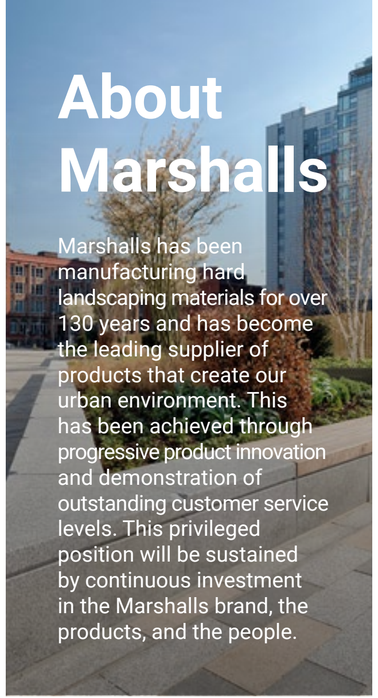
Marshalls
Landscape Protection

Inspirational HVM Solutions
with inner strength and
outer beauty

Keeping people safe... not scared®



About Marshalls

Marshalls has been manufacturing hard landscaping materials for over 130 years and has become the leading supplier of products that create our urban environment. This has been achieved through progressive product innovation and demonstration of outstanding customer service levels. This privileged position will be sustained by continuous investment in the Marshalls brand, the products, and the people.

Proudly celebrating over 10 consecutive years as a Superbrand

At Marshalls, we work together as one team, guided by strong principles, to operate in the most ethical and sustainable way. **We do the right things, for the right reasons, in the right way. This is the Marshalls Way**.

Act with Courage

We Act with Courage by taking responsibility for every action. We persevere and face things head on with a 'can do' attitude. We're proud of our depth of experience, but we're humble enough to never stop learning.

Shape the Future

Operating in the most ethical and sustainable way is a commitment we make to our customers, partners, stakeholders and the communities where we operate. We keep this commitment by considering the long term impact of every single decision we make. We recognise that we can Shape the Future by putting people, communities and the environment first.

We don't take our lead from change, we initiate and embrace it.

We Win Together

We Win Together by continuously developing our business and our Marshalls people. We strive to meet the needs and expectations of our customers and stakeholders. We break down boundaries by proactively proposing solutions, and we do this together with respect for each other.

Inspire with Clear Purpose

We set clear expectations for those we work with and for ourselves. We Inspire with Purpose, letting our passion and pride shine! We're motivated by our own high standards to deliver market leading quality to our customers. We know that brilliance comes from every single one of our people being able to contribute to our vision of Creating Better Spaces and Futures for Everyone.

Landscape Protection

Marshalls Landscape Protection offers a design led approach of Secured by Design Hostile Vehicle Mitigation security products enabling highly effective protection to blend seamlessly into urban landscape design; allowing architects, planners and designers to install security measures without instilling fear.

In most cases, crash-tested products are developed with minimal consideration given to the design, however Marshalls has flipped this on its head and taken a range of aesthetically designed street furniture products and incorporated protective RhinoGuard® technology within to create inner strength and outer beauty.

Our products are manufactured and tested to the latest security accreditations in the UK, with additional Street Furniture products sourced from Europe. From planters, seating and cycle stands, to litter bins, bollards and much more, the portfolio presents a comprehensive collection of creative HVM solutions available in a range of materials, from mild and stainless steel, natural stone, concrete and Ferrocast® to FSC®-certified timber and more.

Security products **don't need to compromise on the aesthetics** of a landscaping project.

We believe in the importance of creating safe, attractive and inviting environments, and regenerating spaces where people want to spend time, where people feel **safe, not scared**.

Our approach to sustainability

We help to build safe, sustainable and beautiful spaces for everyone.

Our approach to sustainability is underpinned by our belief in doing the hard work in areas that are material to our business and our stakeholders, by working with leading organisations and by getting external validation.

ISO50001, which we achieved and maintained since 2015, enables organisations to establish the systems and processes necessary to continually improve energy performance

SBTi targets to **reduce Scope 1 and 2 greenhouse gas emissions** 40% per tonne of production by 2030

100% of our employees are paid at, or above, **the Living Wage Foundation level**

All our production plants now use **100% renewable energy**

We achieved, and have since maintained, **ISO14001 Environmental Management** since 2000. The intentions of **ISO14001** is to achieve a balance between the environment, society and the economy is considered essential to meet the needs of the present without compromising the ability of future generations.

This international standard provides organisations with a framework to **protect the environment** and respond to changing environmental conditions in balance with socio-economic needs.

We launched the highly regarded **Power of Logistics** programme to tackle Modern Slavery and led the sector in tackling the issue in the UK

We have eradicated child labour from Tier 1 of our Indian Sandstone supply chain – this is really important to us and our commitment to respecting **human rights** is central to our business

MADE IN BRITAIN

All our Marshalls branded Landscape Protection and Street Furniture products are **made in mainland Britain**

FSC
www.fsc.org
FSC® C133609
The mark of responsible forestry

We are proud to have been **FSC®-certified** since 2017. All Marshalls manufactured street furniture products that include wood elements are produced using only FSC®-certified (FSC-C133609) hardwood and softwood timber from **well managed forests** and other controlled sources.

100% of concrete and natural stone products are **fully recyclable**

We're proud to pay our fair share of tax – we've kept the **Fair Tax Mark** since 2015

Our developments in design, manufacture and technology negate the need for bulky and obtrusive security, enabling those who design our city spaces to think more creatively about how they can include Hostile Vehicle Mitigation within landscape design features.

Our environment impacts everything we do. **The better our environment, the better we can be.** Our aim is to help create a safe and aesthetically pleasing environment where people want to spend time.

Marshalls' integrated Landscape Protection approach involves the application of **creative thinking**, using our engineering and design know-how to create spaces that are **safer by design from the outset**.

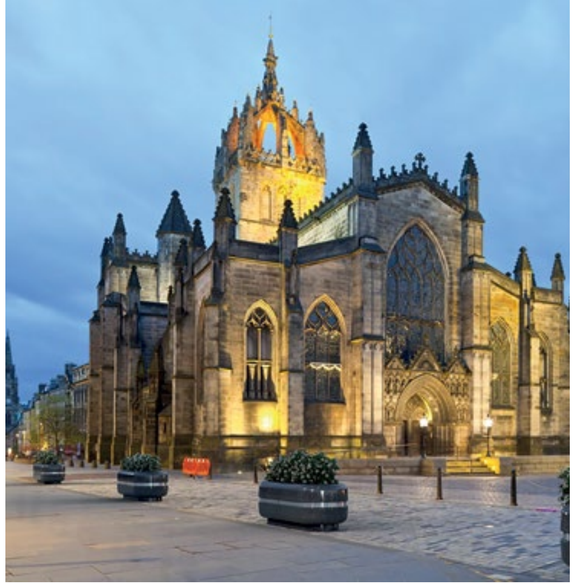
Contents

Protective, aesthetically pleasing security

The terror threat posed to the public has evolved dramatically over the last few years. Large-scale, meticulously planned bomb attacks have given way to vehicle assaults that target pedestrians. Our products help protect and enhance our landscape environments, safeguarding people, buildings and the spaces they occupy from multiple levels of threat, whether they are accidental collisions, criminal ram-raids or terrorist attacks.

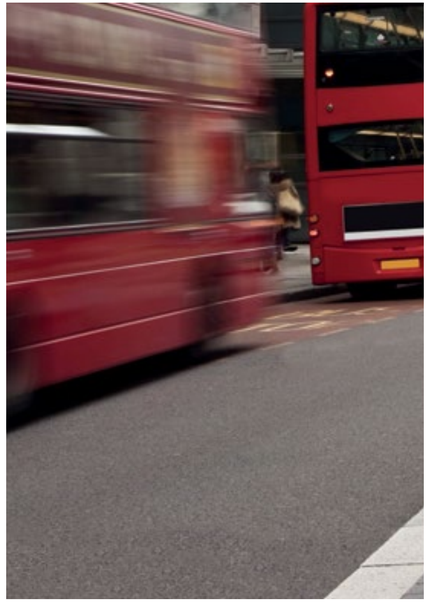
We believe that those in charge of specifying for security must assign a greater role to design aesthetics when it comes to choosing products to prevent vehicle attacks.

Concrete blocks and barricades have previously been common methods of security used to protect areas of high footfall, such as city centres, airports and sports stadiums. These approaches of security make spaces feel hostile and heavily defended.



Ideally, protective measures should be so well integrated into scenes that uninitiated passers-by don't realise they have been put in place for their protection, **keeping people safe... not scared®**

Inner strength and **outer beauty**



RhinoGuard® EOS Seating

The multi-purpose RhinoGuard® protective EOS seat combines form, function and strength, offering not just a contemporary seating solution, but also security and resilience for a range of applications.

The seat frame has been successfully crash tested at 3 different scenarios using a 7.5 tonne vehicle travelling at 30mph, giving full reassurance of its inner strength.

Constructed using FSC®-certified Iroko timber and Ferrocast®, known for its resilience, a variety of looks can be achieved with a range of colour options, in order to suit the requirements of any scheme.

Security specifications

7.5 TONNES PAS 68

30 MPH

V/7500(N2)/48/90:3.1/0.0
Rear impact test

V/7500(N2)/48/90:0.0/0.0
Front impact test

V/7500(N2)/48/90:2.7/0.0
Gap impact test with bollard

MADE IN BRITAIN

Ferrocast®

Seat ends available in any standard RAL colour. Bespoke design options are also available

Decorative

Mild Steel

Front and back panels with the option of powder coating in any standard RAL colour

Timber

FSC®-certified Iroko timber

Overall height above ground (mm)	887
Overall height inc. root (mm)	1237
Seat height (mm)	460
Length x width (mm)	1265 x 678
Foundation type	Reinforced concrete
Foundation length x width x height (mm)	2400 x 1000 x 430
Weight (kg)	190

Original

Manhattan

Natural Stone

Standard colours / materials

Ferrocast®

Pure White RAL 9010 · Agate Grey RAL 7038 · Telegrey 1 RAL 7045 · Grey Aluminium RAL 9007 · White Aluminium RAL 9006 · Black RAL 9005

Gentian Blue RAL 5010 · Moss Green RAL 6005 · Traffic Yellow RAL 1023 · Traffic Red RAL 3020 · Sepia Brown RAL 8014

Natural Stone

Thornlake · Laurel Bank · Brackendale · Brownridge · Sander Red

Timber FSC®-certified

Iroko

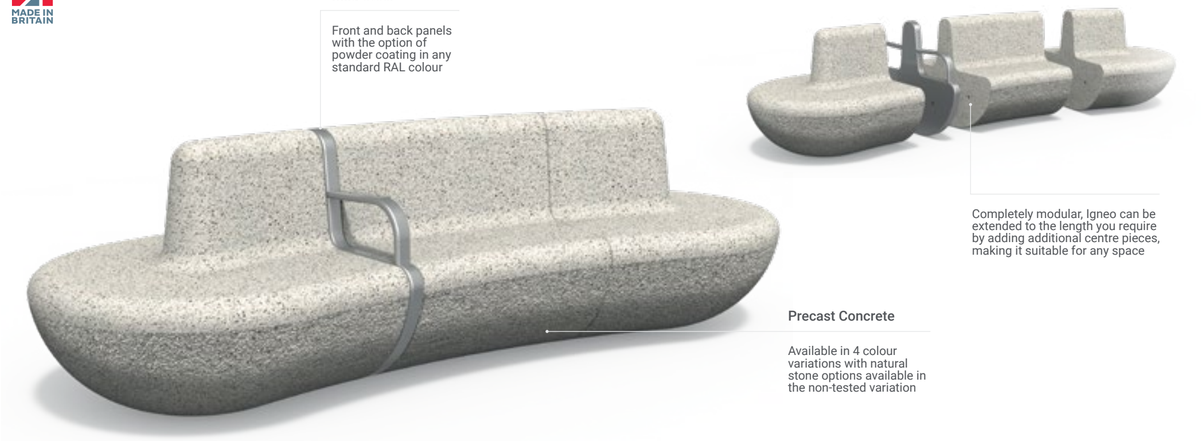
FSC www.fsc.org FSC® C133609 The mark of responsible forestry

Mild steel

MADE IN BRITAIN

Mild Steel

Front and back panels with the option of powder coating in any standard RAL colour



Completely modular, Igneo can be extended to the length you require by adding additional centre pieces, making it suitable for any space

Precast Concrete

Available in 4 colour variations with natural stone options available in the non-tested variation

Overall height above ground (mm)	874
Overall height inc. root (mm)	1159
Seat height (mm)	474
Length x width (mm)	*3017 x 1240
Foundation type	Reinforced concrete
Foundation length x width x height (mm)	2400 x 1600 x 500
Weight (kg)	Ferrocast® arm 21.5 / end section 1000 / middle section 1200

**Igneo can be extended to the length you require with 3017mm being the minimum length*

Standard colours / materials

Standard RAL powder coated colours

Pure White RAL 9010 · Agate Grey RAL 7038 · Telegrey 1 RAL 7045 · Grey Aluminium RAL 9007

White Aluminium RAL 9006 · Black RAL 9005 · Gentian Blue RAL 5010 · Moss Green RAL 6005

Traffic Yellow RAL 1023 · Traffic Red RAL 3020 · Sepia Brown RAL 8014

Precast Concrete

Silver Grey · Anthracite · Conservation Silver Grey · Conservation Charcoal

RhinoGuard® Igneo Seating

Vehicular-borne threats are a reality in many modern urban environments and with the RhinoGuard® Igneo Protective Seat, safety and security combined with a subtle visual appeal can be achieved.

Crash tested on two occasions, pinpointing different locations of the seat, Igneo can successfully withstand impact from a 7.5 tonne vehicle travelling at 40mph.

Manufactured using precast concrete, Igneo is available in 4 colour variations, all finished with an anti-graffiti coating. The optional armrests are manufactured using Ferrocast®, known for its resilience. These are available in a range of RAL colours in order to achieve the look you desire.

Security specifications

7.5 TONNES PAS 68

40 MPH

V/7500(N2)/64/90:3.7/0.0
Front impact test

V/7500(N2)/64/90:3.5/0.0
Gap impact with bollard test

RhinoGuard®
Kirkos Seating

Manufactured in the UK, RhinoGuard® Kirkos consists of five standard solutions designed around a bollard centrepiece and provides a simple yet effective way of enhancing the environment whilst providing the appropriate level of defence required.

Whilst security must always be paramount, areas don't need to be transformed in to steel fortresses and with RhinoGuard® Kirkos, inclusive and aesthetically pleasing spaces can be created keeping people safe... not scared®.

Security specifications

**Various ratings available with a 7.2 tonne vehicle at 50mph being the strongest specification

Mild Steel

with the option of powder coating

Timber

FSC®-certified Iroko hardwood

Bollard

Choose from a selection of bollards to achieve your design and specification requirements

Standard colours / materials

Standard RAL & ADAPTA powder coated colours

Pure White RAL 9010	Agate Grey RAL 7038	Telegrey 1 RAL 7045	Grey Aluminium RAL 9007	White Aluminium RAL 9006	Graphite Grey RAL 7024	Black RAL 9005	Sepia Brown RAL 8014	Corten (RT-8286-I)
Traffic Red RAL 3020	Carmine Red RAL 3002	Traffic Yellow RAL 1023	Yellow Green RAL 6018	May Green RAL 6017	Moss Green RAL 6005	Gentian Blue RAL 5010	Brilliant Blue RAL 5007	Sky Blue RAL 5015

Timber FSC®-certified

Iroko

Mild steel

RhinoGuard® Double Hoop Seat

Overall height above ground (mm)	1090
Overall height inc. root (mm)	*Various
Seat height (mm)	500
Length x width (mm)	3130 x 1370
Foundation type	*Various
Foundation length x width x height (mm)	*Various
Weight (kg)	235

Dependent on core selection. See pages 42 - 43 for options

RhinoGuard® Single Hoop Seat

Overall height above ground (mm)	1090
Overall height inc. root (mm)	*Various
Seat height (mm)	500
Length x width (mm)	1740 x 1370
Foundation type	*Various
Foundation length x width x height (mm)	*Various
Weight (kg)	110

Dependent on core selection. See pages 42 - 43 for options

RhinoGuard® Kirkos Seating

Timber

FSC®-certified
Iroko hardwood

Bollard

Choose from a selection of bollards to achieve your design and specification requirements

Mild Steel

with the option of powder coating

Standard colours / materials

Standard RAL & ADAPTA powder coated colours

Pure White RAL 9010	Agate Grey RAL 7038	Telegrey 1 RAL 7045	Grey Aluminium RAL 9007	White Aluminium RAL 9006	Graphite Grey RAL 7024	Black RAL 9005	Sepia Brown RAL 8014	Corten (RT-8286-I)
Traffic Red RAL 3020	Carmine Red RAL 3002	Traffic Yellow RAL 1023	Yellow Green RAL 6018	May Green RAL 6017	Moss Green RAL 6005	Gentian Blue RAL 5010	Brilliant Blue RAL 5007	Sky Blue RAL 5015

MADE IN BRITAIN

Mild Steel

with the option of powder coating

Timber

FSC®-certified
Iroko hardwood

Timber FSC®-certified

Iroko

FSC www.fsc.org FSC® C133609 The mark of responsible forestry

Mild steel

RhinoGuard® Twist Seat

Overall height above ground (mm)	1090
Overall height inc. root (mm)	*Various
Seat height (mm)	500
Length x width (mm)	2730 x 2320
Foundation type	*Various
Foundation length x width x height (mm)	*Various
Weight (kg)	240

**Dependent on core selection. See pages 42 - 43 for options*

RhinoGuard® Planter

Overall height above ground (mm)	1200
Overall height inc. root (mm)	*Various
Length x width (mm)	1945 x 365
Foundation type	*Various
Foundation length x width x height (mm)	*Various
Weight (kg)	195

**Dependent on core selection. See pages 42 - 43 for options*

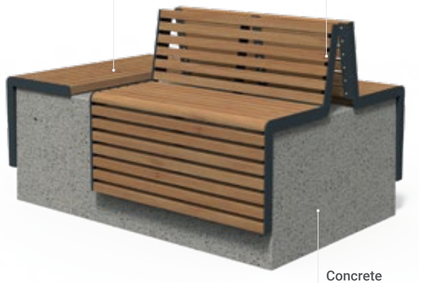
RhinoGuard® Double Planter Seat

Overall height above ground (mm)	1200
Overall height inc. root (mm)	*Various
Seat height (mm)	500
Length x width (mm)	2766 x 1350
Foundation type	*Various
Foundation length x width x height (mm)	*Various
Weight (kg)	310

**Dependent on core selection. See pages 42 - 43 for options*

MADE IN BRITAIN

RhinoBlok double seat 1000 with end bench 1000



Standard colours / materials

Concrete

Silver Grey

Mid Grey

Timber FSC®-certified

Iroko

FSC www.fsc.org FSC® C133609 The mark of responsible forestry

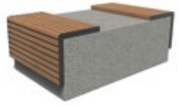
RhinoGuard® RhinoBlok

Overall height above ground (mm)	580
Overall height inc. root (mm)	710
Seat height (mm)	580
Length x width (mm)	1600 x 1000
Foundation type	Precast concrete
Foundation length x width x height (mm)	2120 x 1520 x 200
Weight (kg)	2500

Standard Configurations

RhinoBlok

RhinoBlok
Timber top

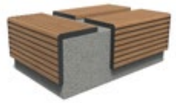


RhinoBlok
Timber end bench 1000

RhinoBlok
Timber single bench 1600

RhinoBlok
Timber double bench 1600

RhinoBlok
Timber end seat 1000



RhinoBlok
Timber triple bench 1000

RhinoBlok
Timber single seat 1600

RhinoBlok
Timber double seat 1600

	Timber Top	Bench 1000	Bench 1600	Seat 1000	Seat 1600
Length x width x height (mm)	1600 x 1000 x 50	1000 x 460 x 460	1600 x 460 x 460	1000 x 515 x 805	1600 x 515 x 805
Seat height (mm)	N/A	630	630	630	630
Weight (kg)	50	35	50	45	65

Create your desired configuration using a variety of seating elements

RhinoBlok Timber seat 1600

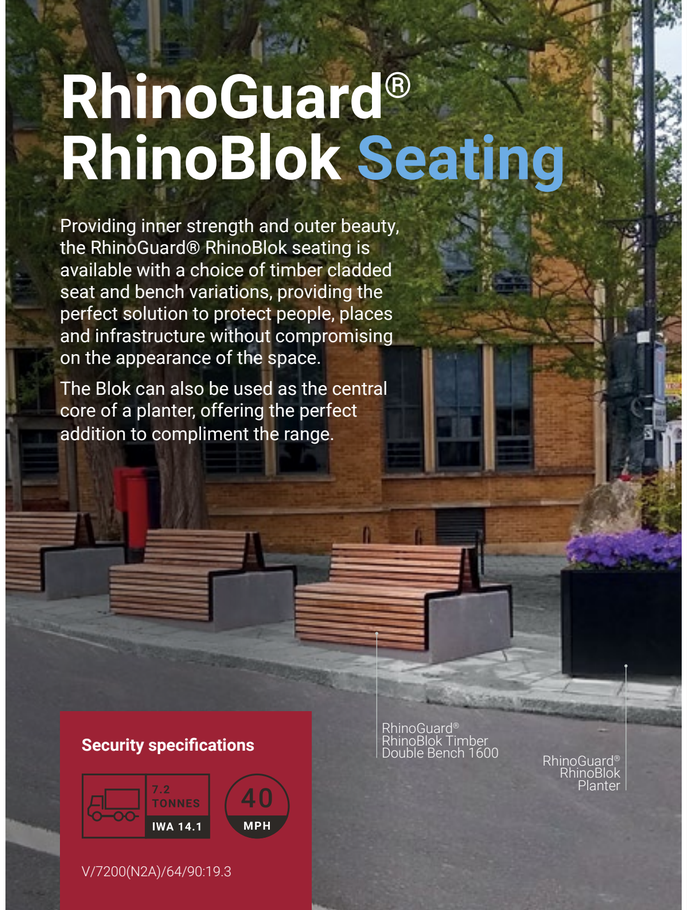
RhinoBlok Timber bench 1600

RhinoBlok Timber seat 1000

RhinoBlok Timber bench 1000

RhinoBlok Timber top

RhinoBlok



RhinoGuard® RhinoBlok Seating

Providing inner strength and outer beauty, the RhinoGuard® RhinoBlok seating is available with a choice of timber cladded seat and bench variations, providing the perfect solution to protect people, places and infrastructure without compromising on the appearance of the space.

The Blok can also be used as the central core of a planter, offering the perfect addition to compliment the range.

Security specifications

7.2 TONNES IWA 14.1

40 MPH

V/7200(N2A)/64/90:19.3

RhinoGuard® Olimpo Seating

Olimpo combines functionality and beauty.

Manufactured using reconstituted natural marble stones or white granite, the seat and planter combined is available with a polished or bush hammered finish for a glossy or rough appearance, providing the perfect solution for classic and modern urban environments.

Available with a choice of security ratings to suit the requirement, Olimpo is offered with or without the back rest element and in a range of colour options, allowing a range of aesthetic design options to be achieved.

Security specifications

**Various ratings available with a 7.2 tonne vehicle at 50mph being the strongest specification

This is an engineered solution based around our current offering of tested products

Available without the 360° backrest

Standard colours / materials

Precious stone

Concrete

Overall height above ground (mm)	880
Overall height inc. root (mm)	*Various
Seat height (mm)	480
Length x width Ø (mm)	2500
Foundation type	*Various
Foundation length x width x height (mm)	*Various
Weight (kg)	3550

*Dependent on core selection. See pages 42 - 43 for options

RhinoGuard® Universo Seating

With its sculptured, circular form and unique style, Universo stands out in any environment.

Manufactured using sandblasted natural stone or concrete, the organic seating elements can be used singularly or combined to create a beautiful and creative space.

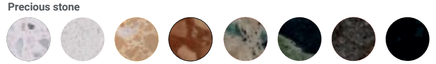
Security specifications

**Various ratings available with a 7.2 tonne vehicle at 50mph being the strongest specification

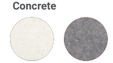
This is an engineered solution based around our current offering of tested products

Standard colours / materials

Precious stone



Concrete



Overall height above ground (mm)	850
Overall height inc. root (mm)	*Various
Seat height (mm)	424
Length x width Ø (mm)	1900
Foundation type	*Various
Foundation length x width x height (mm)	*Various
Weight (kg)	2360

*Dependent on core selection. See pages 42 - 43 for options

RhinoGuard® Large Giove Planter

The RhinoGuard® Giove planter is available in two sizes and provides an elegant HVM solution for introducing planting in to the public realm.

The planters are cast from a mix of concrete and fine Italian marble aggregates sourced from Italy. The use of high-quality natural marble ensures long term colour consistency. Each planter can either be polished during manufacture to leave a smooth surface, or bush hammered for a rough appearance.

Security specifications

7.5 TONNES
PAS 68

50 MPH

V/7500(N2)/64/90:0.0/0.0
Single Frame impact test

V/7500(N3)/80/90:1.7/0.0
Single Frame impact test

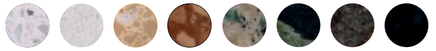
V/7500(N3)/80/90:3.8/35.5
Complete Planter test

With its 1,225 litre capacity, the large Giove planter has been designed to accommodate the root ball of a tree.

All visible surfaces are covered with a transparent anti-decay coating and upon request an anti-graffiti coating is also available

Standard colours / materials

Precious stone



Bianco Carrara · Botticino · Giallo Mori · Rosso Verona · Veneziano · Verde Alpi · Porfido · Nero Erbano

Concrete

White Granite

Overall height above ground (mm)	1100
Overall height inc. root (mm)	*Various
Length x width Ø (mm)	1900
Foundation type	*Various
Foundation length x width x height (mm)	*Various
Weight (kg)	3005

**Dependent on core selection. See pages 42 - 43 for options*

RhinoGuard® Small Giove Planter

The RhinoGuard® Small Giove is the younger sister of the Large Giove planter. Scaled down in size, these can be used alongside one another to create a variety of layouts or individually to add a protective but aesthetically pleasing feature to any urban landscape.

The strength and durability of the material ensures performance in all climates.

Security specifications

1.5-7.2 TONNES

40 MPH

**Various ratings available with a 7.2 tonne vehicle at 40mph being the strongest specification

This is an engineered solution based around our current offering of tested products

All visible surfaces are covered with a transparent anti-decay coating and upon request an anti-graffiti coating is also available

Standard colours / materials

Precious stone

Bianco Carrara · Botticino · Giallo Mori · Rosso Verona · Veneziano · Verde Alpi · Porfido · Nero Erbano

Concrete

White Granite · Grey Concrete

Overall height above ground (mm)	735
Overall height inc. root (mm)	*Various
Length x width Ø (mm)	1500
Foundation type	*Various
Foundation length x width x height (mm)	*Various
Weight (kg)	1500

**Dependent on core selection. See pages 42 - 43 for options*

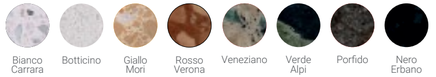
RhinoGuard® Square Planter

Like the RhinoGuard® Rectangle planter, the square variant provides a durable and aesthetically pleasing Hostile Vehicle Mitigation solution.

Available in a range of colour variations and finishes, the planter has a solid construction and requires little maintenance.

Standard colours / materials

Precious stone



Concrete

Overall height above ground (mm)	950
Overall height inc. root (mm)	*Various
Length x width (mm)	1100 x 1100
Foundation type	*Various
Foundation length x width x height (mm)	*Various
Weight (kg)	977

**Dependent on core selection. See pages 42 - 43 for options*

Security specifications

**Various ratings available with a 7.2 tonne vehicle at 50mph being the strongest specification

This is an engineered solution based around our current offering of tested products

RhinoGuard® Rectangle Planter

The RhinoGuard® Rectangle planter provides an economical and flexible way to enhance an urban landscape with natural elements whilst the durability and strength of the material ensures performance in all climates.

The robust geometric construction allows the planter to be strategically placed to restrict vehicular access and guide pedestrian flow, providing a practical yet decorative addition to any landscape project.

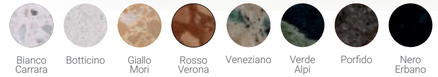
Security specifications

**Various ratings available with a 7.2 tonne vehicle at 50mph being the strongest specification

This is an engineered solution based around our current offering of tested products

Standard colours / materials

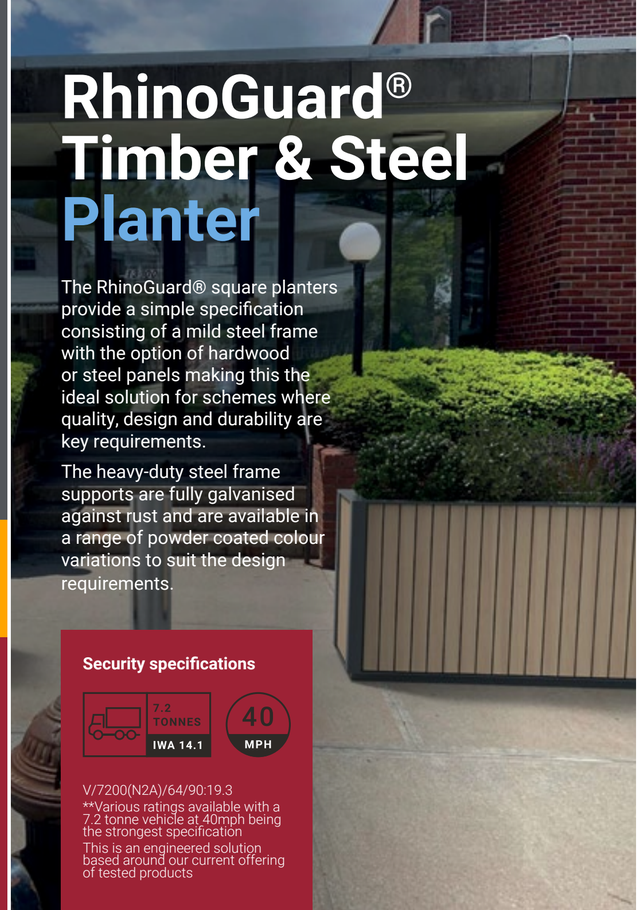
Precious stone



Concrete

Overall height above ground (mm)	950
Overall height inc. root (mm)	*Various
Length x width (mm)	1800 x 700
Foundation type	*Various
Foundation length x width x height (mm)	*Various
Weight (kg)	1265

**Dependent on core selection. See pages 42 - 43 for options*



RhoGuard® Timber & Steel Planter

The RhoGuard® square planters provide a simple specification consisting of a mild steel frame with the option of hardwood or steel panels making this the ideal solution for schemes where quality, design and durability are key requirements.

The heavy-duty steel frame supports are fully galvanised against rust and are available in a range of powder coated colour variations to suit the design requirements.

Security specifications

7.2 TONNES IWA 14.1 | 40 MPH

V/7200(N2A)/64/90:19.3

**Various ratings available with a 7.2 tonne vehicle at 40mph being the strongest specification

This is an engineered solution based around our current offering of tested products

MADE IN BRITAIN

Mild steel

Galvanised mild steel frame. Powder coated to any standard RAL - see page 13

Timber

FSC®-certified Iroko timber

Aluminium

Aluminium infill panels. Powder coated to any standard RAL - see page 13

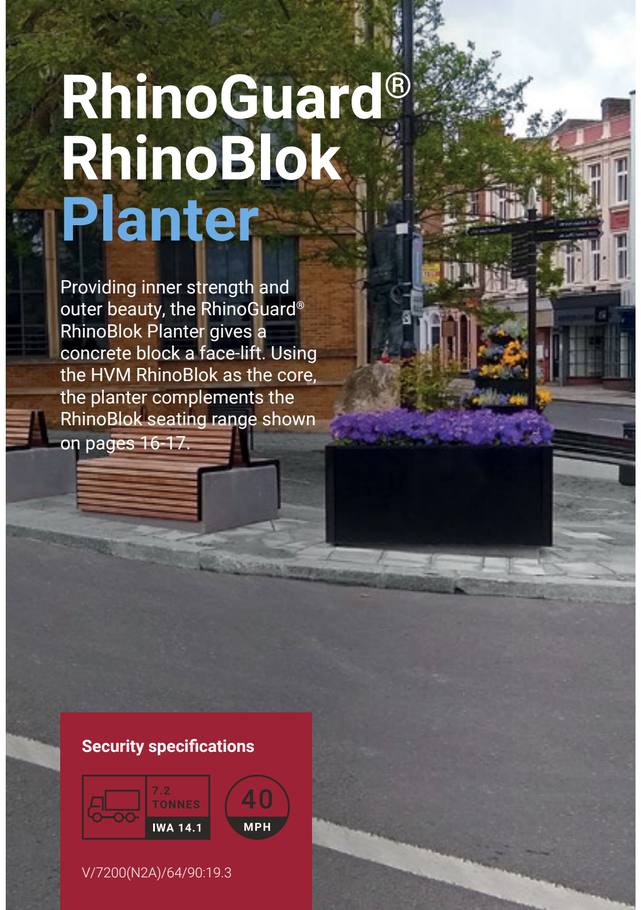
Standard colours / materials

Timber FSC®-certified: Iroko

Mild steel

Overall height above ground (mm)		950		
Overall height inc. root (mm)		*Various		
Length x width (mm)		1900		
Foundation type		*Various		
Foundation length x width x height (mm)		*Various		
Weight (kg)	**Timber**	235	220	295
	Steel	240	225	300

**Dependent on core selection. See pages 42 - 43 for options*



RhoGuard® RhinoBlok Planter

Providing inner strength and outer beauty, the RhoGuard® RhinoBlok Planter gives a concrete block a face-lift. Using the HVM RhinoBlok as the core, the planter complements the RhinoBlok seating range shown on pages 16-17.

Security specifications

7.2 TONNES IWA 14.1 | 40 MPH

V/7200(N2A)/64/90:19.3

MADE IN BRITAIN

Aluminium

Aluminium infill panels. Powder coated to any standard RAL - see page 13

Mild steel

Galvanised mild steel frame. Powder coated to any standard RAL - see page 13

Timber Planter Sleeve

Mild Steel Planter Sleeve

Timber

FSC®-certified Iroko timber

Mild steel

Galvanised mild steel frame. Powder coated to any standard RAL - see page 13

Standard colours / materials

Timber FSC®-certified: Iroko

Mild steel

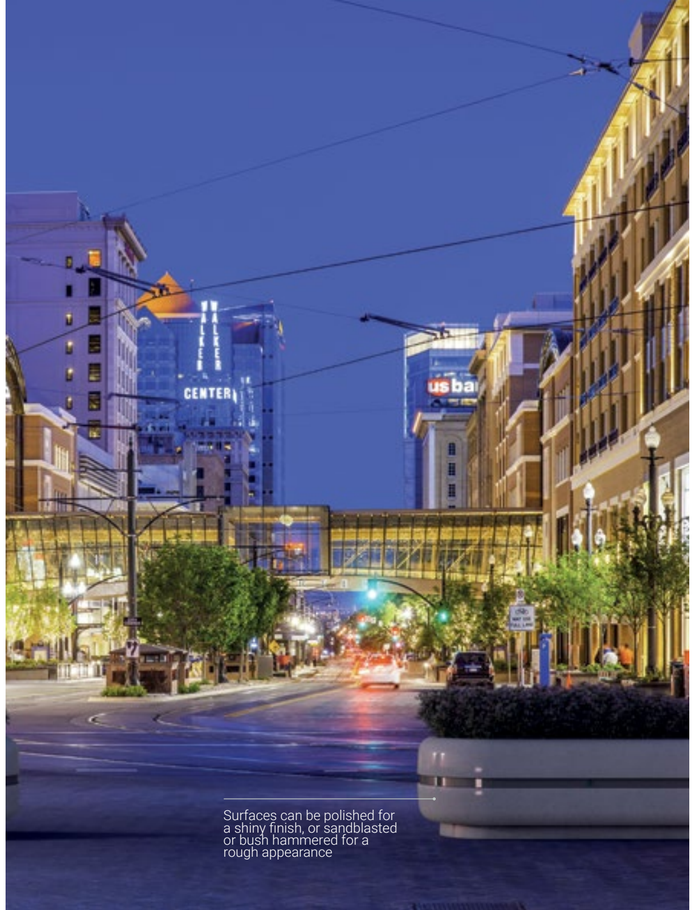
	RhinoBlok Steel Planter Sleeve	RhinoBlok Timber Planter Sleeve
Length x width x height (mm)	1800 x 1200 x 1000	
Weight (kg)	300	295

For RhinoGuard® RhinoBlok specification details or for further information on the RhinoBlok seating options please see page 16 -17

RhinoGuard® Cristina Planter

The Cristina planter is composed of a base and two elements which are divided by a central band of copper or stainless steel which follows the full circumference of the planter.

Manufactured from precious stone or concrete, Cristina is available in a range of security ratings, providing inner strength and outer beauty and will enhance the aesthetics of any environment.

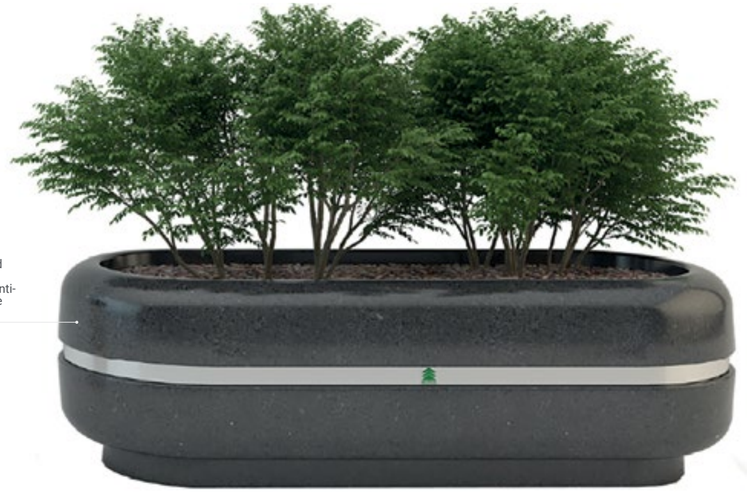


Surfaces can be polished for a shiny finish, or sandblasted or bush hammered for a rough appearance

Central band is available in copper or stainless steel with a satin finish treatment

All visible surfaces are covered with a transparent anti-decay coating and upon request an anti-graffiti coating is also available

Reinforced and fitted with lifting eyes for ease of handling



Overall height above ground (mm)	600
Overall height inc. root (mm)	*Various
Length x width (mm)	2000 x 820
Foundation type	*Various
Foundation length x width x height (mm)	*Various
Weight (kg)	880

**Dependent on core selection. See pages 42 - 43 for options*

Standard colours / materials

Precious stone

Concrete

Security specifications

**Various ratings available with a 7.2 tonne vehicle at 40mph being the strongest specification

This is an engineered solution based around our current offering of tested products

RhinoGuard® Classica 1220 Planter

Classica is available in two sizes - the 300 litre Classica 1220 and the 600 litre Classica 1620.

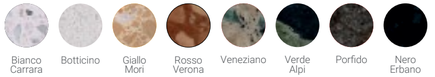
Manufactured from precious stone or concrete, the versatile, circular form of each planter is enhanced with a band of copper or stainless steel in the central groove which follows the full circumference of the planter.

All visible surfaces are covered with a transparent anti-decay coating and upon request an anti-graffiti coating is also available

Surfaces can be polished for a shiny finish, or sandblasted or bush hammered for a rough appearance

Standard colours / materials

Precious stone



Concrete

Overall height above ground (mm)	650
Overall height inc. root (mm)	*Various
Length x width Ø (mm)	1220
Foundation type	*Various
Foundation length x width x height (mm)	*Various
Weight (kg)	910

**Dependent on core selection. See pages 42 - 43 for options*

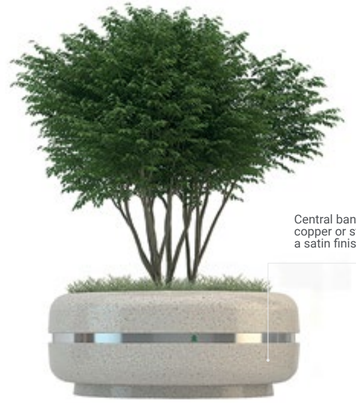
Security specifications

**Various ratings available with a 7.2 tonne vehicle at 40mph being the strongest specification

This is an engineered solution based around our current offering of tested products

RhinoGuard® Classica 1620 Planter

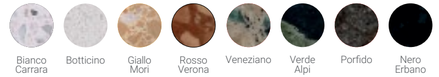
Manufactured from precious stone or concrete, the Classica planters are available in a range of security ratings, providing inner strength and outer beauty and will enhance the aesthetics of any environment.



Central band is available in copper or stainless steel with a satin finish treatment

Standard colours / materials

Precious stone



Concrete

Overall height above ground (mm)	650
Overall height inc. root (mm)	*Various
Length x width Ø (mm)	1620
Foundation type	*Various
Foundation length x width x height (mm)	*Various
Weight (kg)	1468

**Dependent on core selection. See pages 42 - 43 for options*

Security specifications

**Various ratings available with a 7.2 tonne vehicle at 40mph being the strongest specification

This is an engineered solution based around our current offering of tested products

RhinoGuard® Saturno Planter

Available in precious stone or concrete in a range of conglomerate colour variations, Saturno provides a beautiful whilst functional Hostile Vehicle Mitigation solution that doesn't compromise on the aesthetics of a landscaping project.

Surfaces can be polished for a shiny finish, or sandblasted or bush hammered for a rough appearance

All visible surfaces are covered with a transparent anti-decay coating and upon request an anti-graffiti coating is also available

Standard colours / materials

Precious stone

Bianco Carrara | Botticino | Giallo Mori | Rosso Verona | Veneziano | Verde Alpi | Porfido | Nero Erbano

Concrete

White Granite

Overall height above ground (mm)	1198
Overall height inc. root (mm)	*Various
Length x width Ø (mm)	1495
Foundation type	*Various
Foundation length x width x height (mm)	*Various
Weight (kg)	2393

**Dependent on core selection. See pages 42 - 43 for options*

Security specifications

**Various ratings available with a 7.2 tonne vehicle at 50mph being the strongest specification

This is an engineered solution based around our current offering of tested products

RhinoGuard® Esile Planter

The tapered profile of the Esile planter provides an elegant and contemporary Hostile Vehicle Mitigation solution, facilitating its integration in any environment.

Manufactured with Ultra High Performance Concrete which has been developed in recent decades for its exceptional properties of strength and durability, the Esile planter is freeze resistant and abrasion resistant, offering reduced maintenance and an extended life span.

Esile is available in a range of subtle or outgoing colour options to create a cheerful and vibrant atmosphere.

Security specifications

**Various ratings available with a 7.2 tonne vehicle at 40mph being the strongest specification

This is an engineered solution based around our current offering of tested products

All visible surfaces are covered with a transparent anti-decay coating and upon request an anti-graffiti coating is also available

Standard colours / materials

Ultratense concrete

UTC1 | UTC2 | UTC3 | UTC4 | UTC5 | UTC6 | UTC7

Overall height above ground (mm)	900
Overall height inc. root (mm)	*Various
Length x width Ø (mm)	677
Foundation type	*Various
Foundation length x width x height (mm)	*Various
Weight (kg)	279

**Dependent on core selection. See pages 42 - 43 for options*

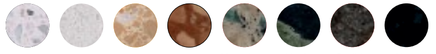
RhinoGuard® Orione Planter

The Orione planter is the perfect solution to bring timeless style in to urban streetscapes, retail centres and large foyers. Equipped with an internal stainless steel flower vase, the Hostile Vehicle Mitigation planter is offered in precious stone or concrete in various conglomerate shades.

All visible surfaces are covered with a transparent anti-decay coating and upon request an anti-graffiti coating is also available

Standard colours / materials

Precious stone



Bianco Carrara · Botticino · Giallo Mori · Rosso Verona · Veneziano · Verde Alpi · Porfido · Nero Erbano

Concrete

White Granite

Overall height above ground (mm)	816
Overall height inc. root (mm)	*Various
Length x width Ø (mm)	520
Foundation type	*Various
Foundation length x width x height (mm)	*Various
Weight (kg)	242

**Dependent on core selection. See pages 42 - 43 for options*

Security specifications

**Various ratings available with a 7.2 tonne vehicle at 40mph being the strongest specification

This is an engineered solution based around our current offering of tested products

RhinoGuard® Pegaso Planter

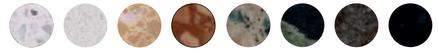
Pegaso is a cylindrical shaped planter available in conglomerate precious stone or concrete and is available in a variety of colour options.

Its softly curved profile offers a timeless design for both public and private spaces. Available in a range of security ratings, the planter provides inner strength and outer beauty and will enhance the aesthetics of any environment.

All visible surfaces are covered with a transparent anti-decay coating and upon request an anti-graffiti coating is also available

Standard colours / materials

Precious stone



Bianco Carrara · Botticino · Giallo Mori · Rosso Verona · Veneziano · Verde Alpi · Porfido · Nero Erbano

Concrete

White Granite

Overall height above ground (mm)	915
Overall height inc. root (mm)	*Various
Length x width Ø (mm)	640
Foundation type	*Various
Foundation length x width x height (mm)	*Various
Weight (kg)	374

**Dependent on core selection. See pages 42 - 43 for options*

Security specifications

**Various ratings available with a 7.2 tonne vehicle at 40mph being the strongest specification

This is an engineered solution based around our current offering of tested products

RhinoGuard® Steel GateKeeper®

The RhinoGuard® Steel GateKeeper® provides temporary protective measures for a number of applications such as Christmas markets or sporting events.

The steel variation has been successfully crash tested to IWA 14.1, providing protection against vehicles up to 2.5 tonnes travelling up to 30mph. The tested solution is pedestrian permeable, with vehicle access points and requires no anchorage in any form and can be quickly deployed across all surfaces without relying on kerbs or structural aids.

GateKeeper® is fully galvanised to protect against corrosion and is available with the option of power coating and branded customisation providing an ideal solution for use on busy high streets or at events

Security specifications

2.5 TONNES IWA 14.1

30 MPH

V2500(N1G)/48/90:5.2 – 11 unit crash test

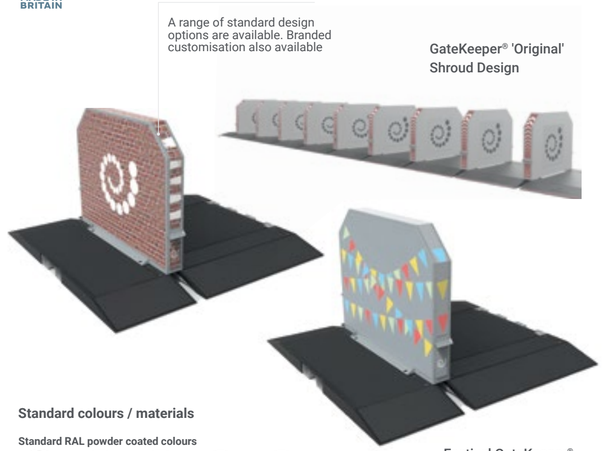
V2500(N1G)/48/90:11.7 – 5 unit crash test

MADE IN BRITAIN

Brick GateKeeper®
Individual Unit Design

A range of standard design options are available. Branded customisation also available

GateKeeper® 'Original' Shroud Design



Festival GateKeeper®
Individual Unit Design

Standard colours / materials

Standard RAL powder coated colours

Pure White RAL 9010	Agate Grey RAL 7038	Telegrey 1 RAL 7045	Grey Aluminium RAL 9007	White Aluminium RAL 9006
Gentian Blue RAL 5010	Moss Green RAL 6005	Traffic Yellow RAL 1023	Traffic Red RAL 3020	Sepia Brown RAL 8014	Black RAL 9005

RhinoGuard® Individual GateKeeper® Unit

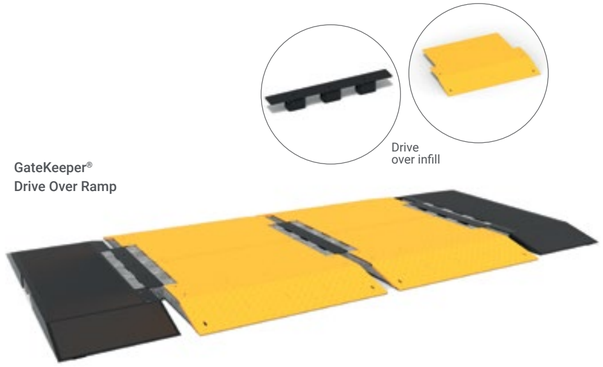
Individual unit length x width x height (mm)	1265 x 1876 x 1093
Individual unit weight (kg)	245

RhinoGuard® GateKeeper®

MADE IN BRITAIN

GateKeeper®
Drive Over Ramp

Drive over infill

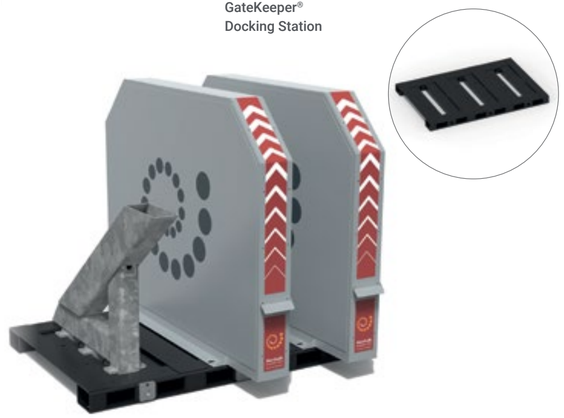


For installations requiring planned vehicular access, the dedicated GateKeeper® drive over ramps should be used. Fitting easily to the standard GateKeeper® base units, drive over ramps can support vehicles weighing up to 40 tonnes and can be used with or without protective uprights and shrouds in place. With uprights removed, drive over infill units can be fitted to eliminate potential trip hazards.

RhinoGuard® GateKeeper® Drive Over Ramp

Individual unit length x width x height (mm)	990 x 88 x 1180
Individual unit weight (kg)	54

GateKeeper®
Docking Station



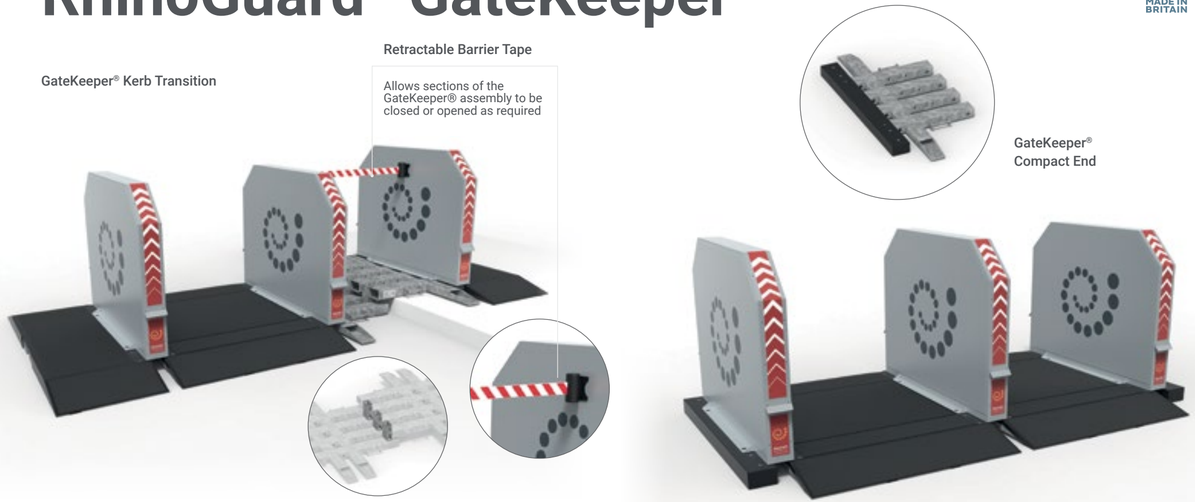
For installations where the uprights and shrouds are to be removed, the docking station provides safe and secure storage for the removed items.

The docking station is a free standing unit which can be positioned alongside the GateKeeper® assembly.

RhinoGuard® GateKeeper® Docking Station

Individual unit length x width x height (mm)	852 x 83 x 1260
Individual unit weight (kg)	85

RhinoGuard® GateKeeper®



Kerb transition joints allow GateKeeper® assemblies on roads and footpaths of varying heights to be connected in a single continuous run. Designed for use with 100mm high kerbs, the kerb transition can be customised if required.

RhinoGuard® GateKeeper® Kerb Transition

Individual unit length x width x height (mm)	628 x 180 x 60
Individual unit weight (kg)	8.5

Protruding just beyond the outside face of the barrier shroud, the compact end provides an alternative solution for installations with insufficient space for the standard end unit.

RhinoGuard® GateKeeper® Compact End

Individual unit length x width x height (mm)	803 x 1876 x 1093
Individual unit weight (kg)	215

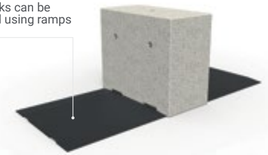
RhinoGuard® Concrete GateKeeper®

The pedestrian permeable RhinoGuard® concrete GateKeeper® has been successfully tested to government approved C-VAW standards, which provides proven resistance from ramming vehicles. During the test, different vehicles were used to demonstrate how the system would perform under various attack angles.

Security specifications

C-VAW

Tested to C-VAW standards
This product holds a CPNI vehicle attack delay standard (VADS) rating



Concrete

Raw finish, available in silver grey or mid grey

Standard colours / materials

Precious stone

RhinoGuard® Concrete GateKeeper® Unit

Individual unit length x width x height (mm)	1200 x 600 x 1000
Individual unit weight (kg)	1981

Protective Post & Rail

MADE IN BRITAIN

Marshalls Landscape Protection offers a range of protective Post and Rail systems which are available in a variety of styles and materials. We are also able to offer bespoke solutions to suit your requirements.

Please get in touch for more information.

Stainless Steel

Finish: brushed

Stainless Steel

Height (mm)	1000
Base diameter	Various based on rating requirements
Standard fixing	Root fixed

**Other size sleeves also available*

Mild Steel

Finish: powder coated in a range of RAL colours (see page 13)

Mild Steel

Height (mm)	1000
Base diameter	Various based on rating requirements
Standard fixing	Root fixed

Stainless Steel

Finish: bead blasted

GEO

Height (mm)	1000
Base diameter	Various based on rating requirements
Standard fixing	Root fixed

Mild Steel

Finish: powder coated in a range of RAL colours (see page 13)

DecorGuard

Height (mm)	1040
Base diameter	Various based on rating requirements
Standard fixing	Root fixed

Security specifications

**Various ratings available with a 7.5 tonne vehicle at 50mph being the strongest specification

		Core rating										
	Core security rating*	**15/30**	**25/10**	**25/20**	**25/40**	**35/30**	**72/30**	**72/40**	**72/50**	**75/30**	**75/40**	**75/50**
	Test standards	PAS 68	PAS 68	PAS 68	PAS 68	IWA14.1	IWA14.1	IWA14.1	IWA14.1	PAS 68	PAS 68	PAS 68
Product	**Stainless steel**	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Mild steel	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	GEO	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DecorGuard	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

**Core Security Rating: For example 15/30 = 1.5 tonne vehicle @ 30mph*

RhinoGuard® product options

MADE IN BRITAIN

Available core rating

The RhinoGuard® range has been designed to fulfil your aesthetic and security needs.

Our RhinoGuard® range of bollards are available with a wide selection of sleeve options, fixing types and foundation depths available to suit your scheme.

All our cores have been tested from 1.5 tonnes to 7.5 tonnes at various speeds up to 50mph.

				Standard Sleeve Options			
							
Test standard	Security rating*	Core diameter (mm)	Height above ground allowing for finishes (mm)	Mild Steel	Stainless Steel	Ferrocast®	GEO
PAS 68	15/30	114	865	✓	✓	✓	✓
PAS 170	25/10	75	800	✓	✓	✓	✓
PAS 170	25/20	139	800	✓	✓	✓	✓
PAS 68	25/40	168	865	✓	✓	✓	✓
		168	868	✓	✓	✓	✓
IWA 14.1	35/30	139	900	✓	✓	✓	✓
IWA 14.1	72/30	N/A	787	✓	✓	✓	✓
IWA 14.1	72/40	194	990	✓	✓	✓	✓
IWA 14.1	72/50	244	935	✓	✓	✓	✓
PAS 68	75/30	194	858	✓	✓	✓	✓
PAS 68	75/40	244	1000	✓	✓	✓	✓
		168	1005	✓	✓	✓	✓
PAS 68	75/50	194	1000	✓	✓	✓	✓
		244	1030	✓	✓	✓	✓

**Core Security Rating: For example 15/30 = 1.5 tonne vehicle @ 30mph*

RhinoGuard® Bollards

The RhinoGuard® bollard range comes with an variety of foundation types, including our RhinoGuard® Ultra Shallow 50® bollard which only requires a 50mm excavation depth.

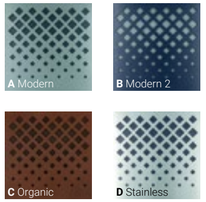
				Core rating						
										
Test standard	Security rating*	Core diameter (mm)	Height above ground allowing for finishes (mm)	Ultra Shallow 50® (50mm deep)	Super Shallow 100® (100mm deep)	Shallow Mount (150-200mm deep)	Shallow Mount - Removable (150-200mm deep)	Reinforced Concrete Cage (500-750mm deep)	Reinforced Concrete Cage - Removable (500-750mm deep)	Lift Assist (1600mm deep)
PAS 68	15/30	114	865					✓	✓	
PAS 170	25/10	75	800					✓		
PAS 170	25/20	139	800					✓		
PAS 68	25/40	168	865					✓	✓	
		168	868			✓				
IWA 14.1	35/30	139	900					✓	✓	✓
IWA 14.1	72/30	N/A	787	✓						
IWA 14.1	72/40	194	990		✓		✓			
IWA 14.1	72/50	244	935			✓	✓			
PAS 68	75/30	194	858			✓	✓			
PAS 68	75/40	244	1000			✓	✓			
		168	1005					✓	✓	
PAS 68	75/50	194	1000					✓		
		244	1030					✓	✓	

Please note not all products are available with each foundation. Speak to a member of our team for more information

RhinoGuard® Decorative Sleeves

MADE IN BRITAIN

Diamond Fade



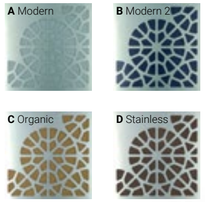
A Diamond Fade - RAL 9007 Grey Aluminium + RAL 7016 Anthracite Grey

B Diamond Fade - RAL 5011 Steel Blue + RAL 9007 Grey Aluminium

C Diamond Fade - Corten (RT-8286-I) + Bronze (RT-8102-1)

D Diamond Fade - Stainless Steel + RAL 5011 Steel Blue

Dubai



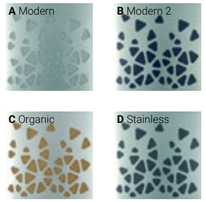
A Dubai - Stainless Steel + RAL 9007 Grey Aluminium

B Dubai - Stainless Steel + RAL 5011 Steel Blue

C Dubai - Stainless Steel + Corten Fossil Base (RT-1553)

D Dubai - Stainless Steel + Bronze (RT-8102-1)

Flower Burst



A Flower Burst - Stainless Steel + RAL 9007 Grey Aluminium

B Flower Burst - Stainless Steel + RAL 5011 Steel Blue

C Flower Burst - Stainless Steel + Corten Fossil Base (RT-1553)

D Flower Burst - Stainless Steel + RAL 7016 Anthracite Grey

Standard colours / materials

Standard RAL powder coated colours

ADAPTA powder coated colours

The decorative outer sleeve is offered in brushed stainless steel as standard but can be powder coated on request.

The inner core is also available in any standard RAL or ADAPTA powder coat.

Stainless steel

Security specifications

**Various ratings available with a 7.5 tonne vehicle at 50mph being the strongest specification

Height (mm)	1000
Base diameters Ø (mm)	204, 254
Weight (kg)	35, 52

RhinoGuard® Natural Stone Sleeves

Choosing natural stone means opting for a unique product. The natural stone bollard sleeves have an authentic, timeless character and provide a durable and sustainable choice.

Available in 5 colour variations, the sleeves are tailored around your requirements and core selection so are available in numerous ratings to suit your scheme.

Chamfer Natural Stone Sleeve Brackendale shown

Security specifications

**Various ratings available with a 7.2 tonne vehicle at 50mph being the strongest specification

Chamfer Natural Stone Sleeve

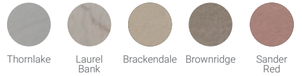
Shown in Laurel Bank

Fillet Natural Stone Sleeve

Shown in Thornlake

Standard colours / materials

Natural Stone



Height (mm)	Assorted sizes available
Diameter (kg)	Assorted sizes available

Sleeve size is tailored around the bollard core selected

RhinoGuard® Bespoke Sleeves

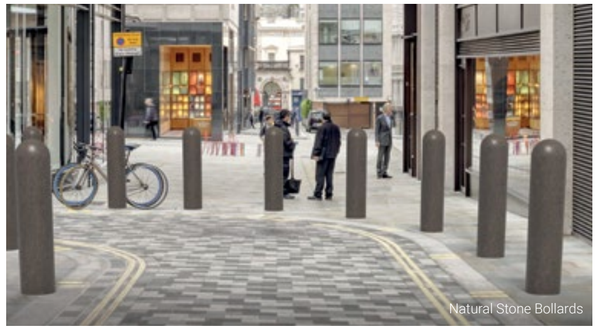
Utilising the experience and knowledge of our team of design engineers, we can develop bespoke sleeve styles in a range of materials and colour options to meet the requirements of any project.

Our design experience and production expertise are your guarantee of success. We strive to offer a unique service that supports you from your first concept sketches right through to installation of the finished product.

Please get in touch if you would like more information.

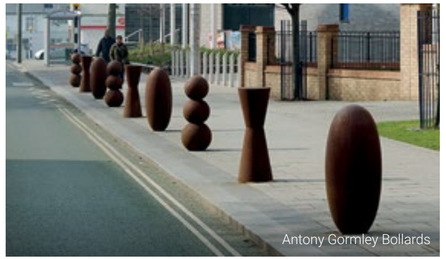

Billy & Belinda Bollards


PiPencil Bollards


Natural Stone Bollards


Valentines Bespoke Bollards


Decorative Flower Burst Bollards


Antony Gormley Bollards

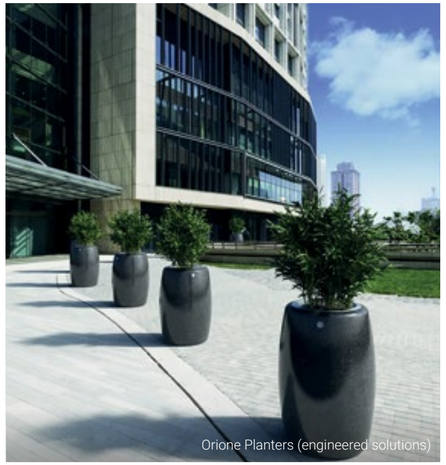
We promise to bring your vision to life through our **bespoke product solutions** service.


Bespoke Designed Bollards


Rugby Bespoke Bollards


Cristina Planters (engineered solutions)


Sloped Bollards


Orione Planters (engineered solutions)

RhinoGuard® Super Shallow 100® Bollard Series

As the Super Shallow 100® requires little excavation, the bollard series makes the perfect solution to use in areas with high utilities or services. Additionally, the level of waste during install is minimal.

The slim profile of the bollard core means a varied choice of sleeve designs and material options are also offered with the Super Shallow 100®. With a breadth of aesthetic choices available, the bollards can either blend in with the surrounding environment or can create a unique design feature in any space. The tapered design of the core also means that bespoke designs can be achieved to compliment schemes, events or branding.

Security specifications

7.2 TONNES IWA 14.1 | 40 MPH

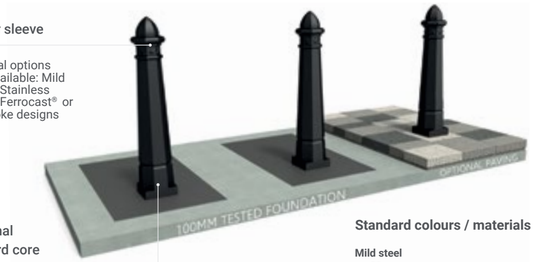
V/7200(N2A)/64/90:7.6

Bespoke sleeve option shown

Both the Ultra Shallow 50® and the Super Shallow 100® core bollard elements can also be incorporated in to our seating, cycle stands, lighting, handrails and wayfinding solutions, offering a variety of innovative and protective design solutions to meet a range of requirements.

Outer sleeve

Several options are available: Mild Steel, Stainless Steel, Ferrocast® or bespoke designs



Internal bollard core

Mild steel with a galvanised finish

Standard colours / materials

Mild steel

Also available with Standard RAL sowder coated colours. See page 13

Overall height above ground (mm)	995
Width x depth Ø (mm)	194
Foundation depth (mm)	100
Weight (kg)	520

RhinoGuard® Ultra Shallow 50® Bollard Series

Requiring just a 50mm excavation depth, the RhinoGuard® Ultra Shallow 50® is the perfect solution for use on bridges and other areas where underground service and utilities affect installation.

The bollard series has been successfully crash tested in two different foundations under the IWA-14.1 standard and is capable of stopping a 7.2 tonne vehicle travelling at 30mph.

Security specifications

7.2 TONNES IWA 14.1 | 30 MPH

V/7200(N2A)/48/30:1.1
Footpath foundation impact test

V/7200(N2A)/48/30:1.1
Cycleway foundation impact test

Westminster sleeve shown

Along with the Westminster style Ferrocast® sleeve design and the standard mild and stainless steel options, the slim profile of the bollard core allows for a varied choice of sleeves.

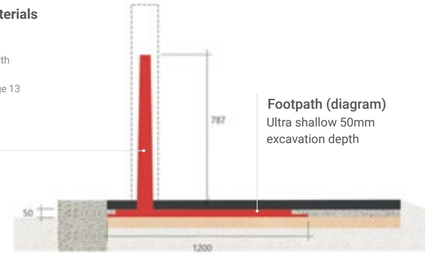
Standard colours / materials

Mild steel

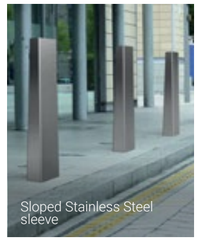
Also available with Standard RAL sowder coated colours. See page 13

Bollard core

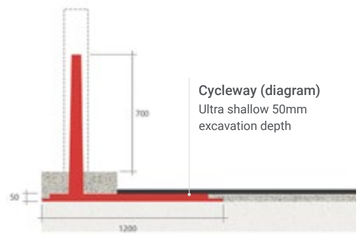
Mild Steel galvanised finish, with several sleeve options available: Mild Steel, Stainless Steel, Ferrocast® or bespoke designs



Footpath (diagram)
Ultra shallow 50mm excavation depth



Sloped Stainless Steel sleeve



Cycleway (diagram)
Ultra shallow 50mm excavation depth

Overall height above ground (mm)	700 (cycleway) / 787 (footpath)
Width x depth Ø (mm)	200 x 100
Foundation depth (mm)	50
Weight (kg)	390

See pages 48-49 for our RhinoGuard® Ultra Shallow 50® with the addition of a Beam barrier system

RhinoGuard® Beam

Incorporating the RhinoGuard® Ultra Shallow 50®, the RhinoGuard® Beam has been crash tested to the IWA 14.1 standard and can successfully stop a 7.2 tonne vehicle travelling at 30mph.

With tailored length options available to suit the scheme's requirements, the protective barrier has the capability of spanning manholes, services, chambers and other obstacles, whilst allowing for expansion and contraction. It can also be used on bridges and other areas where underground service and utilities affect installation.

Security specifications

7.2 TONNES IWA 14.1

30 MPH

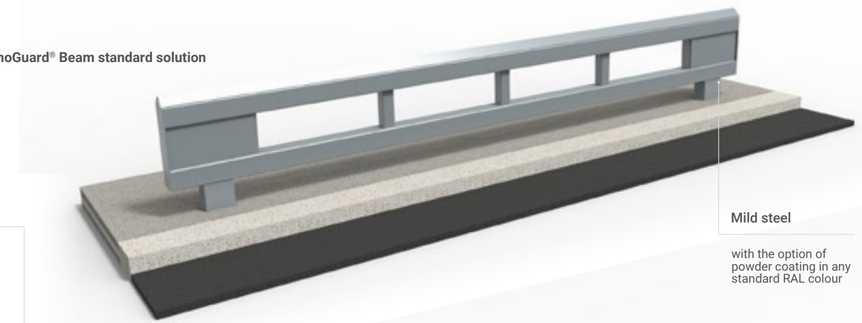
V/7200(N2A)/48/30:0
Beam impact test

V/7200(N2A)/48/30:1.1
RhinoGuard® Ultra Shallow 50® footpath foundation impact test

V/7200(N2A)/48/30:1.1
RhinoGuard® Ultra Shallow 50® cycleway foundation impact test

MADE IN BRITAIN

RhinoGuard® Beam standard solution



Powder coated mild steel

Ferrocast®

Customise Beam with a number of design options, including Ferrocast® reinforcements

Bespoke designs

We can tailor the length and design to meet your specific requirements.

Mild steel

with the option of powder coating in any standard RAL colour

Standard colours / materials

Standard RAL powder coated colours

Pure White RAL 9010	Agate Grey RAL 7038	Telegrey 1 RAL 7045	Grey Aluminium RAL 9007	White Aluminium RAL 9006	Anthracite RAL 7016
Black RAL 9005	Gentian Blue RAL 5010	Moss Green RAL 6005	Traffic Yellow RAL 1023	Traffic Red RAL 3020	Sepia Brown RAL 8014

Stainless steel

Mild Steel as standard with various finish options available.

Option of powder coating in a range of RAL colours as standard, with branded customisation also available.

Overall height above ground (mm)	872
Width x depth Ø (mm)	5670 x 150
Foundation depth (mm)	*Various
Weight (kg)	721

*See page 47 for more information on our RhinoGuard® Ultra Shallow 50®

Features & benefits

- *Provides 0m stopping distance*
- *Tailored length options available*
- *Spans gaps where a foundation isn't possible*
- *Requires just 50mm embedment*
- *Simple installation*
- *Bespoke design options are available including branded customisation*
- *Physically and visually unobtrusive*
- *Allows for expansion*
- *No areas for concealment*

Beam is demountable and can therefore be removed quickly to provide access for plant or emergency service vehicles

RhinoGuard® Standard Sleeve Options

Standard sleeve designs are available in mild steel, stainless steel and Ferrocast® polyurethane and can be specified with reflective banding for increased visibility and safety.

Bespoke design commissions for other styles and finishes can also be accommodated on request. Please see page 42 - 45 for more information.

Contemporary Ferrocast® sleeve shown

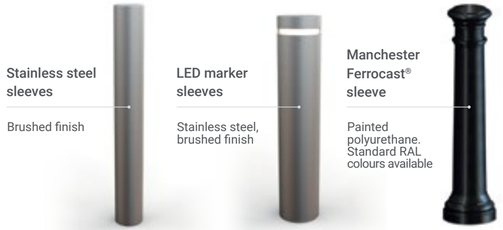
Security specifications

7.5 TONNES

50 MPH

**Various ratings available with a 7.5 tonne vehicle at 50mph being the strongest specification

MADE IN BRITAIN



Stainless steel sleeves
Brushed finish

LED marker sleeves
Stainless steel, brushed finish

Manchester Ferrocast® sleeve
Painted polyurethane. Standard RAL colours available

GEO stainless steel sleeves
Bead blasted with polished top cap

Steel sleeves
Galvanised and powder coated

Contemporary Ferrocast® sleeve
Galvanised and powder coated

	Stainless Steel Sleeves	GEO Stainless Steel Sleeves	LED Marker Sleeves	Steel Sleeves	Ferrocast® Sleeves
Height (mm)	1000			1100	Assorted sizes
Diameters Ø (mm)	168, 194, 204, 273	129, 154, 204, 256	140, 204, 254		Assorted sizes

Sleeve size is tailored to the bollard core selected

RhinoGuard® 25/10 and 25/20 PAS 170 Cores

Able to withstand the force of a 2.5 tonne vehicle driving at up to 10mph or 20mph, the RhinoGuard® PAS 170 cores are an excellent choice for protecting public spaces, providing assurance against lower speed ram-raids and impacts.

The certified steel cores are available with a choice of standard and bespoke sleeve options.

Security specifications

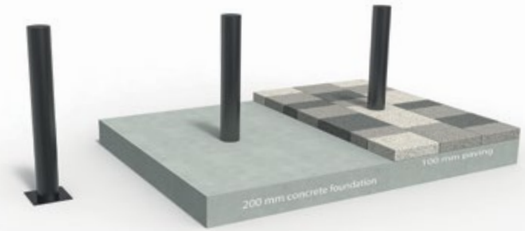
2.5 TONNES PAS170 — 10 MPH

IT/2500/16/90:0.8

2.5 TONNES PAS170 — 20 MPH

IT/2500/32/90:2.0

MADE IN BRITAIN



Standard colours / materials

Standard RAL powder coated colours

Pure White RAL 9010 · Agate Grey RAL 7038 · Telegrey 1 RAL 7045 · Grey Aluminium RAL 9007 · White Aluminium RAL 9006 · Black RAL 9005

Gentian Blue RAL 5010 · Moss Green RAL 6005 · Traffic Yellow RAL 1023 · Traffic Red RAL 3020 · Sepia Brown RAL 8014

Mild steel

Galvanised mild steel finish, with the option of powder coating.

Available with a range of standard and bespoke sleeve options. Please see pages 42 - 45.

	PAS 170 25/10 (2.5 tonne at 10mph)	PAS 170 25/20 (2.5 tonne at 20mph)
Overall height above ground (mm)	800	
Overall height including root (mm)	1100	
Diameter (mm)	75	140
Foundation type	Root fixed	
Foundation length x width x height (mm)	4080 x 700 x 300 (inc. cover)	
Weight (kg)	45	55

RhinoGuard® GEO Street Furniture

The coordinated GEO range with integrated RhinoGuard® protective technology reflects the best of modern urban design: simplicity, sustainability and robust materials in a low profile form.

Manufactured using a bead blasted grade 316 stainless steel, the GEO products are exceptionally strong and require very low maintenance.

Security specifications

7.5 TONNES

50 MPH

**Various ratings available with a 7.5 tonne vehicle at 50mph being the strongest specification

MADE IN BRITAIN

GEO Litter Bin

Stainless steel / brushed satin

GEO Cycle Stand

Stainless steel / brushed satin

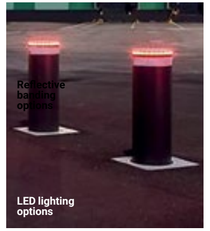
Standard colours / materials

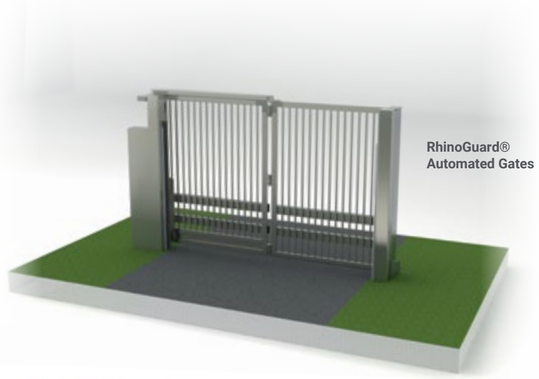
Stainless steel

	GEO Litter bin	GEO Cycle Stand
Overall height above ground (mm)	1100	
Foundation root depth (mm)	500	
Surface finishing (mm)	100	
Overall length (mm)	1700	
Overall width (mm)	N/A	1132
Core diameter Ø (mm)	*Various	
Sleeve diameter Ø (mm)	204	
Bin diameter Ø (mm)	500	N/A
Weight (kg)	46	238

*Various bollard cores available depending on security rating required

Protective Automated Products





RhinoGuard® Automated Gates

RhinoGuard® Automated Blockers

RhinoGuard® Automated Bollards

Standard colours / materials

Standard RAL powder coated colours

Pure White RAL 9010 · Telegrey 1 RAL 7045 · Grey Aluminium RAL 9007 · White Aluminium RAL 9006 · Black RAL 9005

Stainless steel

Gentian Blue RAL 5010 · Moss Green RAL 6005 · Traffic Yellow RAL 1023 · Traffic Red RAL 3020

Security specifications

7.5 TONNES

50 MPH

**Various ratings available with a 7.5 tonne vehicle at 50mph being the strongest specification

	Automated Bollards	Automated Blockers	Automated Gates
Height (mm)	Max. 100	Max. 1100	2400
Base diameter Ø (mm)	Max. 350	Max. 4000	4200
Standard fixing	Root fixed		

* Heights and widths vary depending on rating. Other options available, please speak to a member of our team about your automated product requirements.

RhinoGuard® Redi-Rock™

The Redi-Rock™ HVM wall is proven to stop a 7.5 tonne truck at 30mph and is an effective, removable solution that requires minimal maintenance.

Interconnected with steel cables and with no ground anchors required, the fast-to-install freestanding blocks can be deployed, picked up and moved with no ground work required making this solution ideal for use in crowded places, transport hubs, utility and critical infrastructure as well as buildings of high importance.

Due to its natural stone appearance Redi-Rock™ blends into the background and is aesthetically pleasing, protecting its surrounding without looking out of place.

Security specifications

7.5 TONNES PAS 68

30 MPH

**Various ratings available with a 7.5 tonne vehicle at 50mph being the strongest specification

REDI-ROCK MODULAR WALL SYSTEM

The Redi-Rock™ system is also available as a standard walling system for the retention of earth, landscaping and flood protection applications. For more information on this system please contact a member of the team.

MADE IN BRITAIN

Standard colours / materials

Standard RAL powder coated colours

Limestone | Ledgestone | Cobblestone | Kingstone

Height (mm)	Variable
Fixing type	Freestanding

RhinoGuard® Titan® Kerb

The RhinoGuard® Titan® Kerb is a high containment solution designed to keep vehicles on their intended path, and to prevent the overrun of vulnerable areas adjacent to the carriageway via a physical and visual barrier.

The 400mm high Titan® Kerb not only offers clear visual delineation between trafficked and non-trafficked areas, it also ensures that any errant traffic is safely redirected back onto its intended path. The product is an essential tool for designers, acting as a passive system that protects vulnerable installations like pedestrian refuges.

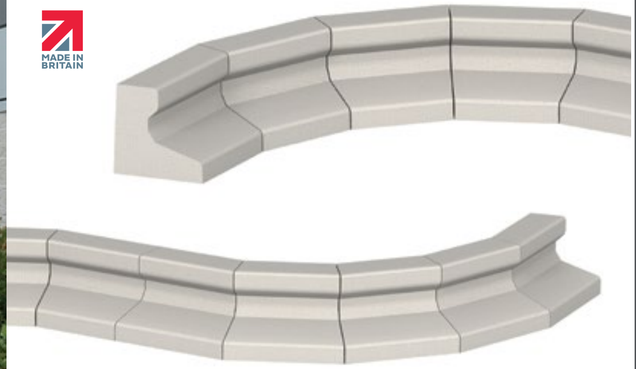
Security specifications

1.5 TONNES IWA 14.1

50 MPH

V/1500[M1]/80/20:0.2

MADE IN BRITAIN



Standard colours / materials

Smooth Grey

	External radius									Internal radius				
Height (mm)	400													
Face length (mm)	965/975	955/975	945/975	935/975	797/841	734/785	807/884	317/394	217/294	975/955	975/935	836/785	961/884	589/666
Width (mm)	390													
Radius covered (m)	76/25	25/15	15/11	11/8.5	7.5	6.0	4.5	2.0	1.5	76/25				
No. per 1/4 circle	122-40	40-24	24-18	18-14	14	12	8			122-40				
Weight (kg)	233	232	230	229	207	194	221	104	80	232	229	182	198	132

Aesthetically pleasing Landscape Protection is the way forward

Installing protective measures to defend public spaces against vehicle-borne terror attacks or accidental collisions has traditionally been viewed as a necessary evil in areas such as city centres, stations and sporting venues. This has led to a tendency to give minimal consideration to how these measures fit with the aesthetics of the surrounding environment. Too often, the result is ugly, obtrusive installations that remind people of the threat that exists, potentially putting them off from visiting and enjoying public spaces.


Public square


Public square


Public square

We design and build protective street furniture that blends in seamlessly with the landscape. Our approach enables architects, planners and designers to secure spaces without instilling fear.

Sports stadium

Design-led protection is the way forward, **keeping people safe... not scared®.**


Transport link

Retail park


Retail park

Secured by Design
SBD
Official Police Security Initiative

Our RhinoGuard® products are all Secured by Design which means they have all been subject to rigorous testing and have been fully certificated by an independent, third-party certification body.

Secured by Design have many partner organisations, ranging from the Home Office, local authorities, housing associations, developers and manufacturers. Working closely with standards and certification bodies, Secured by Design ensures that publicly available standards actually meet the needs of the police and public alike.

Additional Information
Landscape Protection
marshalls.co.uk/landscapeprotection

If you can't find what you need within the Marshalls Landscape Protection range, **your options don't end there.**

Design & Engineering capability

Our specialist design and engineering teams are experienced in a range of materials from natural stone and concrete to mild steel, stainless steel and timber.

Only by consistently pushing boundaries and challenging convention can we create public spaces that stand out.

With every element sourced, tailored or created around your project vision, our theoretical and practical understanding of urban space is unrivalled. Our exceptional bespoke products often start with a flash of inspiration that needs to be fully explored and carefully nurtured throughout the project.

We love to stretch our creativity beyond the typical. Inspired by your vision, ambition and aspiration, our open-minded approach means: **'We will where others won't.'**

Project Management

To ensure projects run smoothly, Marshalls follow a structured 7 step approach. This is led by a dedicated Project Manager from the initial programme of works through to the site inspection and project handover.

01 Project Manager allocated

A specialist Project Manager is allocated to the client giving a single point of contact from initial project scoping through to installation and handover.

02 Provisional programme

Working alongside the client, the dedicated Project Manager will detail a provisional programme of works considering site conditions, site programme, contractual implications and health and safety.

03 Site survey

If a site survey is required, it will be conducted by a fully qualified member of the Marshalls team. The client will be provided with layout drawings for approval.

04 Design

Following layout approval, product specification drawings will be issued and prototype products can be provided within this stage for certain bespoke projects.

05 Final review

Product design and project time-frames are confirmed in preparation for commencement of works.

06 Installation

Installation conducted by a specialist in the Marshalls Landscape Protection install team working in collaboration with the Project Manager.

07 Project handover and O&M

Project Manager to lead a site inspection and final evaluation with the client.

HVM security accreditations explained

At the heart of Hostile Vehicle Mitigation are the BSI Publicly Available Specifications (PAS) and International Workshop Agreements (IWA). These have changed how security products are crash tested, designed and procured in order to protect people and places from hostile vehicle attacks, criminal activity and accidental damage.

All accreditations, overseen by the British Standards Institution (BSI), are designed for impact testing and rating Hostile Vehicle Mitigation (HVM) measures, such as bollards, blockers, planters, seating and barriers used for security and counter-terrorism purposes.

Measures crash-tested to the strongest specification under PAS 68 and IWA 14.1 can stop a 30 tonne vehicle travelling at 50mph. They can be built to withstand different levels of energy from an impact depending on the risk assessment, commonly referred to as a Vehicle Dynamic Assessment (VDA).

PAS 68

Developed in 2005, the Publicly Available Specification, PAS 68 became the first UK impact test specification and has undergone several reviews since, the most recent taking place in 2013. PAS 68, specifies a performance classification for vehicle security barriers and their foundations when subjected to a horizontal impact.

The standard was devised and administered by the Centre for the Protection of National Infrastructure (CPNI), and tests security barriers at varying speeds, using different sized vehicles. Whilst it is only through specifying products successfully tested in accordance with PAS 68 that protective security can truly be assured, this does not necessarily mean that the highest specifications of PAS 68 protection are always required.

PAS 69

BSI PAS 68 is complemented by the PAS 69 document, which provides guidance on the selection, installation, foundations and use of PAS 68 tested security products, taking into account site specific conditions, to ensure they are placed as effectively as possible.

PAS 69 suggests a maximum gap of 1.2m between the installed, upright faces of successive security products, to ensure that vehicles are prevented from encroaching freely between the barriers.

PAS 170

PAS 170 delivers a testing standard for vehicles of up to 2.5 tonnes travelling at 10 or 20mph. Unlike previous anti-ram solutions, new products tested and certified by PAS 170 provide businesses and local authorities with assurance and proof of performance for the first time.

IWA 14.1

IWA 14.1 is the global standard which has been developed directly from PAS 68 and has become the preferred accreditation of the two.

No matter where you are based or where you want to create a safe and beautiful space, the IWA workshop agreement standardises all counter terrorism impact testing agreements and models and combines them into one, making the testing and specification of products easier and clearer for all specifiers.

IWA 14.2

IWA 14.2 provides guidance for the selection, installation and use of vehicle security barriers (VSBs) and describes the process of producing operational requirements (ORs). IWA 14.2 also gives guidance on a design method for assessing the performance of a VSB.

C-VAW

C-VAW testing is a government approved approach to proving a product's resistance from a ramming vehicle attack. Various vehicles are used to see how the system will perform from other attacks including angular and driving at gaps between the products.

	Vehicle mass (kg)							
	1.5 tonne Saloon car (M1)	**2.5 tonne 4x4 pickup (N1G)**	**3.5 tonne Flatbed van (N1)**	**Fully laden 7.5 tonne 2 axle lorry (N2)**	**Fully laden 7.2 tonne 2 axle lorry (N2)**	**Empty 18 tonne 2 axle lorry (weighs 7.5 tonnes) (N3)**	**Empty 18 tonne 2 axle lorry (weighs 7.2 tonnes - N3)**	**30 tonne 4 axle lorry (N3)**
	Used for PAS 68 & IWA14 impact testing	Used for PAS 68 & IWA14 impact testing	Used for PAS 68 & IWA14 impact testing	Used for PAS 68 impact testing	Used for IWA14 impact testing	Used for PAS 68 impact testing	Used for IWA14 impact testing	Used for PAS 68 & IWA14 impact testing
Vehicle speed km/h (mph)								
16 (10)	15	25	35	74	71	74	71	296
32 (20)	59	99	138	296	284	296	284	1185
48 (30)	133	222	311	667	640	667	640	2667
64 (40)	237	395	553	1185	1138	1185	1138	4741
80 (50)	370	617	864	1852	1778	1852	1778	7407
96 (60)	533	889	1244					
112 (70)	726	1210						

The table above provides the kinetic energy values (in kj) created on impact, for each of the vehicle types and speeds used in PAS 68 & IWA 14.1 impact testing.

International standards comparison

Over the last 15 years the Hostile Vehicle Mitigation testing standards have progressed and now more than one standard is used globally.

The table shows comparisons between the USA and international testing standards.

	Vehicle mass (kg)						
	1.5 tonne saloon car (M1)	**2.5 tonne 4x4 pickup (N1G)**	**Empty 18 tonne (weighs 7.5 tonnes) 2 axle lorry (N3)**			**30 tonne 4 axle lorry (N3)**	**Empty 18 tonne 2 axle lorry (weighs 7.5 tonnes) (N3)**
	1500 - PAS/IWA 1100 - ASTM	2500 - PAS/IWA 2300 (P) - ASTM	3500 - PAS/ IWA/ASTM	7200 (N2) - IWA/ASTM	7500 (N3) - PAS 6800 (M) - ASTM	30000 PAS/IWA 29500 (H) - ASTM	Old USA K rating test
Vehicle speed km/h (mph)							
16 (10)	15	25	35	71	74	296	
32 (20)	59	99	138	284	296	1185	
48 (30)	133	222	311	640	667/656	2667/2850	K4*
64 (40)	237/179	395/375	553	1137	1185/1110	4741/4810	K8*
80 (50)	370/271	617/568	864	1778	1852/1680	7407/7283	K12*
96 (60)	533/424	889/887	1244				
112 (70)	726	1210					

*(International /USA) * old USA K rating tests which use a 6800 (M) vehicle.*
The table above provides the kinetic energy values (in kj) created on impact, for each of the vehicle types and speeds used in IWA, PAS and ASTM impact testing.
All test standards use a similar array of vehicles and speeds for testing and therefore deliver similar energy in terms of kilojoules (kj).

Security ratings explained

The International (IWA14.1), UK (PAS 68) and USA (ASTM2656) test standards are defined with a specific rating which includes the vehicle type, test mass and vehicle speed, together with the penetration distance.

PAS 68 & IWA 14.1

The PAS 68 and IWA14.1 classification is set out with a row of letters, symbols and numbers that indicate the specification that the product has been tested to. The key difference between the IWA14.1 rating and the PAS 68 is that with IWA14.1 the debris dispersion is not included.

PAS 68 performance rating example: Fixed Bollard V/7500(N2)/48/90:2.5/1.2

IWA14.1 performance rating comparison example: Fixed Bollard V/7500(N2)/48/90:2.5

Fixed Bollard / V / 7500(N2) / 48 / 90: 2.5 / 1.2

- **Product Type / VSB:** Bollard
- **Test Method:** Vehicle
- **Test Vehicle Mass:** 7.5 Tonne (N2) Lorry
- **Impact Speed:** 48km/h
- **Impact Angle to Impact face of VSB:** 90 degree impact
- **Vehicle Penetration Distance beyond the VDB datum line:** 2.5m
- **Debris dispersion:** 1.2m (not included for IWA14.1)

ASTM 2656

ASTM 2656 is the USA testing standard which has grown from the original K ratings standard.

ASTM 2656 performance rating example: M 50 P1

M 50 P1

- **Vehicle classification:** Medium duty truck of 6800kg
- **Impact Speed (mph):** 50mph/80kph
- **Vehicle penetration distance:** Less than 1m

For further information please contact the Marshalls Landscape Protection team on **+44(0) 1422 312 993**

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Landscape Protection

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marshalls.co.uk/landscapeprotection