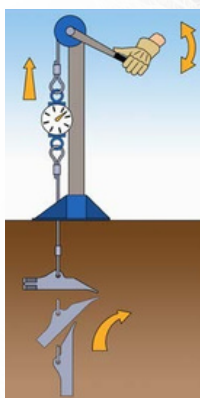


Once the Anchor has been driven to the required depth the drive rod is removed for reuse.

MACHINE MOUNTED



HAND HELD



A tensile load is applied to the attached tie bar or tendon. This rotates the anchor into the locked position for maximum load holding capacity. The Anchor is then proof tested to the designed loading requirements before the top termination is fitted, as specified by the civil or structural engineer.



The Anchor Range

All kN loadings are based upon the optimal tendon choice for the mechanical Anchoring systems to achieve Ultimate Resistance test.

Anchor System	AS-01	AS-05	AS-10	AS-20	AS-30	AS-50	AS-90	AS-120	AS-200	AS-300	AS-400
Tendon Type	3mm	6mm	M12	16mm HYB	16mm HYB	20mm HYB	20mm HYB	25mm HYB	28mm HYB	30mm HYB	30mm HYB
Independent Destructive TEST of Mechanical Anchor Head (kN)	5	30	55	70.7	112.5	195.3	195.3	222.2	355.7	450	500
Ultimate Strength of Tendon (kN)	6.90	25	64	121	121	100	108	295	370	566	566
Limiting Structural Strength	4.5	22.5	49.5	63.7	101.3	160.2	169.2	200.0	321.0	405.0	450.0
Anchor Head Surface Area (mm ²)	1,400	3,481	6,781	15,637	21,130	29,093	48,734	104,517	65,886	104,769	216,078

Common Soil Type Description	Blow Count or 'SPT'	Ultimate Anchor Resistance (kN)										
Very Dense and/or Cemented Sands Coarse Gravel & Cobbles	60 +	4	13	27	63	67	119	169	199	271	405	450
Dense Fine Sand Very Hard Silts & Clays	45 - 60	4	12	24	57	77	106	169	199	242	384	450
Dense Clays, Sands & Gravel Very Soft to Hard Silts & Clays	35 - 50	4	10	20	48	64	89	149	199	202	322	450
Medium Dense Sandy Gravel Very Stiff to Hard Silts & Clays	25 - 40	3	8	16	38	52	72	129	199	163	259	150
Medium Dense Coarse Sand & Sandy Gravel Stiff to Very Stiff Silts & Clays	14 - 25	2	5	11	26	35	49	82	177	112	178	367
Loose to Medium Sense Fine to Coarse Sand Firm To Stiff Clays & Silts	7 - 14	1	4	7	18	24	33	56	121	76	121	251
Loose Fine Sand, Aluminium Soft Firm Clays; Varied Clays; Fill	4 - 8	1	3	6	14	18	26	43	93	58	93	193
Peat, Organic Silts; Inundates Silts Fly Ash	0 - 5	1	2	4	10	14	19	33	71	45	71	148

N.B. For guidance purposes only – True capacity must be tested with a load locker:

Previous project tests have shown that if an earth anchor is grouted into poor ground, the results that can be achieved are favorable to increased tensile loading capacity. Note: All below ground work should be undertaken after properly reviewing survey documentation on services. It is imperative in all cases that anchors are fully load locked before being out into service.



Performance

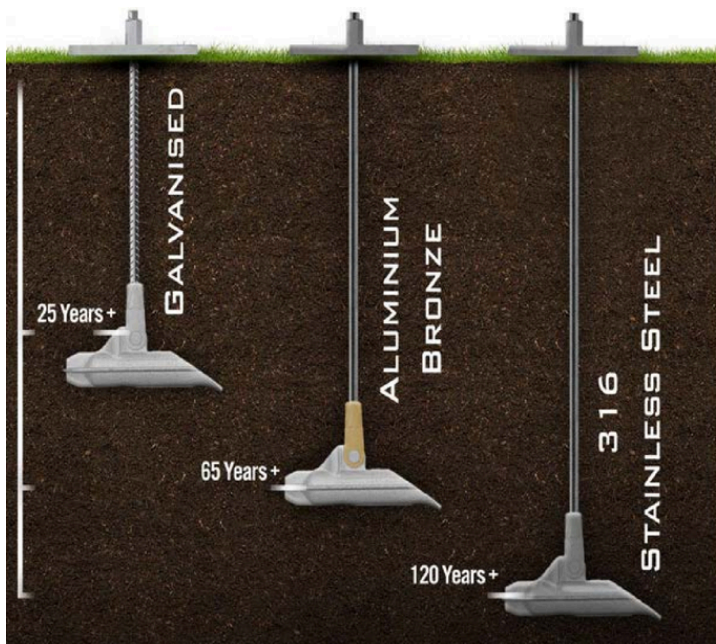


AS-01	AS-05	AS-10	AS-20	AS-30	AS-50
					
L - 75 W - 28 H - 30 mm 0.09 kg Surface Area - 1663 mm ²	L - 127 W - 41 H - 35 mm 0.22 kg Surface Area - 3481 mm ²	L - 168 W - 70 H - 72 mm 0.96 kg Surface Area - 6781 mm ²	L - 240 W - 76 H - 95 mm 2 kg Surface Area - 15637 mm ²	L - 293 W - 88 H - 107 mm 3 kg Surface Area - 21130 mm ²	L - 375 W - 98 H - 110 mm 4 kg Surface Area - 29093 mm ²
AS-90	AS-120	AS-200	AS-300	AS-400	
					
L - 375 W - 178 H - 109 mm 5 kg Surface Area - 48734 mm ²	L - 500 W - 300 H - 178 mm 10 kg Surface Area - 104517 mm ²	L - 500 W - 172 H - 150 mm 10 kg Surface Area - 65886 mm ²	L - 500 W - 300 H - 176 mm 15 kg Surface Area - 104769 mm ²	L - 650 W - 450 H - 176 mm 29 kg Surface Area - 216078 mm ²	

Anchor Systems are the only company globally to offer such an extensive range of mechanical ground anchors with loading capacities from 1-450kN+.

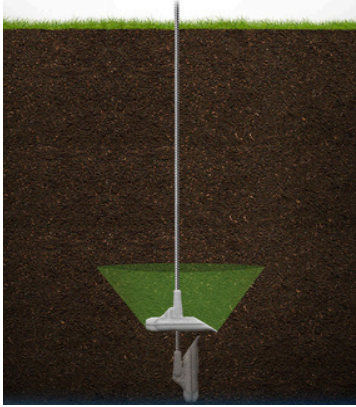
Our Vulcan Earth Anchors are produced from a range of durable materials to accommodate for the varied environments that they are used in.

We produce our systems from a range of high quality materials to provide a system design life from 5 years to 120+ years. These are typically either fully galvanised, a mixture of galvanised, aluminium bronze and stainless steel or a complete 316 stainless steel system.



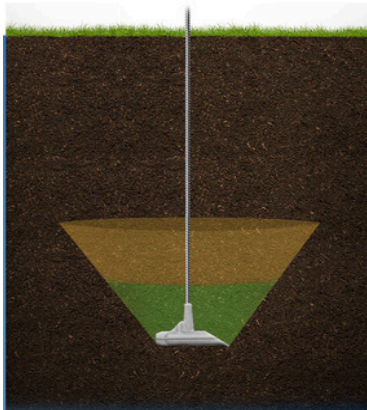
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Load Distribution



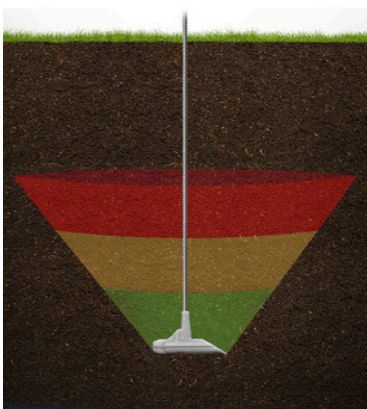
Initial Load Application

During the first stage, a force is exerted to initiate the rotation of the anchor into its load-locked position. This process involves both loading and extension elements.



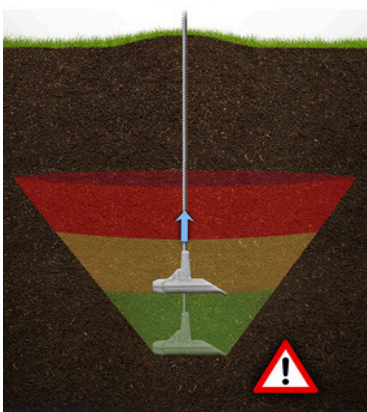
Compaction and Loading

In the second stage, the anchor system creates a conical shape of soil directly ahead of the anchor. During this phase, the load typically increases with minimal extension. The type of soil involved will influence the total extension experienced.



Peak Load Range

During the third stage, the anchor reaches its maximum load capacity. As the load on the anchor nears the soil's bearing capacity, the rate of load increase diminishes until the soil experiences bearing capacity failure.



Nearing Capacity Failure

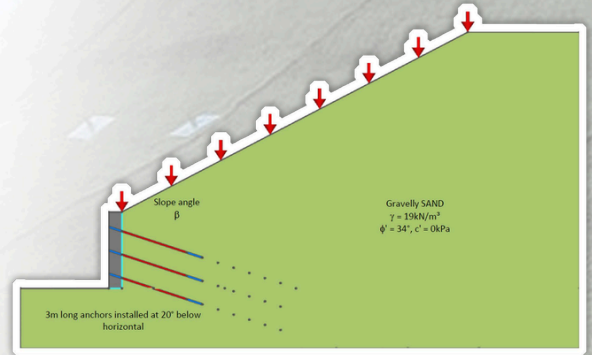
Attention: if the mechanical shear strength of the soil is surpassed, the remaining load will diminish as the anchor continues to extend and shear through the ground.

Design Services

Design

Anchor Systems provides support from initial enquiry through to design, supply and installation. We work with clients to understand their project requirements, advise on the most suitable anchor system and offer bespoke product solutions where required.

Where needed, we work with consultant engineers to support fully indemnified designs that consider site conditions, installation requirements and the most cost-effective solution.



Stability Designs

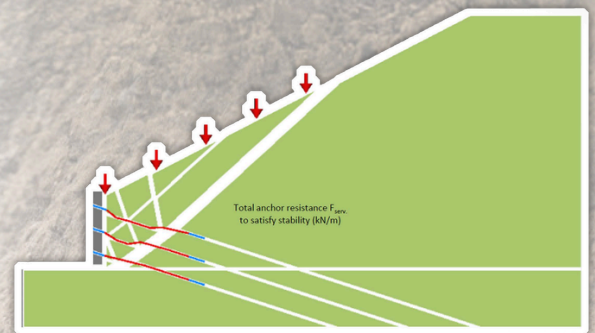
We offer two types of stability design for retaining walls, embankments and slope stabilisation projects:

Local Stability Design

Based on loading requirements, drawings and soil investigation data provided by the Principal Engineer. This assesses the site-specific ground conditions and specifies the correct anchor type, layout and spacing.

Global Stability Analysis Design

Based on drawings, a required factor of safety and soil investigation data. This determines the anchor loads needed to maintain the required level of stability.



Designs are produced using recognised methods, including Eurocodes, DMRB and CIRIA guidance. Reports can be provided in PDF format, with a signed design certificate if required.

Where a retaining wall or other structure forms part of the design, a Structural Engineer must confirm the structure is suitable.

Retaining Wall

Vulcan Earth Anchors provide a reliable anchoring solution for new and existing retaining walls, helping to stabilise structures where additional support is required.

Suitable for timber crib walls, sheet piling, gabion baskets and reinforced concrete structures, the system can be installed with minimal disruption and proof tested on site to confirm performance.

Typical uses include:

Retaining wall stabilisation, wall tie-back systems, sheet pile anchoring, gabion restraint and remedial wall support.



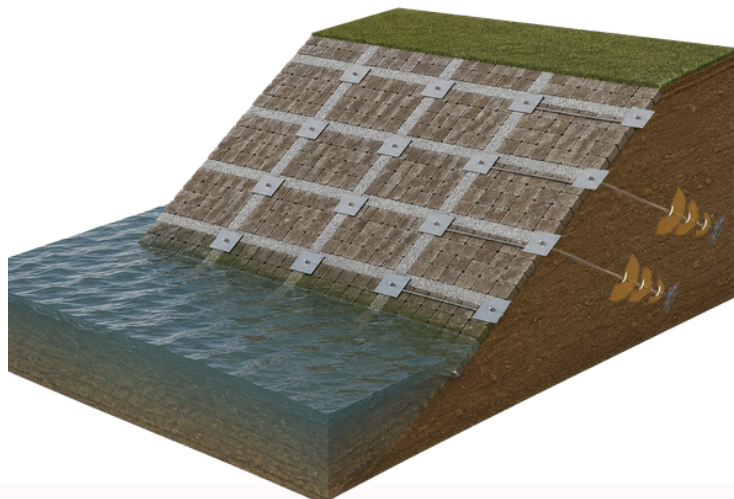
Marine Anchoring

Vulcan Earth Anchors are well suited to marine and coastal environments, providing a strong, durable solution for anchoring systems exposed to water, erosion and changing ground conditions.

With a choice of material options, including fully stainless-steel systems, Vulcan Anchors can support long-term performance in demanding environments.

Typical uses include:

Coastal defence, rock mattress anchoring, erosion control, marine retaining walls, embankment protection and waterway stabilisation.



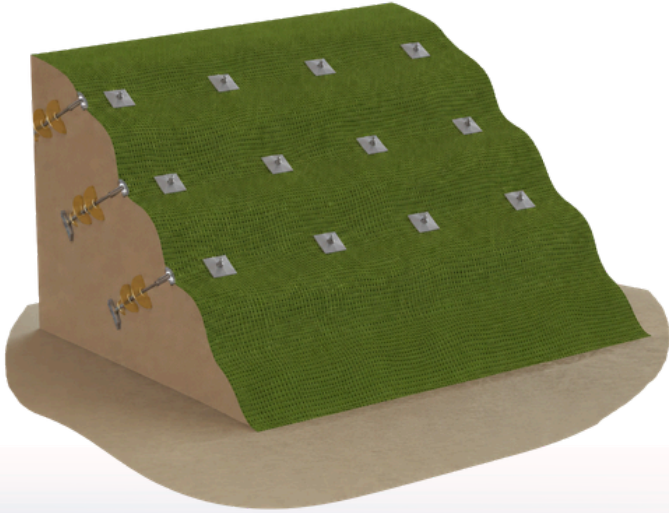
Slope Stabilisation

Vulcan Earth Anchors are widely used to stabilise slopes, embankments and earth bunds, securing erosion control matting, geotextiles, mesh systems and other surface protection measures.

The anchors can be installed quickly using handheld or machine-mounted equipment, making them suitable for both planned works and emergency stabilisation projects.

Typical uses include:

Slope stabilisation, embankment support, geotextile anchoring, erosion control, geocell restraint and landslip prevention.



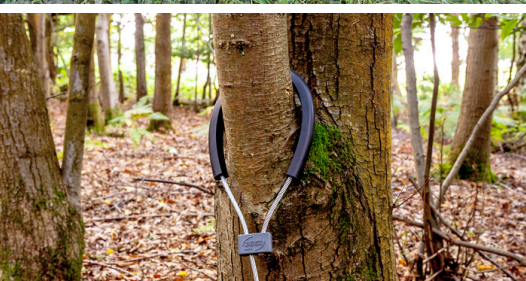
Tree Anchoring

Vulcan tree anchoring systems provide a discreet and secure solution for supporting newly planted trees without the need for visible above-ground stakes.

The system helps stabilise the rootball while allowing natural movement and healthy establishment. A range of kits are available to suit different tree sizes, planting methods and project requirements.

Typical uses include:

Rootball fixing, containerised tree anchoring, guying systems, urban landscaping, commercial planting and public realm projects.



Utilities

Vulcan Earth Anchors provide a practical anchoring solution for a wide range of utility applications, where fast installation and dependable performance are essential.

The systems can be used to secure equipment, infrastructure and support systems across energy, rail, water and temporary works environments.

Typical uses include:

Solar arrays, overhead line structures, pipelines, temporary tower support, cable routes, access systems and associated utility infrastructure.



Anchoring Structures

Vulcan Earth Anchors offer a fast and effective method of securing temporary and permanent structures without the need for traditional concrete foundations.

The system can be adapted to suit a range of structural applications, providing dependable holding capacity while reducing installation time and site disruption.

Typical uses include:

Air domes, temporary buildings, marquees, shelters, scaffold anchoring, backstay anchoring and structural restraint systems.



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Plates Available

All plates are available in various sizes and materials to accommodate your requirements.

FLAT PATTRESS PLATE

Designed predominately for slope stabilisation where the anchor is driven perpendicular to the slope surface.

COMBI-TECH

An innovative design using the Vulcan mechanical earth anchor technology combined with the sock anchor technology that offers a completely concealed system. This systems allows the original drilled core to be placed back into its original position which entirely hides the anchor termination. Ideal for heritage and conservation works or installations where cosmetics are of paramount importance. This system can be installed at any angle.

FLAT PATTRESS PLATE (WITH WIRE)

This Pattress Plate finish is designed and used in the same way as the Flat Pattress Plate above. Replacing the lock nut with a barrel and wedge grip allows the plate to be used with wire instead of bar.

FORMED PATTRESS PLATE

Designed for retaining walls and slope stabilisation where there is a requirement for a large degree of flexibility of the angle the anchor is to be driven. This plate is used with a Domed Load Nut to terminate the bar.

TAPERED WASHER PATTRESS PLATE

For use in applications similar to that of ones that may use a Formed Plate - where there is a requirement for a large degree of flexibility of the angle the anchor is to be driven but require a much higher load to be applied to the plate.

RECESSED PATTRESS PLATE

This Plate is ideal for heritage and conservation works or installations where aesthetics are of great importance. The plate is designed to achieve an attractive, flush finished appearance with the termination completely hidden. This type of plate provides safety for areas of high public traffic where a protruding tendon could injure a pedestrian.

WEDGE BOSS PATTRESS PLATE

A wedge boss allows for installations where there is a requirement to drive the anchor to an angle of up to 45 degrees whilst also allowing for a good degree of flexibility and well as being able to transfer high loads.

ANCHOR DRAIN

The Anchor Drain is installed in the same way as a Vulcan Earth Anchor and is designed to alleviate water pressure in a slope or behind a wall. The system is finished of either by pointing mortar or a bespoke plate design that will allow the water to flow. Please ask one of our team for full details.



Recessed Pattress Plate

This plate is ideal for heritage and conservation works or installations where aesthetics are of great importance. The plate is designed to achieve an attractive, flush finished appearance with the termination completely hidden. This type of plate provides safety for areas of high public traffic where a protruding tendon could injure a pedestrian.

Flat Pattress Plate

Designed predominately for slope stabilisation where the anchor is driven perpendicular to the slope surface.

Wedge Boss Pattress Plate

A wedge boss allows for installations where there is a requirement to drive the anchor to an angle of up to 45° whilst also allowing for a good degree of flexibility as well as being able to transfer high loads.

Formed Pattress Plate

Designed for retaining walls and slope stabilisation where there is a requirement for a large degree of flexibility of the angle the anchor is to be driven. This plate is used with a Domed Load Nut to terminate the bar.

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Vulcan Anchor Drain

The Anchor Drain system provides a relief to built up water pressure through a retro fit drainage membrane and is installed in the same way as a Vulcan Earth Anchor.

A length of 'MebraDrain' wicking material is secured to the Vulcan anchor head. Once the anchor has been installed the drive rod is withdrawn and the Anchor Drain provides an instant drainage membrane. The system is finished off either by pointing mortar or a bespoke plate design that will allow the water to flow. Installing the Anchor Drain is an effective method of ensuring the future stability of a slope or structure.

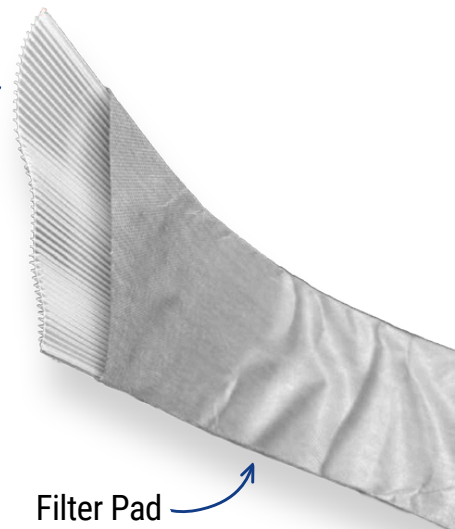
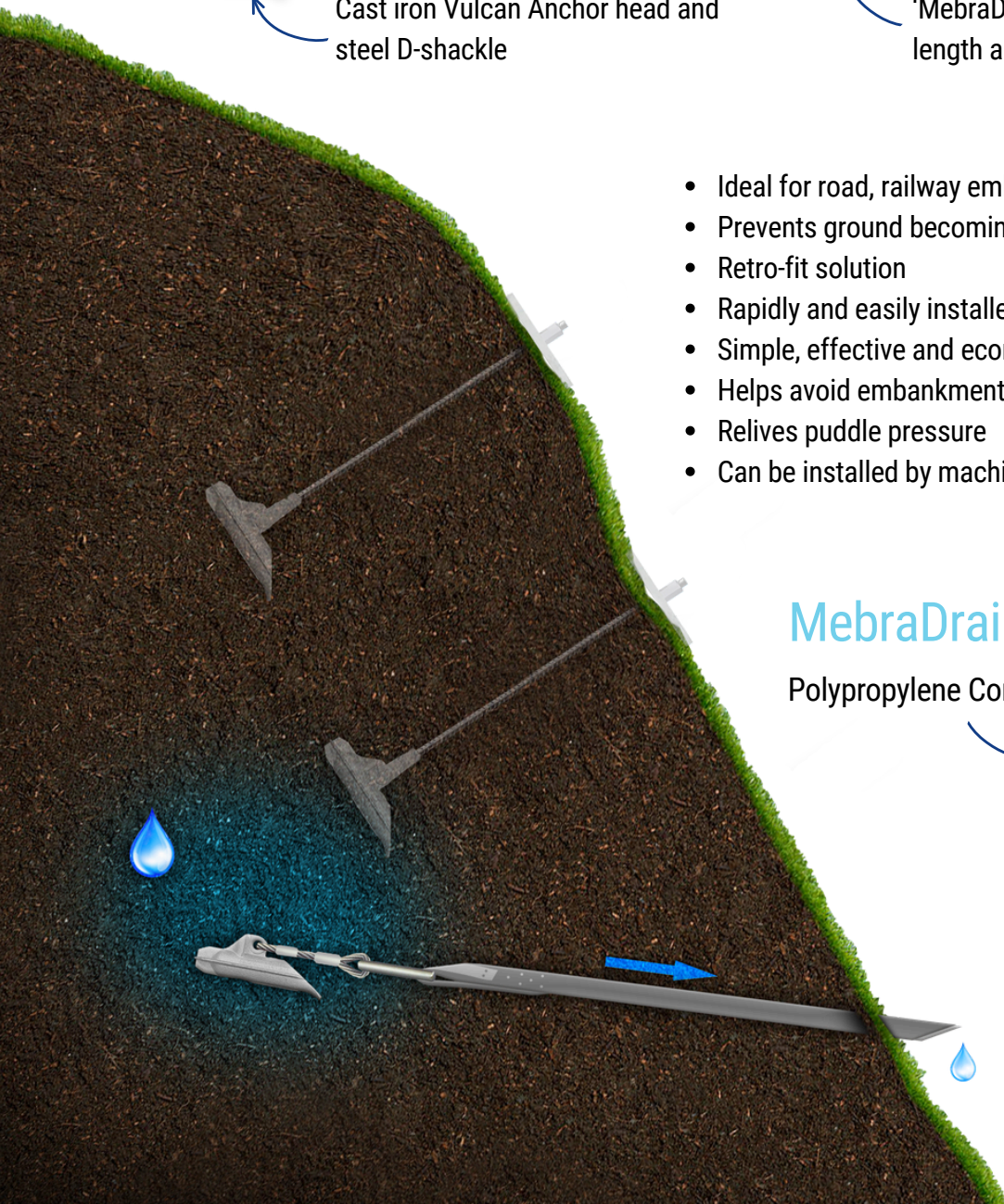


- Ideal for road, railway embankments or retaining walls
- Prevents ground becoming saturated
- Retro-fit solution
- Rapidly and easily installed
- Simple, effective and economical
- Helps avoid embankment failure
- Relieves puddle pressure
- Can be installed by machine or handheld equipment

MebraDrain

Polypropylene Core

Filter Pad

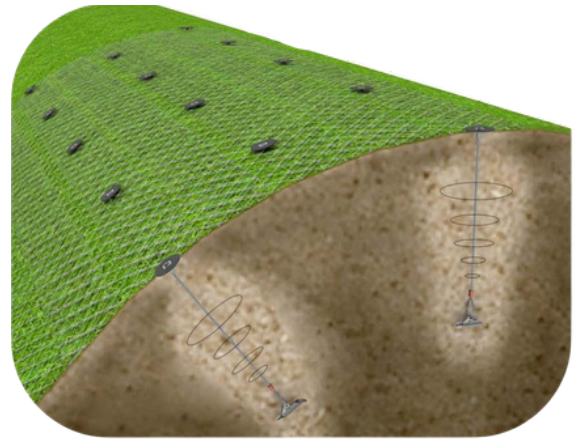


Geotextiles

Vulcan Earth Anchors provide a fast and reliable method of securing geotextiles, erosion control matting, geogrids and other surface protection systems. Installed directly through the surface material and into the ground, the anchors help hold the system in place while allowing vegetation to establish naturally over time.

The system is particularly suited to slopes, embankments, spillways, transition areas and erosion-prone locations where traditional fixing methods may be difficult, disruptive or time-consuming. Once installed, each anchor is load locked to provide immediate holding capacity and a secure fixing point within the ground.

Vulcan Geotextile Anchors are available in a range of sizes and material options to suit different project requirements, ground conditions and environmental exposure.



System Overview

Anchor Sizes

Available in AS-01, AS-05 and AS-10 systems, with load capacities ranging from 1kN to 10kN.

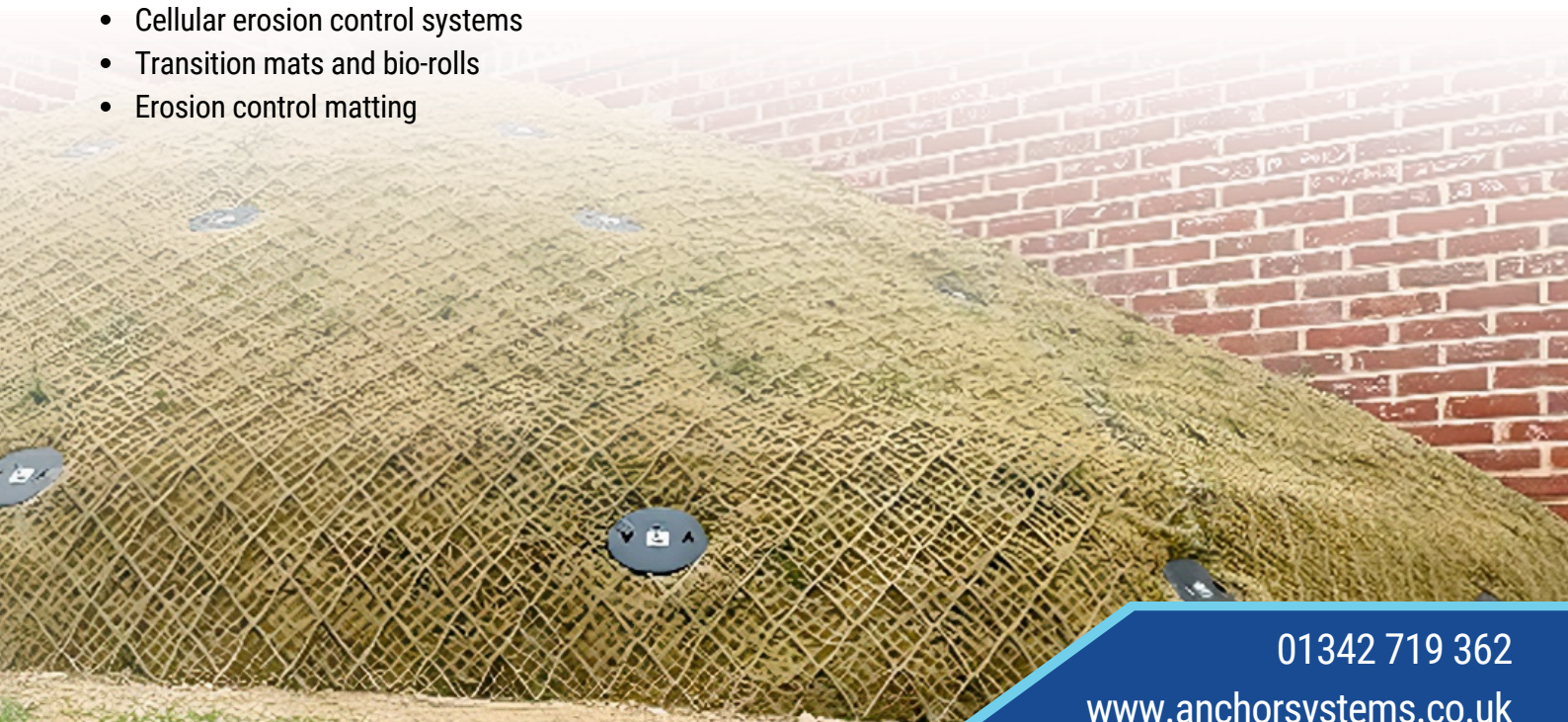
Material Options

Systems are available in galvanised steel for standard applications or Grade 316 stainless steel for aggressive soils, coastal environments and extended design life requirements.

Compatible Materials

Vulcan Earth Anchors can be used to secure a wide range of erosion control and geotechnical materials, including:

- Geotextiles and geogrids
- Steel wire mesh and coir mesh
- Cellular erosion control systems
- Transition mats and bio-rolls
- Erosion control matting



Slope Stabilisation

Vale Primary School

CLIENT

Hobart Paving

CONTRACTOR

Hobart Paving

DESIGNER

Tellus Design

INSTALLER

Site 7 Construction

ENGINEER

Scott White and Hookins

Requirement

At Vale Primary School in West Sussex, the embankment supporting one side of the playing field had begun to slip. This caused the pitch to drop and the boundary fence to become unstable, raising safety concerns about the slope and surrounding area. West Sussex County Council required a reliable slope stabilisation and erosion control solution to restore safety across the school grounds.

The chosen approach needed to be cost-effective, environmentally considerate and cause minimal disruption to school activities. Anchor Systems Vulcan Earth Anchor system was selected as it offered a more efficient and sustainable alternative to options such as drilled and grouted soil nails or sheet piling.

Testing

Prior to installation, a comprehensive site test was undertaken to demonstrate the suitability of the Vulcan Earth Anchor system for the site's specific ground conditions. Two AS-30 Vulcan Earth Anchors were installed and successfully tested to their maximum capacity of 60kN, significantly exceeding the project's design load requirements. Based on these results, the specification was revised to AS-20 anchors, which provided more than adequate holding capacity at a lower cost.

The design required all anchors to be proof load tested to 8kN and then locked off at 5kN. Ground conditions included approximately 1m of medium-density topsoil with SPT values of 10–15, overlying chalk with higher strengths of 30–40. Anchors were driven to a depth of 2m, where testing confirmed reliable performance across the site, ensuring confidence in the long-term stability of the solution.



Solution

Anchor Systems supplied 154 AS-20 Vulcan Earth Anchors, complemented with 300mm recessed patress plates and 60mm galvanised threaded bars. Recessed plates were specifically chosen to ensure no exposed elements remained visible on the embankment, reducing any potential safety risks for pupils and staff accessing the slope in the future.

Installation was carried out by Site 7 Construction using an 8-tonne excavator fitted with a breaker attachment, with proof testing completed using a 20-tonne hydraulic ram. Given the limited access to the base of the slope, all work was conducted from the top using long-reach machinery, with fencing temporarily removed to facilitate safe operations. To minimise disruption to teaching, the works were scheduled during school break periods and completed within five days.

For additional erosion control and environmental enhancement, the slope was lined with a Greenax erosion control mat. This provided temporary protection while vegetation re-established, and it was carefully cut and stitched around existing trees to preserve the site's natural features. The embankment was then hydroseeded with a wildflower mix, which not only stabilised the soil but also encouraged biodiversity and created an attractive outcome.

The completed works delivered a stable, safe and environmentally sensitive solution that successfully met the council's requirements, secured the school grounds, and enhanced the surrounding landscape.



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PROJECT REPORT

Slope Stabilisation

Newhaven Port, East Sussex

CLIENT

Newhaven Port Authority

CONTRACTOR

Jackson Civil Engineering

DESIGNER

Beckett Rankine

INSTALLER

Jackson Civil Engineering

Requirement

Newhaven Port, located at the mouth of the River Ouse, was facing ongoing coastal erosion that had compromised the structural integrity of the sea embankment. The primary goal was to deliver a permanent slope stabilisation solution that would secure newly placed articulated concrete mattresses (Dycel 221) used for erosion protection.

Due to tidal working windows and a steep, challenging slope, the project required a reliable anchoring system capable of handling both buoyant uplift and variable ground conditions. Anchor Systems was contracted to provide and test a robust ground anchor solution that would form the structural backbone of the revetment installation.

Testing

To ensure site-specific suitability, eight on-site load tests were carried out at varying depths and orientations. Ground conditions varied significantly between the toe and crest of the slope, necessitating anchor depths ranging from 5.8 to 13.5 metres. Key test highlights

- Anchor Type: Vulcan Earth Anchor (AS-200)
- Inclination Angles: 45° and 90°
- Maximum Load Achieved: 250kN
- Testing Standard: All anchors tested to soil mechanics failure

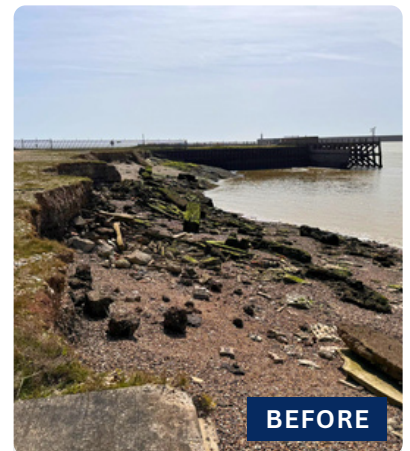
Each anchor test was logged with bar extension, plate loss, and achieved capacity, validating both design assumptions and anchor layout. These tests highlighted changes in soil strength between the toe and crest zones, leading to the deployment of varied anchor depths and orientations across the embankment.

Solution

The final solution used 166 x Vulcan Earth Anchors driven to depths between 8 and 10 metres, installed on a 3m grid layout as specified in Beckett Rankine's revetment drawings. All components—bars, plates, and fixings—were fully galvanised to meet the extended design life requirements in a harsh marine environment.

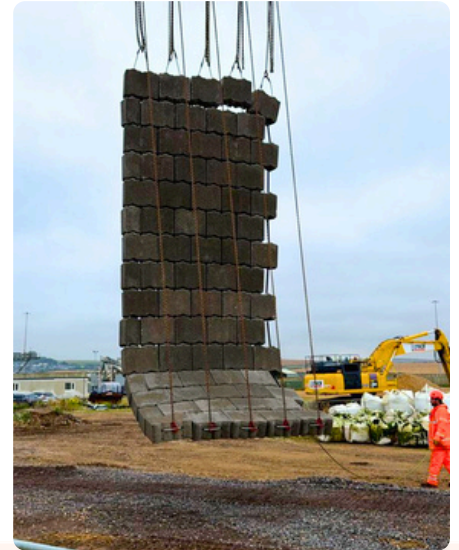
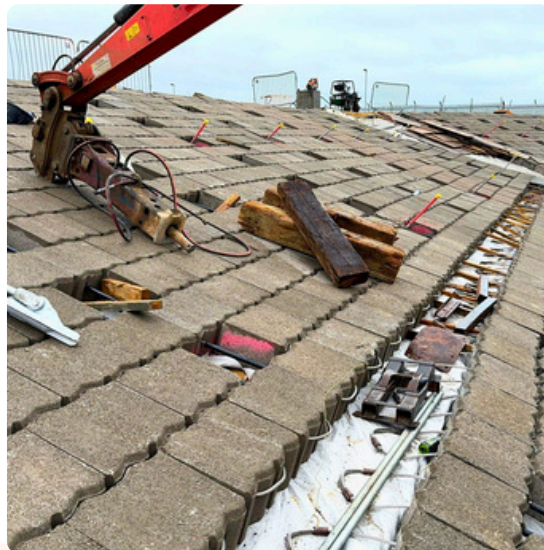
Anchors were embedded through both the crest and toe mass concrete beams, tying directly into the articulated concrete revetment mats using extra cable loops fixed to 20mm reinforcement bars spaced at 200mm intervals. The system was installed using machine-mounted equipment, with anchor positions precisely aligned to match the Dycel mat layout. Geotextile membranes were laid under the mats and beams without puncturing, ensuring soil retention and preventing undermining.

This project not only delivered effective slope stabilisation and coastal erosion control but also demonstrated the performance and versatility of Anchor Systems' ground anchor technology in a complex, multi-partner marine environment.





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PROJECT REPORT

Sheet Piling Retaining Wall Housing Development, Stockport

SUB-CONTRACTOR

ESS (CE) Ltd

DESIGNER

JIG Consulting Ltd

Requirement

As part of the development of new retirement living apartments, a sheet pile retaining wall was required to provide long-term ground retention and stability. The retaining structure formed a critical element of the overall build, supporting adjacent ground and safeguarding the integrity of the development.

Due to the permanent nature of the works and the load demands associated with the retaining wall, a reliable, high-capacity ground anchoring solution was required. Vulcan Earth Anchors were specified within the original design to provide effective tie-back support to the sheet piling, ensuring long-term performance while minimising disruption to surrounding ground conditions.

Ground conditions on site comprised made ground over firm clay, presenting challenges that required careful consideration during both design and installation. The solution needed to achieve high design loads while remaining practical to install within site constraints.

Testing

To confirm suitability and optimise anchor selection, site testing was carried out at an early stage of the project. This testing phase was essential to validate the performance of the Vulcan Earth Anchors within the prevailing ground conditions and to ensure the correct anchor sizes were specified to meet the required loads.

The anchors were designed to accommodate various working loads, with maximum design loads of up to 350 kN. Early-stage testing provided confidence in the anchor performance and allowed the design team to proceed with certainty, reducing risk and ensuring compliance with project requirements.

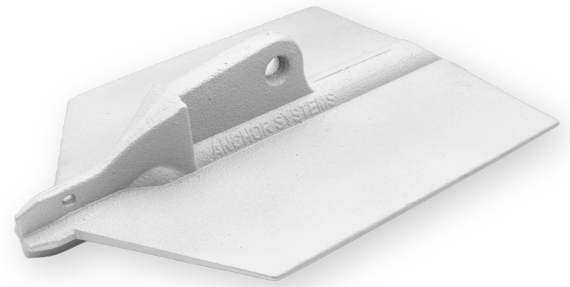
Solution

Anchor Systems supplied Vulcan Earth Anchors AS-400, installed in conjunction with 30 mm diameter threaded bars, to provide the required tie-back support to the sheet pile retaining wall.

Installation was carried out using a 13-tonne and 15-tonne excavator fitted with hydraulic breakers, enabling the anchors to be installed efficiently despite challenging ground conditions. The versatility of the Vulcan Earth Anchor system allowed the installation team to adapt to site constraints without the need for bespoke or non-standard components.

The installed anchors delivered high load capacity, reliable performance, and long-term stability, making them ideally suited to this sheet piling application. By using a mechanical ground anchor solution, the project benefited from a robust, proven system that avoided the need for more invasive traditional anchoring methods.

This project demonstrates the effectiveness of Vulcan Earth Anchors as a permanent ground anchoring solution for sheet piling and retaining wall applications, particularly where demanding loads and variable ground conditions are present.



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Scour Works Erosion Control Banff Bridge

CONTRACTOR

STORY Contracting

DESIGNER

AMEY

Requirement

Banff Bridge on the A98 in Aberdeenshire required remedial works to address scour affecting the bridge foundations within the tidal river environment. Scour occurs when flowing water removes sediment from around structural foundations, potentially compromising long-term stability. To protect the bridge, a scour protection system was designed using rock mattress units installed across the riverbed. These mattress systems needed to be securely fixed to prevent movement caused by water flow, tidal forces and storm conditions.

The anchoring solution therefore needed to:

- Provide reliable ground anchor restraint for rock mattress units
- Perform in a tidal saltwater environment with high corrosion resistance
- Meet defined load requirements to ensure long-term erosion control and scour protection
- Be installed within varying ground conditions including sand with buried rock fragments

Importantly, the anchors were required to be installed into the natural riverbed, rather than areas of exposed concrete, ensuring effective load transfer within the in-situ ground conditions.

Testing

Prior to construction, a series of on-site validation tests were undertaken to confirm the performance of the selected Vulcan Earth Anchor ground anchor system within the site's ground conditions.

A total of 12 test anchors were installed along the shoreline to verify achievable loads and installation depths. Testing confirmed:

- Achieved loads between 30 kN and 50 kN
- Installation depths between 1800 mm and 2770 mm
- Performance exceeding the project's 12 kN design load requirement

Testing was carried out using a 20-ton hydraulic ram to confirm the anchor load capacity before installation commenced. Ground conditions consisted primarily of sand with buried rock fragments, resulting in varying densities across anchor locations.



Solution

Anchor Systems supplied a fully stainless steel AS-10 bar and wire Vulcan Earth Anchor system, designed to meet the project's structural and environmental requirements. The system utilised grade 316 stainless steel components to provide corrosion resistance within the tidal saltwater environment, ensuring long-term durability for the erosion control works.

The bar and wire configuration was selected as a cost-effective solution that still allowed the anchor system to be securely locked off using a plate, washer and threaded nut detail at the surface. This enabled the rock mattress units to be firmly restrained against uplift and movement caused by river flow and tidal forces.



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01342 719 362
www.anchorsystems.co.uk

Gabion Retaining Wall

Wealden Business Centre

CLIENT

Now Construction

CONTRACTOR

Symbiotic Solutions

DESIGNER

GOWN Engineers

INSTALLER

Symbiotic Solutions

Requirement

The Wealden Business Centre in Crowborough required the construction of a gabion basket retaining wall as part of a wider ground stabilisation solution. To ensure long-term structural stability, the design—produced by GOWN Engineers specified the use of a ground anchoring system to reinforce the gabion wall and provide additional resistance against potential soil movement.

The Vulcan Earth Anchor system was chosen by Anchor Systems International for its proven performance in similar retaining wall applications. The AS-20 anchors, paired with 16mm galvanised steel bars and galvanised load plates, were selected to deliver the required design load capacity while maintaining ease of installation on an already partially completed structure.

Testing

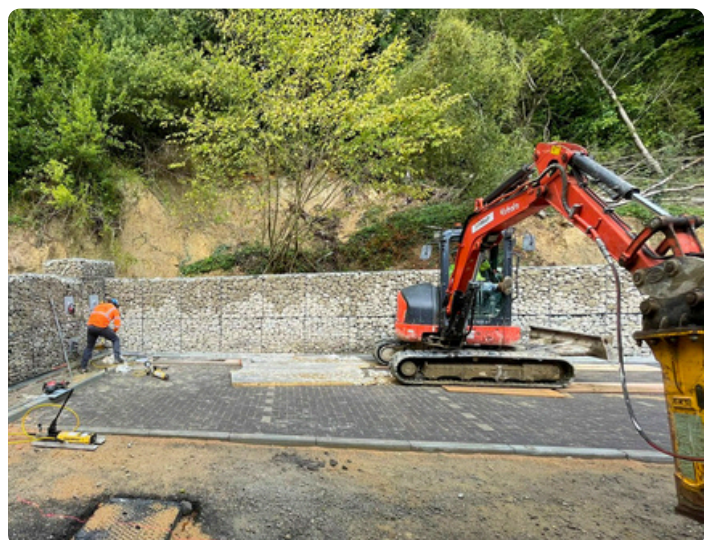
Before installation, suitability testing was carried out to verify that the anchors could penetrate the underlying weathered mudstone identified in the site's ground investigation report. The testing confirmed that the anchors achieved excellent load performance, with high load capacities recorded during trials.

Following the successful suitability tests, each anchor underwent proof loading as part of the installation process to validate their performance and ensure compliance with the design requirement of 30kN SLS (Serviceability Limit State). The results demonstrated consistent and reliable performance across all installed anchors.

Solution

Installation took place over two days, with a total of 14 Vulcan Earth Anchors installed through the pre-constructed gabion baskets. To facilitate installation, the baskets were designed with ducts to allow the anchors to be driven through efficiently. The anchors were installed using a small excavator, allowing for precise placement even within the confined workspace.

Despite the limited access and the challenges of working with an existing gabion structure, the Anchor Systems solution provided a straightforward and effective method of reinforcement without requiring any bespoke or non-standard components.





Timber Crib Retaining Wall Gloucestershire

CLIENT

Private

DESIGNER

Tellus Design

INSTALLER

Site 7

Requirement

Customer approached Anchor Systems (International) Ltd with concerns regarding a failing timber crib retaining. The structure was experiencing movement of the material behind the timber soldiers, indicating a significant loss of structural integrity. Following an online search, the client found Anchor Systems' Vulcan Earth Anchor solutions and requested a site visit for technical guidance and reassurance.

Solution

After a thorough on-site evaluation by our project manager, a tailored anchoring solution was designed using the Vulcan Earth Anchor system:

- 50 x AS-50 Vulcan Anchors were installed to the face of the wall at depths of 3 metres.
- 24 x AS-05 Geo-Textile Anchors were positioned at the crest and toe to hold down the mesh
- A roll of Deltax meshing was applied to the wall face, anchored by the geo-textile units.

The site presented access challenges due to a slope in front of the wall. To mitigate this, a 13T excavator with steel tracks and a pecker was used. Anchor Systems' proprietary 20T ram and battery-powered pump were employed for loading and lock-off procedures.

Load requirements specified by the engineer were:

- Proof load: 20kN
- Lock-off load: 14kN

A test anchor (AS-50) successfully reached a load of 57kN, validating the design assumptions.

Solution

Despite occasional weather delays and some difficulty with proof loading due to deterioration of the timber during testing, the system achieved full lock-off across all anchors. The solution provided by Anchor Systems (International) Ltd met the structural goals of stabilising the timber crib wall and ensured long-term integrity of the retaining structure.

The client was satisfied with the outcome, particularly given the challenges of site access and urgency. This project once again demonstrates the versatility and performance of Vulcan Earth Anchors in retaining wall applications.





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Backstay Anchoring

Hinkley Connection

CLIENT

National Grid

CONTRACTOR

Balfour Beatty

Issue

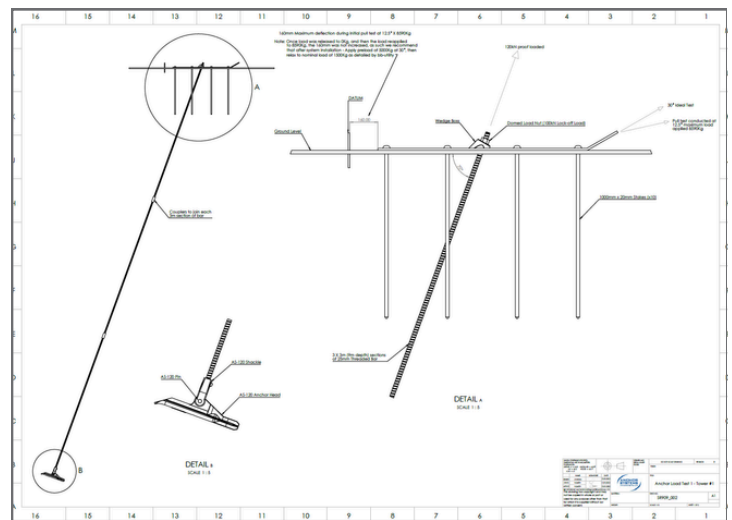
The Hinkley Connection Project required a reliable anchoring system to support temporary stay cables for new overhead line pylons in Somerset, UK. The project faced challenges due to varying ground conditions, necessitating a robust and adaptable anchoring solution.

Testing

A comprehensive geotechnical investigation was conducted to assess soil conditions and determine the optimal anchoring solution. Boreholes, in-situ testing, and laboratory analysis confirmed the presence of Tidal Flat Deposits, Peat, and Mercia Mudstone at different depths across the site.

The tests indicated that:

- Soft silts, clays, and organic Peat layers presented lower resistance to anchoring forces.
- More stable bedrock formations, where present, provided adequate shear strength but required deeper anchor penetration.
- Load testing confirmed a maximum cable stay force of 69kN, incorporating a partial load factor of 1.50.



Solution

Anchor Systems International Ltd provided the Vulcan® driven ground anchor system, chosen for its adaptability across varying soil conditions. The installation involved driving anchors at angles between 70° and 90° and adjusting depths between 6m and 29m based on ground conditions. Modifications were made to anchor loads and soil parameters to optimise performance.

Balfour Beatty, the project's principal contractor, implemented the anchoring solution following site-specific requirements and geotechnical data, ensuring stability throughout the temporary installation phase.







PROJECT REPORT

Floating Pontoon

Jumeirah Island, Dubai

CLIENT

Dubai Municipality

CONTRACTOR

Zarco

INSTALLER

Al Khaja Innotech

DESIGNER

Tellus Design

Issue

Dubai Municipality sought an environmentally friendly alternative to traditional pre-cast concrete blocks for anchoring a floating pontoon on Jumeirah Island, Dubai. Conventional concrete blocks posed a significant environmental impact and suffered a buoyancy loss of approximately 60% when submerged. The client required a solution that maintained stability and buoyancy without these disadvantages.

Testing

Prior to installation, rigorous testing was conducted to ensure the selected anchoring solution met the project's performance requirements. The Vulcan AS-120 Earth Anchors, made of 16mm 316 stainless steel for marine-grade durability, were chosen for their proven strength and resilience.

Training sessions were carried out in Bahrain to familiarise the installation team with proper procedures, and all anchors were pre-tested for load-bearing capacities ranging from 20-50 kN. The proof-loading phase confirmed that the anchors could sustain the required loads without performance degradation.

Solution

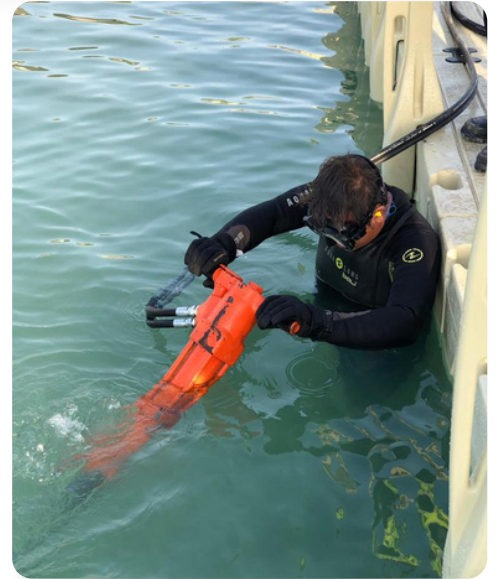
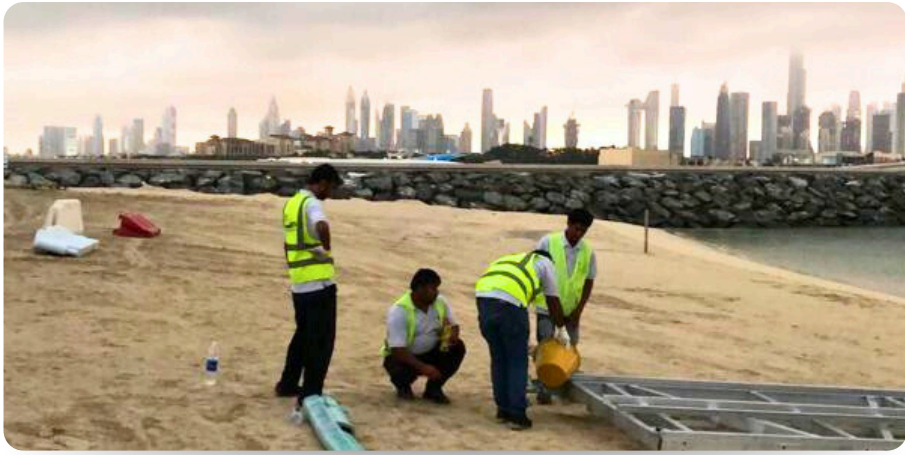
Tellus Design was commissioned to develop a tailored anchoring solution that utilised 60 AS-120 Vulcan Earth Anchors. These anchors provided superior load-bearing capabilities compared to traditional concrete blocks, while also offering a more sustainable and environmentally friendly alternative.

The installation team, led by Al Khaja Innotech, was trained to deploy the anchors using specialised marine installation equipment. The anchors were driven subsea to a depth of 3 metres, ensuring a secure and stable foundation for the floating pontoon.

Result

The installation was successfully completed, with all anchors meeting the specified load requirements. The solution proved to be not only environmentally sustainable but also highly effective, eliminating the buoyancy-related weight loss issues of concrete.

The project was executed efficiently, with minimal on-site plant and vehicle usage, demonstrating the versatility and reliability of Anchor Systems' solutions. The success of this project underscores the effectiveness of Vulcan Earth Anchors in marine applications and highlights Anchor Systems' commitment to providing innovative, sustainable anchoring solutions.



Installation Service & Equipment

When you purchase a product through Anchor Systems there's no need for you to shop around trying to find installation equipment or specialist installers. We can supply you with all the tools and training you need or if you require a complete supply and installation service, we have our very own list of approved and experienced contractors who have undertaken specialist training to install Vulcan Anchors.

Site Testing

The chosen anchor system should always be proof tested on site prior to starting work. Site tests are vital, especially when soil test reports are not available as they allow the confirmation of maximum loading achievable in the areas that the ground anchors are to be positioned and also allow for creep testing.

Site Preparation

Before any anchors are installed it is always recommended to use a CAT scanner to the required depth to check for buried services.

Personal Protective Equipment

At Anchor Systems (International) Ltd we strongly recommend that before you install any type of below ground system that the proper safety equipment is worn. Please see below the recommended personal protection equipment:

- Hard Hat
- Safety Boots
- Goggles
- High Visibility Clothing
- Ear Defenders
- Gloves



Plant

Anchor Systems (International) Ltd have created specialist installation tools that are fit for the purpose of efficiently installing and tensioning our Ground Anchors. All of our equipment is available to either hire out for the length of time you require it for or to purchase. If you would like to know more about our equipment specifications then we will happily provide you with this on request.

Hand Held Equipment

We offer a range of handheld installation and loading equipment that is fit for the purpose of efficiently installing and tensioning our Vulcan Earth Anchors from the AS-05 (5kN) up to an AS-90 (90kN) capacity.

We have also tried to keep the individual plant unit weights as low as possible to ensure that our anchoring systems can be installed as easily as possible.



Machine Mounted

All installations over 90kN would be conducted using machine mounted equipment required for our heavy-duty range of anchors ranging from 120kN to 400kN capacity.

We can supply an adaptor pot fit for breaker points up to 110mm, drive adaptor and drive extensions.





Vulcan Earth Anchors®

Load Range 1 - 450 kN

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