

# Anchor Screw Foundation Solution

DESIGN, PERFORMANCE,  
APPLICATIONS AND SERVICES



[www.anchor systems.co.uk](http://www.anchor systems.co.uk)



# Anchor Systems

## ABOUT ANCHOR SYSTEMS (INTERNATIONAL) LTD

Anchor Systems (International) Ltd is a global business that specialises in the design, manufacture and supply of foundation and earth anchoring systems and solutions. Our foundation systems, the Anchor Screw, the Anchor Post, and the Anchor Base are all easy to install alternatives to using concrete as a foundation. Our Vulcan range of Earth Anchors is the largest and most versatile globally and are utilised for many universal applications from slope stabilisation and retaining walls to tethering utility poles and anchoring sapling trees, refer to our 'Vulcan Brochure' or 'Anchor Post Brochure' for further detail.

Established in 1995, Anchor Systems have become the 'Go To' experts to the UK Rail industry for alternative foundation systems over using concrete. We have provided foundation solutions for London Underground and Network Rail for many applications ranging from elevated troughing to signal masts.

We provide full support as part of our service. This begins as soon an enquiry is received, we work with you to gain a full understanding of what you are trying to achieve and how you like to work. We give full support and advice throughout the design and ordering process. To go even further, we offer training and on-site supervision too. We make sure expectations are met throughout the process and can also offer our clients bespoke designed products that are unique to them and their project.



## ABOUT THE ANCHOR SCREW

Our patented Anchor Screw is an easy to install foundation solution that irradiates the need to use traditional methods like concrete. It is entirely manufactured in the UK from recycled steel and can offer a design life in excess of 50 years. Through the design of the dome head and bespoke interface plates, this is a very versatile and flexible foundation system that allows the structure that is to be mounted on the Anchor Screw to always be correctly positioned. Anchor Screws come in a selection of sizes that suit a range of loads and jobs and can be used in multiples, with a common interface plate, to achieve even greater capabilities. Typically installed in less than 10 minutes, the Anchor Screw allows work to progress without the need for drying times.

# Anchor Screw

## BENEFITS AND FEATURES

### Speed

Typically installed in under 10 minutes per anchor

### Easy to Install

Zero on-track plant or RRV's required as installed with lightweight, handheld equipment

### Dust

Zero dust is generated as no cementitious products required

### Environmental

Fully reusable and Made in Britain from UK recycled steel

### Longevity

Can be designed with 50 or 100+ year lifespans dependant on client requirements

### Water and Drying Times

Zero water consumed or drying time required, as no wet trades involved

### HAVS

Zero risk as the installation equipment is non-percussive

### Noise

Installation is relatively quiet. The installation equipment runs at 80-85db

### Versatility

Easily adjustable to guarantee the correct positioning with patented design features

### Mess and Waste Materials

Zero mess due to no digging required nor any general wasted materials, which reduce man-hours and project risks





# Adjustability

The patented, adjustable interface connection allows for a 7° alignment in all directions. This means that even if the Anchor Screw is slightly misaligned when installing, the structure on the top can still be levelled.



# Product Sizes

The Anchor Screw has been designed for different purposes in varying ground conditions along with bespoke interface plates which are made to suit your project requirements. Below are some of our standard systems, however the Anchor Screw can be made to any bespoke size for your project.

**AS\_608 950L**  
950mm x 60mm CHS



**AS\_605**  
1395mm x 60mm CHS



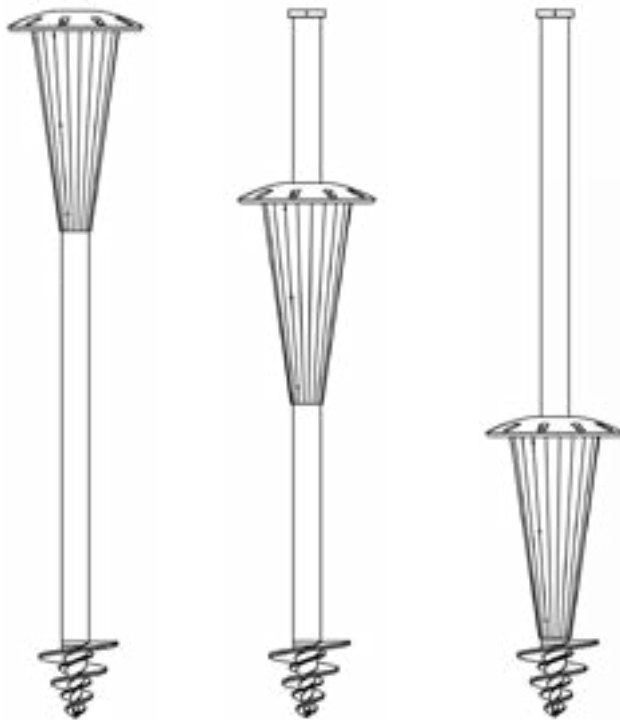
**AS\_762**  
1595mm x 60mm CHS



**AS\_766**  
1995mm x 76MM CHS



**Multi Piece Anchor Screw**



\*CHS = Circular Hollow Section  
(The central tube)

# Resistance to Vertical Loads

The Anchor Screws are designed to resist both vertical and horizontal actions, including the associated destabilising moments. Anchor Screws are designed as helical pile steel pile foundations following guidance in Annex A of BS8004:2015. Vertical compressive and tensile (uplift) forces are resisted by end bearing on each helix plate. Shaft resistance between the helix plates and the ground surface is ignored.

Coarse grained soils - Design axial resistance ( $R_{c;d}$  - Compression /  $R_{t;d}$  - Tension)

Soil Classification	Friction angle $\phi'_{v,k}$ (°)	895mm		1395mm		1595mm		1995mm	
		$R_{c;d}$ (kN)	$R_{t;d}$ (kN)	$R_{c;d}$ (kN)	$R_{t;d}$ (kN)	$R_{c;d}$ (kN)	$R_{t;d}$ (kN)	$R_{c;d}$ (kN)	$R_{t;d}$ (kN)
BS EN1997-2									
Loose	30	3.5	1.0	10.1	3.5	12.7	5.0	18	8.6
Medium dense	32	4.4	1.1	12.7	4.3	16.0	6.1	22.6	10.9
	34	5.6	1.3	16.2	5.3	20.4	7.6	28.8	13.3
Dense	36	7.1	1.4	20.8	6.6	26.1	9.5	36.9	16.8
	38	9.2	1.6	26.9	7.1	33.9	12.0	47.8	21.4
Very dense	40	12.1	1.8	35.3	8.2	44.4	13.0	62.7	27.4

Fine grained soils - Design axial resistance ( $R_{c;d}$  - Compression /  $R_{t;d}$  - Tension)

Strength description	Undrained shear strength $c_{u,k}$ (kPa)	895mm		1395mm		1595mm		1995mm	
		$R_{c;d}$ (kN)	$R_{t;d}$ (kN)	$R_{c;d}$ (kN)	$R_{t;d}$ (kN)	$R_{c;d}$ (kN)	$R_{t;d}$ (kN)	$R_{c;d}$ (kN)	$R_{t;d}$ (kN)
BS EN1997-2									
Low strength	20	2.9	1.1	7.1	3.2	7.4	3.9	7.6	5.1
Medium strength	40	5.6	2.2	14.0	6.1	14.5	7.5	14.7	9.8
High strength	75	10.5	4.1	26.1	11.2	27.0	13.9	27.1	18.1
	100	14.0	5.5	34.7	14.9	35.9	18.4	36	24



For designs carried out in accordance with BS EN1997-1 (Eurocode 7), the design (i.e. 'factored') vertical actions must not exceed the design resistance of the Anchor Post. The design actions,  $F_{c;d}$  and  $F_{t;d}$  include appropriate partial load factors. For geotechnical assessment, the partial factor set for Design Approach 1, Combination 2 is usually critical and therefore, the vertical actions should be factored by partial factor set A2 (i.e.  $\gamma_G = 1.0$  and  $\gamma_Q = 1.3$ ). The design resistances are calculated using partial factor set R4 (refer to Table A.NA.6, UK NA to BS EN1997-1).

Calculated design resistances for compressive and tensile forces for the four lengths of Anchor Screw are shown in the tables below. These tables assume the Anchor Screws are installed entirely within a single homogenous soil type and are for illustrative purposes only. The 'coarse grained' soils table is applicable to sands and gravels and assumes the water table is below the lowest helix plate. Where groundwater is at or close to ground level, the values for coarse grained soils should be reduced by 50%. The 'fine grained' soils table is applicable to silts and clays. Greater resistances than those shown in these tables may be justified by load testing a number of the installed Anchor Screws.

# Resistance to Horizontal Loads

For horizontal actions, the Anchor Screw may be designed according to BS EN1997-1 as a laterally loaded pile. Alternatively, a simplified approach may be adopted using the method in BD94-17 - Design of Minor Structures, for planted columns and posts. This approach uses characteristic (i.e. 'unfactored') actions and three soil qualities defined as 'Poor', 'Average' and 'Good'.

Calculated resistances for horizontal forces for the four lengths of Anchor Screw are shown in the tables below. For each length, the resistance for a 60mm and 76mm diameter shaft have been determined. These tables include values for the load applied at the top of the Anchor Screw and 1m above the dome plate. The resistances are calculated using the BD94-17 method for the three soil qualities defined in Table 3. Where the quality of the foundation soil is unknown, assume 'Poor' quality. The calculated resistances in this table should be compared with the characteristic (i.e. unfactored) horizontal loads applied to the Anchor Screw. It is assumed that the top of the dome plate projects no more than 50mm above ground level. The structural resistance of the Anchor Screws have been calculated for 50 and 100 year service lives, assuming the foundations are embedded in undisturbed natural soils or non-aggressive compacted fill. The loss of section due to corrosion is based upon Table 4.1 of UK NA to BS EN1993-5. The structural resistances were calculated assuming a partial load factor,  $\gamma_Q = 1.50$ , based upon the horizontal action being a variable load such as wind.

Soil quality description from Table 3 of BD94-17

Good	Compact, well-graded sand and gravel, hard clay, well-graded fine and coarse sand, decomposed granite rock and soil. Good soils drain well.
Average	Compact fine sand, medium clay, compact well drained sandy loam, loose coarse sand and gravels. Average soils drain sufficiently well that water does not stand on the surface.
Poor	Soft clay, clay loam, poorly compacted sand, clays containing a large amount of silt and vegetable matter, and made-up ground. Where the Quality is unknown, it shall be taken as Poor.

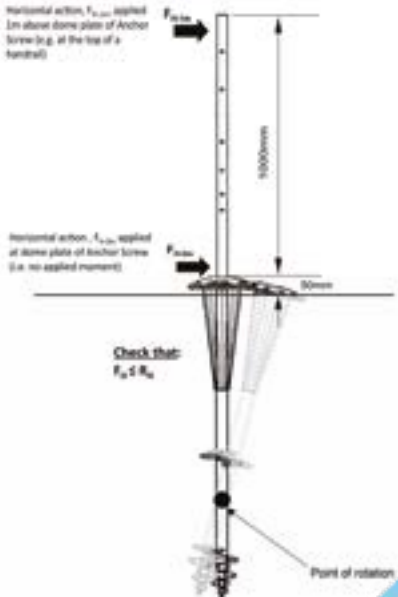
In situations where suitable ground investigation has been carried out, a more rigorous analysis to BS EN1997-1 may allow higher characteristic horizontal loads and/or moments to be resisted. Greater resistances than those shown in this table may be justified by load testing a number of the installed Anchor Screws.

$R_H$  The lateral resistance of highlighted values are limited by the strength of the soil.

$R_H$  The lateral resistance of highlighted values are limited by the moment capacity of the CHS steel post sections

Horizontal resistance ( $R_{H,0m}$  - At 0.0m)

Quality of soil (Table 3 of BD94-17)	Shaft thickness (service life)	895mm		1395mm		1595mm		1995mm	
		60mm (kN)	76mm (kN)	60mm (kN)	76mm (kN)	60mm (kN)	76mm (kN)	60mm (kN)	76mm (kN)
Poor	5 - (50 years)	1.0	1.3	2.7	3.4	3.5	4.4	4.1	6.2
	5 - (100 years)	1.0	1.3	2.7	3.4	3.5	4.4	3.6	5.6
	8 - (50 years)	1.0	1.3	2.7	3.4	3.5	4.4	5.4	7.2
	8 - (100 years)	1.0	1.3	2.7	3.4	3.5	4.4	5.0	7.2
Average	5 - (50 years)	1.7	2.1	4.5	5.7	4.8	7.3	4.8	7.3
	5 - (100 years)	1.7	2.1	4.2	5.7	4.2	6.5	4.2	6.5
	8 - (50 years)	1.7	2.1	4.5	5.7	6.1	7.7	6.4	9.9
	8 - (100 years)	1.7	2.1	4.5	5.7	5.9	7.7	5.9	9.2
Good	5 - (50 years)	2.8	3.5	5.5	8.4	5.5	8.4	5.5	8.4
	5 - (100 years)	2.8	3.5	4.8	7.5	4.8	7.5	4.8	7.5
	8 - (50 years)	2.8	3.5	7.3	9.3	7.3	11.4	7.3	11.4
	8 - (100 years)	2.8	3.5	6.8	9.3	6.8	10.6	6.8	10.6



Horizontal resistance ( $R_{H,1m}$  - At 1.0m)

Quality of soil (Table 3 of BD94-17)	Shaft thickness (service life)	895mm		1395mm		1595mm		1995mm	
		60mm (kN)	76mm (kN)	60mm (kN)	76mm (kN)	60mm (kN)	76mm (kN)	60mm (kN)	76mm (kN)
Poor	5 - (50 years)	0.4	0.5	1.3	1.6	1.9	2.4	2.1	3.3
	5 - (100 years)	0.4	0.5	1.3	1.6	1.8	2.4	1.8	2.9
	8 - (50 years)	0.4	0.5	1.3	1.6	1.9	2.4	3.0	4.2
	8 - (100 years)	0.4	0.5	1.3	1.6	1.9	2.4	2.7	4.2
Average	5 - (50 years)	0.7	0.9	2.2	2.9	2.2	3.6	2.2	3.6
	5 - (100 years)	0.7	0.9	1.9	2.9	1.9	3.1	1.9	3.1
	8 - (50 years)	0.7	0.9	2.3	2.9	3.2	4.0	3.2	5.2
	8 - (100 years)	0.7	0.9	2.3	2.9	2.9	4.0	2.9	4.8
Good	5 - (50 years)	1.1	1.4	2.4	3.8	2.4	3.8	2.4	3.8
	5 - (100 years)	1.1	1.4	2.0	3.3	2.0	3.3	2.0	3.3
	8 - (50 years)	1.1	1.4	3.4	4.7	3.4	5.6	3.4	5.6
	8 - (100 years)	1.1	1.4	3.1	4.7	3.1	5.1	3.1	5.1



# Environmental

Through innovation, the Anchor Screw has become an alternative foundation solution to concrete. The eradication of concrete is not the only environmental benefit the Anchor Screw achieves.

## BENEFITS AND FEATURES

### Design Life

The Anchor Screw can achieve 100+ years

### Whole Life Cycle

With the use of maintenance free fixings, the Anchor Screw and its Interface plate can be completely maintenance free throughout its design life

### Made in Britain

Holds the Made in Britain accreditation and is made from 100% recycled UK steel

### Reusable

Can be extracted and reused or recycled

### Reliability

Made from quality materials and installed by approved contractors which in turn reduces installation breakages and guarantees the design life

### No Hazardous Materials

Zero water, no airborne dust nor hazardous materials

### Low Noise

During installation, noise exposure levels are in the range 80-85db



## THE COMPANY

Our aim is to constantly try to reduce, reuse and recycle to help lower our overall environmental impact. Through innovation, our products are reducing the use of concrete. 100% of our packaging is recyclable or made from recycled material. Our products are Made in Britain to reduce our carbon footprint. We monitor the efficiency of our processes from transportation and packaging to power consumption and waste management and look to improve on these on an ongoing basis.



# Anchor Post Vs Anchor Screw



Due to their sizes and design, the Anchor Post is typically more cost effective than the Anchor Screw initially however there are many benefits for using the Anchor Screw and in some situations, it may be the only viable option.

### Noise

The Anchor Screw is ideal for installing foundations in noise sensitive areas. During installation, noise exposure levels are between 80-85db at 2 metres for approximately 5-8 minutes whilst each one is being installed. This is a lower level of exposure to noise in comparison with the Anchor Post, which is a percusion driven system.

### HAVS

Due to its installation methodology, the Anchor Screw produces no HAVS (Hand-Arm Vibration Syndrome). It is turned into the ground, like a screw, through a rotary action produced through a torque head. Therefore, the action is a smooth turning one that does not produce any vibration. The Anchor Post is percusion driven utilising a specialised breaker which can have an increased effect on general fatigue and HAVS in comparison with an Anchor Screw.

### Load and Capabilities

The design of the Anchor Screw, with its coned upper body, large domed head, flights and larger overall body allows it to withstand much larger loads than that of an Anchor Post. However, if there is a requirement to install between cable runs or in very tight positions, the Anchor Post is the better option due to its slimmer body and the shape of the installation equipment.

### Speed

The Anchor Screw is typically consistent in terms of speed. Installation times are typically between 5 and 8 minutes regardless of ground conditions (within reason). The Anchor Screw will turn at the same constant rpm allowing the installer to plan their work more accurately. The Anchor Post will typically vary between 1 and 10 minutes depending on ground conditions.



Anchor Post Foundation system with fins which is percusion driven into the ground.



Anchor Screw Foundation system which is screwed into the ground.



# GPR Scanning

A combination of Ground-Penetrating Radar (GPR) and electromagnetic induction imaging (EI) is used to map the area in the vicinity of the anchor location to verify that there are no hidden services or geophysical issues that would affect the installation of the anchor.

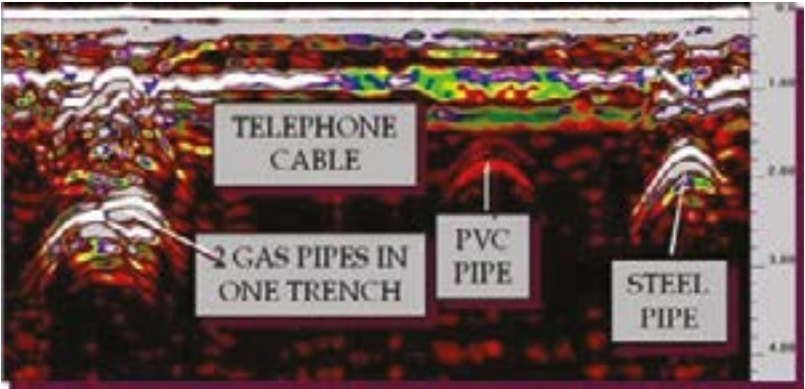
GPR is a geophysical method that uses radar pulses to image the subsurface. This nondestructive method uses electromagnetic radiation in the microwave band (UHF/ VHF frequencies) of the radio spectrum and detects the reflected signals from subsurface structures. GPR can have applications in a variety of media, including rock, soil, ice, fresh water, pavements and structures. In the right conditions, practitioners can use GPR to detect subsurface objects, changes in material properties, and voids and cracks.



Metal detectors use electromagnetic induction (EI) to detect metal and are available in different configurations, varying in sophistication and sensitivity. They have some capacity to discriminate between different types of metallic targets. Although not as commonly used in archaeology, sophisticated metal detectors are available having much greater sensitivity than hand-held models. These instruments are capable of data logging and sophisticated target discrimination. They can be mounted on wheeled carts for survey data collection.



A full underground clearance survey of each through route will be undertaken. This comprises metallic and non-metallic services, including Water, Power, Gas, Telecommunications, Fibre Optics, Drainage and other linear targets. GPR can also detect and map subsurface anomalies such as voids and obstructions. We will deliver a survey report including a drawing of the site. The output data typically appears in the following form and requires interpretation.



# GPR Scanning



1. (Left) The areas where the anchors are to be installed are scanned thoroughly to check for any utilities and obstructions below the ground.

2. (Below) The Anchor Screw positions that have been scanned and declared clear of utilities and obstructions are marked up.



3. (Below) Finally, a full report of all the scanned areas is produced.

GPR Survey record sheet: Higher Green Project

Project: Higher Green (Signal) extension

Run: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

Date	Location	Location identified by	Successful bore hole clearance	Cleared By	Marked location (orange marker etc)
26/06/2019	1	GPR (Shovel)	Yes	Alan Shovel	Yes
26/06/2019	2	GPR (Shovel)	Yes	Alan Shovel	Yes
26/06/2019	3	GPR (Shovel)	Yes	Alan Shovel	Yes
26/06/2019	4	GPR (Shovel)	Yes	Alan Shovel	Yes
26/06/2019	5	GPR (Shovel)	Yes	Alan Shovel	Yes
26/06/2019	6	GPR (Shovel)	Yes	Alan Shovel	Yes
26/06/2019	7	GPR (Shovel)	Yes	Alan Shovel	Yes
26/06/2019	8	GPR (Shovel)	Yes	Alan Shovel	Yes
26/06/2019	9	GPR (Shovel)	Yes	Alan Shovel	Yes
26/06/2019	10	GPR (Shovel)	Yes	Alan Shovel	Yes
26/06/2019	11	GPR (Shovel)	Yes	Alan Shovel	Yes
26/06/2019	12	GPR (Shovel)	Yes	Alan Shovel	Yes





# Project Report

At the commencement of the Hither Green Signalling Renewal project, the Balfour Beatty team recognised the opportunity to improve both the efficiency and sustainability of our standard construction materials and methods. Through introducing the Anchor Screw as a foundation system instead of concrete, has helped Balfour Beatty move closer to their goal of achieving a 25% reduction of on-site construction activity by 2025

**LOCATION**  
Hither Green Signalling  
Renewal, London

**CONTRACTOR**  
Network Rail

**SUB CONTRACTOR**  
Balfour Beatty

*"The Anchor Screw system is a fantastic example of innovation to solve a Customer's challenges, in this case cost and efficiency. With obvious safety benefits for our workforce this transferable solution could benefit not just other Rail projects but wider BB Group applications."*

**Chris Ottley, Operations Director,  
Balfour Beatty**

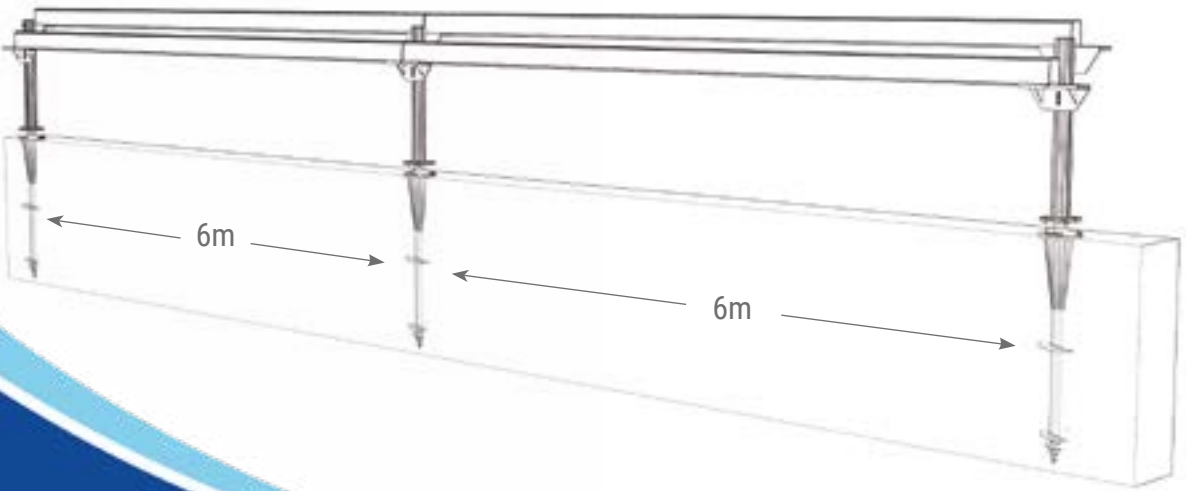


## THE MEASURES

The Anchor Screw foundation system replaced the need to use cast in-situ posts to support elevated cable route, although the system can be used to support a variety of different super-structures. The galvanised steel screws are driven into the ground from the surface, following a ground clearance check which is completed using 3D Ground Penetrating Radar. The hemi-spherically domed heads then allow for up to 7 degrees of vertical alignment correction, in the case the screw has been knocked off alignment during driving.

As the system had not been used on Network Rail infrastructure previously, it was crucial to work with our Client, Network Rail, to ensure full buy-in throughout design and construction. The subsequent approval we received clearly shows both the collaborative relationship between client and supplier and the obvious value this system has and can provide.

Authorisation for the use of the Anchor Screw system was obtained from Network Rail. This is the first time the system has been installed on Network Rail infrastructure. Approval was gained and the system was installed on the Hither Green Signalling Renewals project resulting in multiple benefits for the project and our customer.



# Hither Green

## THE RESULTS

The Anchor Screw system was installed for the first time in February 2020. During the first shift, 124 screws were installed in five hours, enough for 744m of elevated route, with no on-track plant required and zero accidents or incidents. A summary of benefits can be seen below:

- 60% time saving on foundation installation
- 40% cost saving (derived from man hour savings, elimination of plant requirements, reduced possession requirements)
- 73% embodied carbon reduction on materials, equivalent to 13920kgCO<sub>2</sub>e and 89.4% material saving
- Zero on-track plant and zero water consumed
- UK manufacturing and local materials, eliminating mainland European transportation miles
- No noise or HAVS risk





# Project Report



A 400m segregation barrier was required within the six foot at Westbourne Park Station to divide the Network Rail and Crossrail Tracks.

Due to the depth of ballast being over 1000mm, the proposed segregation barrier solution would utilise multiple concrete foundations, involving multiple RRV's, ballast removal, waste management, onsite concrete shuttering and mixing. This method of installation was estimated to take more than 20 weekend shifts with an initial budget of over £1million, deeming the works uneconomical for the client and the network.

## SOLUTION

Anchor Systems were approached by Network Rail to discuss the use of our Anchor Screw foundation solution and asked to offer a design and installation cost for the segregation barrier.

Due to the presence of concrete track drainage located approximately 1000mm below the ballast level, we conducted a Ground Penetration Radar (GPR) survey of the 400m section of works to identify the accurate location and depth of the concrete drain. During the survey, the GPR technician marked out every installation location and gave clearance of services and obstructions (bore hole clearance) to ensure that safe and efficient installation could take place.

Following the GPR survey, the Anchor Screw design was modified, reducing its overall length to 850mm to ensure clearance from the existing drain while at the same time being able to achieve the vertical and lateral load requirements for the segregation barrier in line with Network Rail standards.

A total of five tests were conducted along with five trial pits to confirm the GPR survey results. All five test anchors were installed and tested within one four-hour night shift and removed using the same installation equipment. The product design, manufacture, and mobilisation for anchor suitability testing was all carried out by Anchor Systems and our installation partner within a one-week time frame.



**LOCATION**  
Westbourne Park London

**CLIENT**  
Network Rail and Crossrail

**SPECIALIST INSTALLER**  
Arbourtech Services Ltd

**PRINCIPLE CONTRACTOR**  
Colas Rail

**ANCHOR SYSTEM USED**  
Anchor Screw foundation system and GRP handrail interface manufactured and supplied by Anchor Systems (International) Ltd

# Westbourne Park

Anchor Systems worked with Colas Rail and Network Rail to offer a complete solution with one of our approved installers to guarantee workmanship and onsite efficiency. The entire solution was offered at a saving of 30% for the design, testing, supply, installation, and commissioning of the barrier.

- Over 300 Anchor Screws were installed at 1500mm spacings along Westbourne Park within 14 night shifts, including the erecting of the barrier
- Delivering a massive reduction in project costs compared to the original solution
- Huge reduction in relative project ecological footprint through reduction of workforce, heavy machinery/RRV's, concrete, waste management, water consumption and material delivery miles
- A saving to the network of over 30%



Over and above the project benefits, the Anchor Screw offers further benefits to the network and local environment:

- On average the Anchor Screw foundation offers a carbon reduction of over 70%
- All materials are recyclable, easily removable, and reusable
- Made in the UK from 100% recycled steel, with a minimum design life of 50 years
- Anchor Screw can be designed to offer 100+ year design life solution
- No wet trades, curing times or excavation
- No requirement for RRV's
- Portable and lightweight installation equipment. Materials can all be transported by hand and with track trolleys
- Reduction in hours on site and workforce required during installation
- Zero HAVS (Hand Arm Vibration) and low noise pollution output offering lower disturbance to local residents
- Adjustable domed head to ensure the asset or interface is always level and offers horizontal and lateral adjustment to ensure the route is straight. The patented dome head of the Anchor Screw and interface plate offers 14° overall tolerance

*"The Anchor Screw system helped to significantly reduce construction time and provided greater tolerance to satisfy gauging requirements on the Westbourne Park Barrier Scheme. Throughout the design stage, Network Rail design and Anchor Systems collaborated to produce a bespoke post that could be installed entirely within the ballast formation. This system has many other applications and can offer significant efficiencies whilst providing a more environmentally friendly option compared with alternative foundation types."*

**Sam Fletcher CEng MICE - Senior Design Engineer (Building & Civils)**  
Network Rail

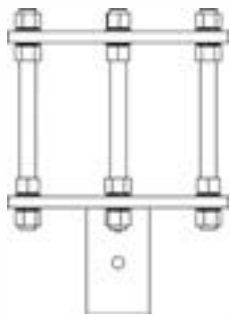




# System Examples

## PLATFORM FOUNDATION

Anchor Systems were contacted by KN Circet to help when the platform for this cabinet needed to be replaced as the base and foundations were failing. The cabinet was located on a slope to the side of a Network Rail line. A design for an extra long Anchor Screw was created and the installation was quick and simple. As soon as the Anchor Screws were installed the base of the platform could be fitted as no drying time is needed like there is with concrete.

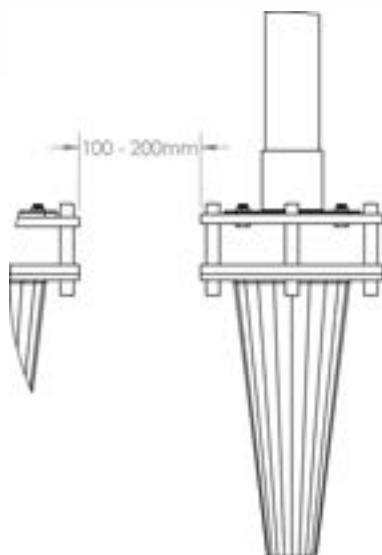


# System Examples

## SIGNAGE FOUNDATION

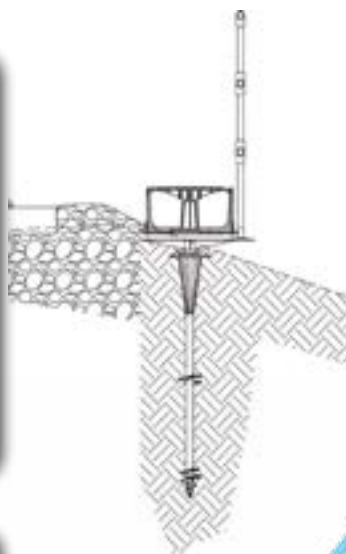
Anchor Screw foundation systems for use on rail or highway signage.

- No excavation
- No concrete
- Removable
- Reduce the need for GI
- Rapid installation
- Hand held installation
- Low noise and zero HAVS



## ELEVATED WALKWAY

Cable management system within a walkway with handrail used for Network Rail.





# 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 our specialist products.

## 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 equipment that are fit for the purpose of efficiently installing our Anchor Screws. 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.

## BENEFITS

- Lightweight
- Zero HAVS
- Zero excavation
- Almost silent
- Equipment is portable on track trolleys
- Speed of installation
- Low wear and tear on equipment
- Works in very dense and compact ground conditions
- All equipment is bespoke and calibrated
- Recommended and approved installers for the Rail industry to guarantee installation efficiency



Torque  
Head

Torque (Reaction) Arm





FOR TECHNICAL ADVICE OR  
FURTHER INFORMATION PLEASE CONTACT:

**ANCHOR SYSTEMS (INTERNATIONAL) LTD**

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