ANCHOR SYSTEMS (INTERNATIONAL) LTD

VULCAN® EARTH ANCHOR SYSTEMS

Vulcan Earth Anchors®

Timber Crib Wall Anchoring Systems

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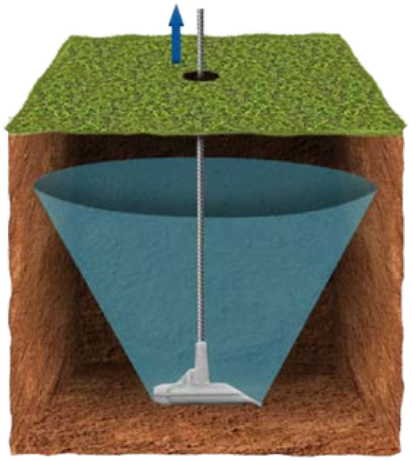
Have any questions?
01342 719 362

Home of the Vulcan

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.



Key Features:

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

Timber Crib Wall Solution

We've developed a fast, reliable, and cost-effective anchoring system specifically designed for use with timber crib retaining walls. Whether you're dealing with a failing structure or aiming to reinforce an ageing wall, our solution offers a practical and durable fix without the need for complete reconstruction.

Engineered for efficiency and strength, our anchoring system stabilises timber crib walls quickly minimising disruption and reducing overall project costs. It's the smart choice for anyone looking to extend the life of their retaining wall with confidence and peace of mind.

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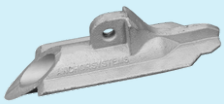
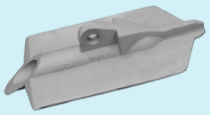
Holding Capacities

Typical Vulcan Earth Anchor range for Temporary/Permanent Structures AS-30 to AS-90.

Name	AS-30 14 - 87 kN	AS-50 19 - 119 kN	AS-90 33 - 169 kN
Anchor			

Details on the full range of anchors, **AS01 to AS400**, are available on request.

All anchor loadings are based upon the optimal tendon choice for the mechanical anchoring systems to achieve ultimate resistance load.

Anchor System	AS-30	AS-50	AS-90
Tendon Type	16mm Galvanised Bar	16mm Galvanised Bar	20mm Galvanised Bar
Independent Destructive Test of Mechanical Anchor Head (kN)	112.5	195.3	195.3
Utimate Strength of Tendon (kN)	121	100	108
Limiting Structural Strength (kN)	101.3	160.2	169.2
Anchor Head Surface Area (mm^2)	21,130	29,093	48,734

Common Soil Type Description	Blow Count or 'SPT'	Ultimate Anchor Resistance (kN)		
Very Dense and/or Cemented Sands Coarse Gravel & Cobbles	60 +	67	119	169
Dense Fine Sand Very Hard Silts & Clays	45 - 60	77	106	169
Dense Clays, Sands & Gravel Very Soft to Hard Silts & Clays	35 - 50	64	89	149
Medium Dense Sandy Gravel Very Stiff to Hard Silts & Clays	25 - 40	52	72	129
Medium Dense Coarse Sand & Sandy Gravel Stiff to Very Stiff Silts & Clays	14 - 25	35	49	82
Loose to Medium Sense Fine to Coarse Sand Firm To Stiff Clays & Silts	7 - 14	24	33	56

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 put into service.

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Geotextile Meshing

As part of our retaining wall reinforcement solutions, we supply and install high-performance geotextile mesh systems for the wall face. These systems help stabilize the structure, prevent erosion, and improve the long-term durability and appearance of timber crib walls.

We proudly offer and install Deltax and Greenax systems:

Deltax® – High-Tensile Wire Mesh

Deltax is a lightweight, high-tensile steel wire mesh designed for surface stabilisation. With a tensile strength of up to 1770 N/mm², it is engineered to control erosion and retain loose materials along the wall face, offering long-term durability with minimal maintenance.

It's galvanised and optionally coated for corrosion protection, making it ideal for exposed environments.

Greenax® – Composite Mesh for Greener Solutions

Greenax combines a high-tensile steel wire mesh with an integrated erosion control mat (coir or synthetic), providing immediate soil retention while promoting vegetation growth over time.

This makes it ideal for applications where a natural, green finish is desired—perfect for visually sensitive or environmentally regulated sites.

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Gabion Baskets

As well as geotextile meshing, gabion baskets can be used in combination with timber crib walls to form a hybrid retaining wall system, especially for erosion control, landscaping, and slope stabilisation.

How Gabions and Timber Crib Walls Work Together

- Facing or Veneer: Gabion baskets are used as the external face of the wall, providing a more durable and aesthetically pleasing finish to the timber crib structure behind.
- Erosion Protection: Gabions protect the face of the timber crib wall from water runoff, direct wave action, or surface erosion. This is especially useful near creeks, rivers, or coastal areas.
- Drainage Enhancement: Gabions are permeable, so they allow water to filter through while holding back soil, reducing hydrostatic pressure behind the wall and extending the lifespan of the timber structure.
- Structural Support: In some designs, gabions can act as a secondary gravity wall, reinforcing the toe or base of a timber crib wall, especially in steep or unstable terrain.

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Project Report

ENGINEER
Mesh Engineering

DESIGNER
Tellus Design

CLIENT
Bath & North East Somerset Council

CONTRACTOR
NKS Contracts

INSTALLER
Site 7 Construction

Requirement

The project at Cleeve Court Community Resource Centre was initiated to stabilise a failing timber crib retaining wall that had begun to show signs of structural distress. Rebuilding the wall was considered impractical due to the high costs and restricted site access, which prevented large machinery from reaching the area. These limitations made a conventional rebuild unviable and prompted the need for a more efficient, low-impact solution.

Following site assessment and collaboration between NKS Contracts, and Mesh Engineering, the Vulcan Earth Anchor system from Anchor Systems (International) Ltd was selected as the preferred solution. The decision was based on its proven effectiveness in stabilising retaining structures with minimal disruption and its ability to be installed using compact equipment suitable for tight-access sites.

Testing

Before full installation commenced, a series of on-site proof tests were carried out to confirm the performance of the chosen anchors. The design required the anchors to achieve a 42kN load capacity during initial calculations. These tests were conducted using a 20-tonne hydraulic ram, and the required load was successfully achieved within five pulls, validating the system's capability and reliability.

Following the testing phase, Tellus Design refined the global stability analysis, confirming that the design could be optimized to a 20kN proof load and 13kN lock-off load, ensuring both safety and efficiency while meeting all engineering requirements.

Solution

The final installation incorporated 95 x AS-50 Vulcan Earth Anchors for primary stabilisation, alongside 44 x AS-05 Geotextile Anchors used to secure 2 rolls of Deltax mesh to the face of the wall for erosion control and surface protection.
Due to the challenging access conditions, all installation equipment—including a 5 tonne excavator fitted with T38 drive equipment—had to be craned over a hedge and manoeuvred carefully down the side of the care home. Despite these constraints, the installation was completed efficiently within three weeks.

Where the original timber wall had completely failed, Anchor Systems worked closely with Site 7 Construction and Mesh Engineering to design and install 13 metres of gabion baskets, providing both structural reinforcement and an aesthetically natural finish to the repaired section.

The result was a durable and cost-effective stabilisation solution that avoided the disruption and expense of a full wall rebuild. The use of the Vulcan Earth Anchor system provided long-term ground stabilisation with minimal environmental and operational impact, restoring stability and safety to the site.

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Retaining Wall

Cleeve Court, Bath Spa

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Project Report

CLIENT
Private

INSTALLER
Site 7

ENGINEER
Tellus Design

Requirement

The customer approached Anchor Systems (International) Ltd with concerns regarding a failing timber crib retaining wall. 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 Geotextile 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.
- All components were fully galvanised for durability.

The site presented access challenges due to a slope in front of the wall. To mitigate this, a 13 tonne excavator with steel tracks and a pecker was used. Anchor Systems' proprietary 20 tonne ram and battery-powered pump were employed for loading and lock-off procedures.

Load requirements specified by the engineer (Tellus Design) were:

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

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

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Result

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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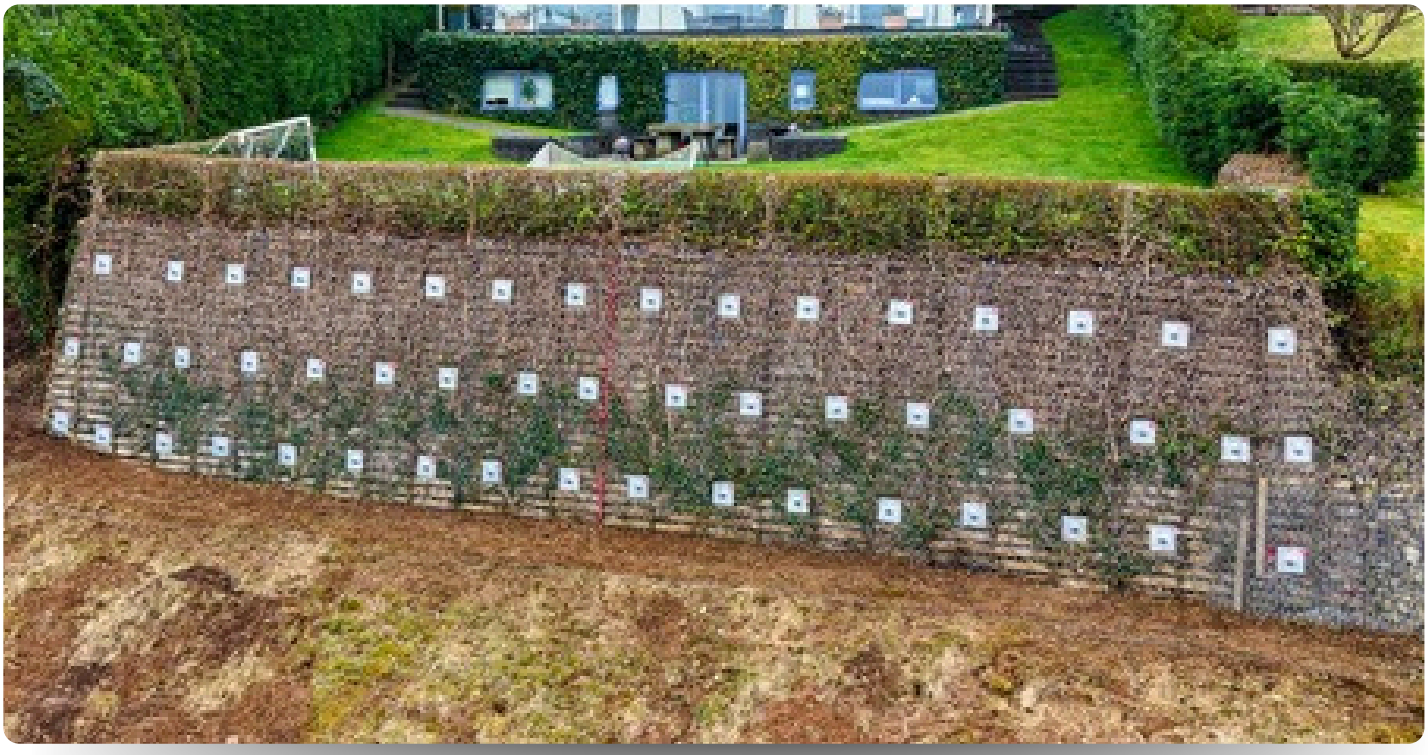
Retaining Wall Stabilisation

Gloucestershire



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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 have the ground scanned for potential buried services,

Personal Protection 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
- Overalls
- Ear Defenders
- Gloves

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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.

Handheld 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.

Trundle Pack

Our focus is to ensure that the plant that we provide is both robust and quick for hand held plant installation. With this in mind we have developed the Trundle Pack which contains the installation equipment you need altogether on one easy to manoeuvre trolley. The Trundle Pack has been designed for rough terrain and long- distance sites with poor access meaning there is no need to make multiple trips back and forth to your vehicle when unloading.

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.

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