Expect the Best

Paving

BOSUN BRICK

Expect the Best

THINGS YOU SHOULD KNOW ABOUT PAVING, PRIOR TO INSTALLATION

DELIVERY
It is highly advisable for you and your installer to inspect our product upon delivery. In the unlikely event of either party disputing our contract of supply – it remains the best time to resolve disputes with the least implications to all parties.

INSTALLATION
Closely linked to the points above, it is advisable to use an experienced, reputable paving installer. Obtain references beforehand and feel free to also contact us in this regard.

PRICING
Please consider pricing very carefully and bear in mind that there are always reasons why a product or contractor might be much cheaper than the rest. As a contractor, developer or home owner you will be spending a substantial amount of money on paving. Do your homework and bear in mind that the cost of an installation involves much more than the initial price quoted.

MAINTENANCE
Some claim certain types of paving to be maintenance free. This is a myth. Although in many instances, little maintenance is required; it is advised to at least replenish jointing sand, by sweeping approved plaster sand over the paved surface from time to time. This costs very little but will go a long way to ensure a paving installation that lasts for many years.

EFFLORESCENCE
Please be conscious of efflorescence. This whitish film on the surface of a concrete product is a temporary, natural phenomenon that occurs in most concrete products. It is caused by moisture reacting with lime and other minerals present in cement and aggregates and will disappear over time. Much has been written about the subject and tips to combat this problem could be obtained from www.bosun.co.za

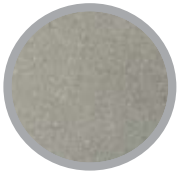
INSTALLATION ACCORDING TO THE SOUTH AFRICAN NATIONAL STANDARD
It is imperative that your paving is installed in accordance with SANS 1200MJ. Even the most superior manufactured product might fail if the installation is not done in accordance to SANS. Amongst others,
SANS 1200MJ specifies the quality of bedding and jointing sands and the method of installation.
For more information on SANS 1200MJ, please do not hesitate to contact us or visit www.bosun.co.za

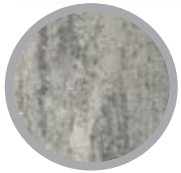
The Bosun 5-year guarantee is conditional upon installation being done in accordance with SANS 1200MJ.

Colours & Finishes

Many of Bosun's colours and finishes are new and have never been seen before in South Africa
The following colours and finishes are available on 50mm - 80mm pavers

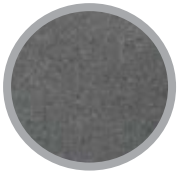
Shades of Grey


Grey

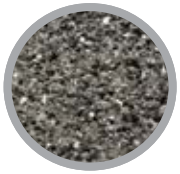

Granite


Ash
Natural Stone Texture
Fade Resistant

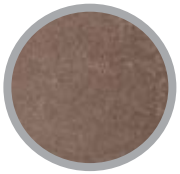
Shades of Black


Black


Basalt
Natural Stone Texture
Fade Resistant


Ebony
Natural Stone Texture
Fade Resistant

Shades of Brown


Brown


Tan


Sahara


Marble

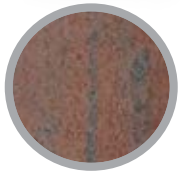

Kalahari
Natural Stone Texture
Fade Resistant

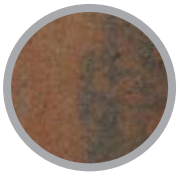
Not all products are available in the colours listed on this page

Please consult your Bosun representative for more information

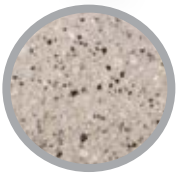
Shades of Red


Red

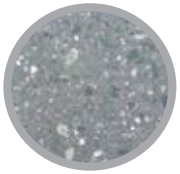

Multiblend

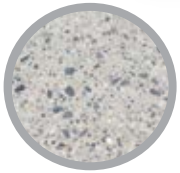

Autumn Blend

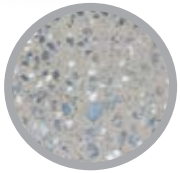
Shades of White

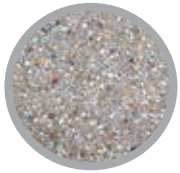

Ivory
Natural Stone Texture
Fade Resistant

Stone Finishes


Stone Black


Stone White


Stone Grey


Chestnut

Please note

Our blended colours vary from paver to paver, creating a random organic effect. We recommend viewing a number of sample pavers together in order to perceive the holistic picture of any one colour. (Feel free to visit our factories where we will assist you in this regard.)

Due to photographic and printing processes the colours in this catalogue may not be a hundred percent accurate.

Concrete is made from natural products which are mined and crushed and the resulting aggregates are never exactly the same colour. These differences do reflect in the final products in the form of slight colour variations. It is therefore recommend to mix pavers from different packs when doing an installation.

60mm/80mm Interlocking Paver

Robust pavers, that will provide hardwearing durability and functionality.

The 80mm is a heavy-duty paver, made for use in industrial and commercial applications where trucks, forklifts and other heavy machinery are prevalent.

Dimensions	200mm x 100mm
Height	60mm/80mm
Mass per Paver 60mm	± 2.6kg
Mass per Paver 80mm	± 3.5kg
SANS	1058: 2012 Approved
Pavers per m^2	50

Rio Rocoso Interlocking Paver

Designed to 'lock' together when installed, this paver has the appearance of a ripple surfaced cobble with bevelled edges.

It combines the functionality of interlockers with the aesthetic appeal of a cobble.

Dimensions	200mm x 100mm
Height	60mm/80mm
Mass per Paver	± 2.6kg
SANS	1058: 2012 Approved
Pavers per m^2	50

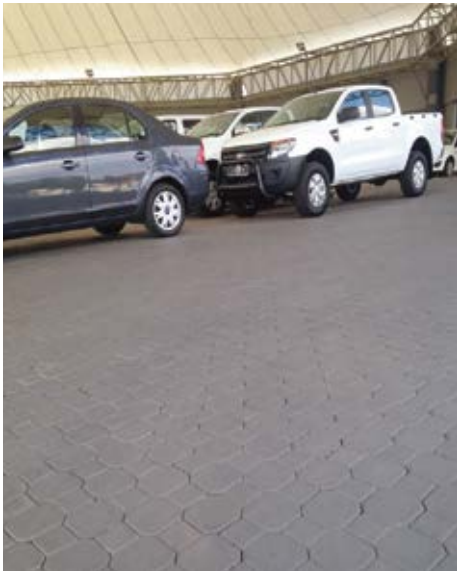
Interlocking Paving

Citylock Paver

An interlocking paver that creates the impression of different sized pavers laid in conjunction with each other.

The finish resembles that of small and large paving stones placed together.

Dimensions	230mm x 140/90mm
Height	60mm/80mm
Mass per Paver	± 3.5kg
SANS	1058: 2012 Approved
Pavers per m^2	39



Regular Paving

Bevel Bond Paver

An unadorned, smooth-surfaced paver with bevelled edges, ideal for areas with an array of patterns, borders and colours.

Dimensions	200mm x 100mm
Height	50mm (60mm can be manufactured)
Mass per Paver	± 2.15kg
SANS	1058: 2012 Approved
Pavers per m^2	50

All pavers are available in an uncoloured, rough concrete finish without our renowned topping topping layer.

Split Bevel Bond Paver

A modern, smooth surfaced, cobble-look paver with bevelled edges.

This paver creates the impression of 100mm x 100mm cobble stones.

Dimensions	200mm x100mm
Height	50mm
Mass per Paver	± 2.15kg
SANS	1058: 2012 Approved
Pavers per m^2	50

Rio Rocoso Bevel

From the Spanish, “rocky river”, this paver has the appearance of a ripple-surfaced cobble with bevelled edges.

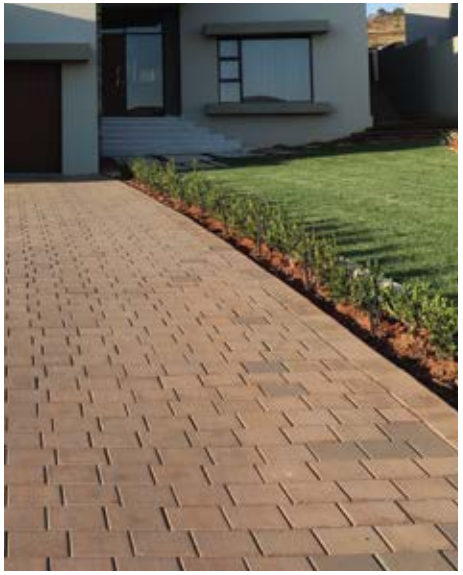
The texture adds rustic appeal to applications like driveways and garden walkways.

Dimensions	200mm x 100mm
Height	50mm
Mass per Paver	± 2.15kg
SANS	1058: 2012 Approved
Pavers per m^2	50

Smooth Ethnic Paver

This contemporary, larger paver has a smooth, even look with bevelled edges.

Because the larger surface creates the perception of space, it lends itself to driveways and landscaping applications in residential estates amongst others.



Dimensions	200mm x 150mm
Height	55mm
Mass per Paver	± 3.7kg
SANS	1058: 2012 Approved
Pavers per m^2	33

Bosun Cobble

With its rustic charm, this paver lends warmth and character to any architectural style.

It creates the effect of a larger cobble stone (150mm x 150mm).

Dimensions	300mm x150mm
Height	Gauteng: 60mm PE branch: 55mm
Mass per Paver	± 5.8kg
SANS	1058: 2012 Approved
Pavers per m^2	22.2

All pavers are available in an uncoloured, rough concrete finish without our renowned topping topping layer.

Venetian Paver

Laid in a distinctive “Herringbone” pattern, this paver provides classic European charm and an elegant touch.

Dimensions	255mm x 55mm
Height	60mm
Mass per Paver	± 1.90kg
SANS	1058: 2012 Approved
Pavers per m^2	72.7

Urban Paver

A non-bevelled paver range designed for smooth trafficking whith creates a uniquely contemporary look to complement modern residential architecture. Available in 4 sizes and can be installed in different size combinations:

Small

Dimensions	200mm x 100mm
Height	60mm
Mass per Paver	± 2.6kg
SANS	1058: 2012 Approved
Pavers per m^2	50

Medium

Dimensions	200mm x 150mm
Height	60mm
Mass per Paver	± 3.7kg
SANS	1058: 2012 Approved
Pavers per m^2	33.33

Slimline

Dimensions	400mm x 200mm
Height	60mm
Mass per Paver	± 11kg
SANS	541
Pavers per m^2	13

Large

Dimensions	400mm x 300mm
Height	60mm
Mass per Paver	± 17.5kg
SANS	541
Pavers per m^2	8.33

XXL

Dimensions	900mm x 600mm
Height	80mm
Mass per Paver	± 95kg
SANS	541
Pavers per m^2	1.85

Linneo Paver

These large rectangular pavers are available in two sizes and create a seamless, modern feel.

Install them in combination with each other or singularly.

Small

Dimensions	300mm x 120mm
Height	80mm
Mass per Paver	± 6.5kg
SANS	1058: 2012
Pavers per m²	27.77

Large

Dimensions	600mm x 240mm
Height	80mm
Mass per Paver	± 23kg
SANS	541
Pavers per m²	6.94

Organic Paver

(Available in Urban Small and Interlocking Pavers)

These pavers offer a new finish to standard interlockers. The colour and texture on these pavers are derived from natural stone aggregate exposed by an advanced washing technique. Stone doesn't fade, neither will these pavers.

Dimensions	200mm x 100mm
Height	60mm/80mm
Mass per Paver 60mm	± 2.6kg
Mass per Paver 80mm	± 3.5kg
SANS	1058: 2012 Approved
Pavers per m²	50

Available in the following finishes

Basalt

Kalahari

Waterwise Paver®

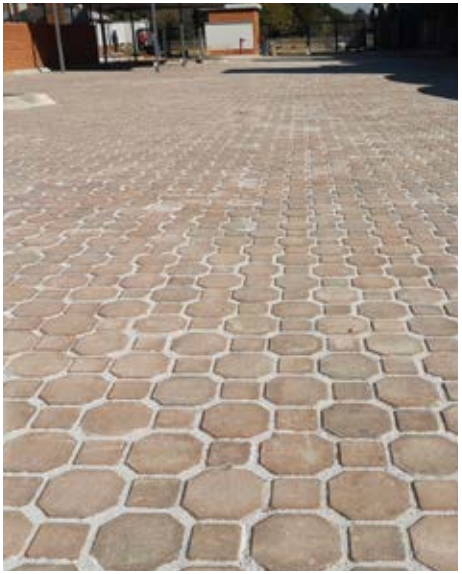
Designed for use in permeable paving systems, this paver anchors itself to pavers from adjoining rows, while leaving gaps between the joining areas through which water drains. The registered design allows for various installation options, leaving different sized gaps, determined by the amount of permeability required.

Dimensions	239mm x 209mm
Height	60mm
Mass per Paver	± 4.35kg
SANS	1058: 2012 Approved
Pavers per m²	Varies according to permeability (ref www.bosun.co.za)

Permeable Citylock

An interlocking paver that resembles smaller and larger pavers installed in a pattern.

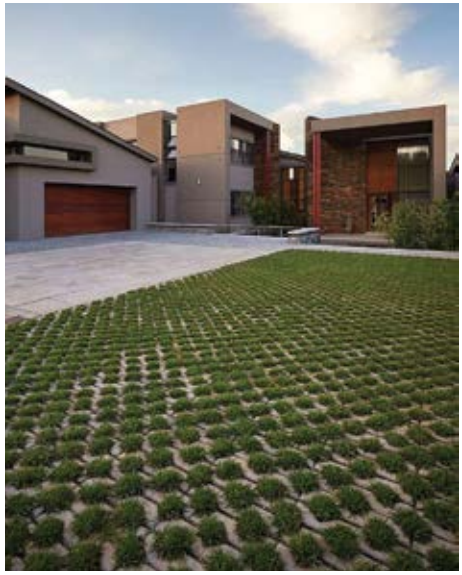
This paver is similar in appearance to the Bosun Citylock paver but offers permeability and can be used in conjunction with the original Citylock paver.



Dimensions	230mm x 140/90mm
Height	60mm
Mass per Paver	± 3.5kg
SANS	1058: 2012
Pavers per m²	39

Grass Blocks

The Bosun Grass Block is a permeable paver designed to facilitate the growth of grass in paved areas. The design of the grass block encourages water to drain through the voids where vegetation grows while offering sufficient structural integrity to allow for vehicular traffic. Our grass blocks are often used for erosion control purposes.



Dimensions	600mm x 400mm
Height	100mm
Mass per Unit	± 35kg
SANS	N/A
Pavers per m^2	4.2

All pavers are available in an uncoloured, rough concrete finish without our renowned topping topping layer.

Bosun Buffalo Block

Ideal for grass block installations as well as permeable paving systems, this highly versatile block creates an interlocking matrix of blocks positioned together to establish an erosion-resistant surface while remaining flexible and fit for vehicular traffic.

The block has a higher load-bearing distribution and capacity when compared to traditional grass blocks. In addition, the design ensures that the block is easier to handle and install. The innovativeness of the Buffalo Block is evident in the fact that Bosun holds two design registrations on the appearance and functionality of the block, as well as a patent on the unique design of the block's nibs.

Dimensions	400mm x 216mm
Height	100mm
Mass per Unit	± 12.23kg
SANS	N/A
Pavers per m^2	13.55

Bosun Flagstones

Bosun Flagstones are specifically designed for use on patios, pool surrounds, home aprons, commercial walkways and piazzas. They are thicker than tiles in order to withstand the elements, but thinner and visually more attractive than traditional paving products. These Flagstones have straight edges that allow for less obtrusive jointing gaps. Their dense surface allows for effortless cleaning and prevents unwanted liquid penetration, that could permanently stain your outdoor floor.

Smooth Finishes

Textured Finishes

	Square	Rectangular
Dimensions	400mm x 400mm	400mm x 200mm
Height	35mm	35mm
Mass per Paver	± 12kg	± 7.06kg
SANS	541	541
Pavers per m2	6.25	12.5

Bosun Colourfast Finishes

Bosun Colourfast - The Pavers That Won't Fade

Bosun Colourfast finishes are predominantly derived from the specially selected, natural stone aggregates used in their topping. As the name suggests, the colour of these pavers will not fade - as natural stone does not fade.

Due to their superior colour fastness, these finishes lend themselves to the design and creation of permanent colour contrasts on a paved surface. Colourfast finishes are suitable for both residential and commercial applications.

Colourfast finishes are available on selected Urban, Linneo, and both 60mm and 80mm Interlocking Pavers.

- Natural Stone
- Fade Resistant
- Striking Contrasts

Paving Size Comparison

The red outline indicates the size of a standard paving brick

Standard Brick
Bevel Bond
Urban Small

Venetian

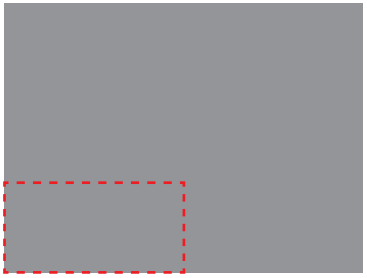
Split Bevel
Rio Rocoso

Bosun Cobble

Smooth Ethnic
Urban Medium

Urban Slimline

Urban Large



Linneo Small

Urban XXL

Linneo Large

IMPORTED FROM FRANCE

Guard Remover Eco Efflorescence & Cement

Suitable for most paving materials, Guard Remover Eco Efflorescence & Cement brings soiled paving back to its original state of cleanliness. It proves most effective in the rapid removal of cement haze, grout spillages, efflorescence and concrete laitance.

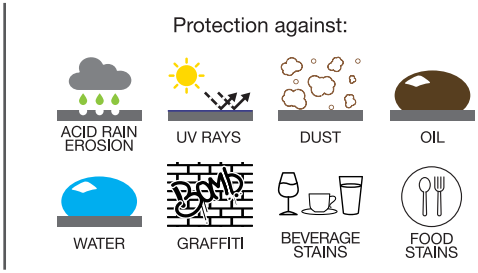
Guard Remover Eco Efflorescence & Cement cleans paving in a minimally aggressive and non-corrosive way, when compared to other products on the market. This product was designed to meet the varying requirements of users applying it, in terms of safety, effectiveness, and the impact on the environment. It is an ideal product to be used in preparation for the application of paving protectors.

Guard Industry Paving Protectors

Bosun supplies a range of Guard Industry paving protectors at various levels of protection to suit your requirements. Guard Industry paving protectors penetrate the pores of the pavers, making them impermeable and limit the absorption of water, oil, fat, grease, soil, and even graffiti. They offer long-lasting protection by slowing down the ageing of your paving and make it easier to maintain.

Suitable applications include: driveways, patios, pool surrounds, walkways, high trafficked commercial areas as well as larger industrial applications.

Guard Industry paving protectors do not go yellow over time and provide the option to enhance the appearance of the paving, or to retain the original colour. All these products are easy to apply with a low-pressure sprayer, a roller or a brush. Contact your Bosun Representative to discuss various protection options.



probst handling equipment

made in Germany

✔ Safe and Reliable ✔ Simple to Operate ✔ Save Time and Money

Probst Paving Block Cutter

The Probst Paving Block Cutter is an essential unit for paving professionals and is ideal for most paving bricks and slabs. Using precisely guided rectangular blades, the block cutter produces a clean-cut paver in less than a second – greatly improving productivity.

The block cutter has a superior service life and low running costs when compared to grinders and other related power tools. No electricity is required on site and the potential risk of fine cement dust staining is greatly reduced.

Probst Paving Transport Cart

The transportation of pavers in wheelbarrows is not recommended as pavers may scuff and chip. To overcome this problem, the Probst Paving Transport Cart has been engineered to easily transport columns of pavers directly from the pack to the laying area. It is also far more efficient as you can transport the same amount of pavers on site in half the time, when compared to other methods.

The engineered design of the cart accommodates various paving elements with a maximum carrying capacity of 400kg. The cart features an integral protection device to prevent overloading. The cart is fully mechanical and adjusts smoothly without the need for additional tools.

Probst Kerb Laying Clamp

The Probst Kerb Laying Clamp is designed for easy and safe handling of precast kerbs and other large paving elements such as the Bosun XXL slab.

It is manually handled by people, or it can be attached to various types of mechanical equipment. The tool allows for a small jointing gap through its one-sided angular support, which is placed on the adjoining unit. It has the ability to grip longitudinally, enabling it to be used in tight spaces.

CONTACT DETAILS

GAUTENG
Tel: 011 310 1176
Fax: 011 310 1178
Email: gp@bosun.co.za

Physical Address:
Corner Cresset & Musket Roads
Midrand Industrial Park
Midrand

NORTH WEST
Tel: 012 250 1711
Fax: 012 250 1708
Email: nw@bosun.co.za

Physical Address:
1892 Pendoring Street
Brits Industrial Area
Brits

EASTERN CAPE
Tel: 041 405 0100
Fax: 041 405 0199
Email: ec@bosun.co.za

Physical Address:
Corner Neptune Road & MR435
Coega Industrial Development Zone
Port Elizabeth

BOSUN BRICK
Expect the Best

Expect the Best

Kerbs

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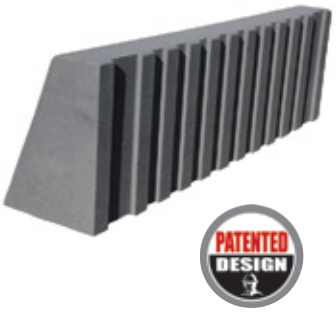


Patent No. 2012\09544
Made in South Africa

Castle Bottom Kerb

A new innovation in kerbs, introducing the Bosun Castle Bottom Kerb, currently available in our 1000mm Figure 8C, Figure 3 and Figure 7 Kerb.

The Castle Bottom Kerb has ribs or cavities across the bottom of its surface.

Advantages of Castle Bottom Kerbs, compared to conventional kerbs:

- The cavities provide a grip for installers when laying the kerbs, which allows for much easier handling.
- The cavities make the Castle Bottom Kerb much quicker and easier to install. Where unlevelled screed surfaces forced installers to uplift, fill up and re-lay conventional kerbs it is easier to manoeuver a Castle Bottom Kerb into place, with the screed being displaced into the cavities in the kerb.
- Kerbs are laid on a concrete screed. Because the Castle Bottom has more point loads, it will therefore sink into the screed, providing much better adhesion IN ALL DIRECTIONS. The Castle Bottom eliminates air pockets in the screed beneath the kerb. Air pockets could create tensile weaknesses beneath the kerb when installed.

Kerbs with Nibs

Bosun's Figures 3 and 7 kerbs are available with nibs.

Advantages of Kerbs with nibs compared to conventional kerbs:

- The nibs ensure easier installation with the correct spacing between kerbs.
- It reduces the likelihood of air pockets in the grout.
- Because the nibs touch the adjacent kerb, it creates greater force stability which results in less movement when installed.

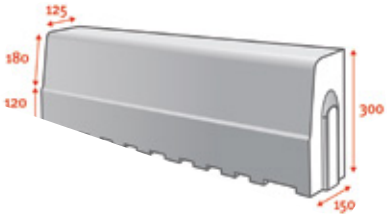


Figure 3 Kerb: Barrier Kerb

Half-battered, heavy duty Barrier kerb. Used to create traffic islands and corners. It restricts access onto the pavement. Used in heavy traffic areas.

	Fig 3 Long	Fig 3 Short
Length	1000mm	330mm
Mass Per Unit	±110kg	±36kg
SANS	927 : 2007	

Figure 4 Kerb: Barrier Kerb

Half-battered, medium duty kerb. Installed in townhouse complexes and small shopping centres. It restricts vehicular access onto pavements.

	Fig 4 Long	Fig 4 Short
Length	1000mm	330mm
Mass Per Unit	±80kg	±26kg
SANS	927 : 2007	

Only available in PE

Figure 7 Kerb: Semi-mountable Kerb

The Figure 7 Semi-mountable kerb is used on public roads and other applications where limited access to a pavement is required.

	Fig 7 Long	Fig 7 Short
Length	1000mm	330mm
Mass Per Unit	± 105kg	± 35kg
SANS	927 : 2007	

Transition Kerb (7/8C)

This kerb serves as a neat and simple transition between Figure 7 and Figure 8C kerb. It is easy to install without the need for on-site curing.

Length	1000mm
Mass Per Unit	± 120kg

Figure 8B Kerb: Medium-duty mountable Kerb

A Medium-duty mountable kerb, ideal for use in residential estates and residential driveways on ramps.

	Fig 8B Long	Fig 8B Short
Length	1000mm	330mm
Mass Per Unit	± 86kg	± 27kg
SANS	927 : 2007	

Figure 8C Kerb: Heavy-duty mountable Kerb

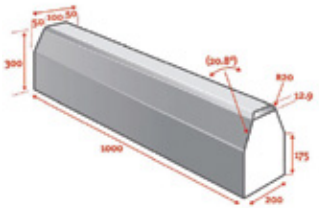
A Heavy-duty mountable kerb for use on commercial and municipal road edgings where vehicular traffic needs access.

	Fig 8C Long	Fig 8C Short
Length	1000mm	330mm
Mass Per Unit	± 107kg	± 36kg
SANS	927 : 2007	

Figure 12 Kerb: Garden Kerb

Garden kerbs are ideal for neat and efficient edging of any paving. Well installed garden kerbs keep paving intact and ensure that it doesn't move. It can be used on residential and light duty commercial applications.

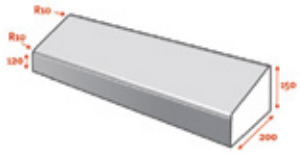
Length	500mm
Mass Per Unit	± 12kg
SANS	927 : 2007



Delineator Kerb: Double-sided semi-mountable Kerb

This kerb allows for buses to mount the kerb if necessary while smaller vehicles cannot. It is a cost effective alternative to placing two separate figure 7 kerbs back to back. Applications include bus lanes and BRT's, shopping malls and parking bays. The Delineator kerbing system includes spacing blocks that allows for drainage.

Length	1000mm
Mass Per Unit	± 115kg

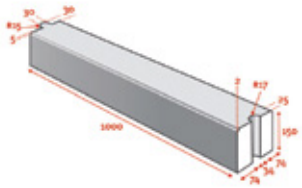


Channel Kerb

Channel Kerbs are used as a method of preventing the degradation of road surfaces and edging between channels and the kerb. Used as an edge restraint they carry the flow of water to the nearest catch pit.

Length	1000mm
Mass Per Unit	± 60kg

Kerbs



Edge Beam

Commonly installed on paved areas with steep slopes in order to prevent horizontal creep and the subsequent opening of paving joints.

Length	1000mm
Mass Per Unit	± 55kg

Protection for Kerbs

GUARD INDUSTRY

IMPORTED FROM FRANCE

IMPERGUARD®

The World's Best Concrete Protector

ImperGuard - regarded as "Scotch Guard" for concrete, protects against moisture and low viscosity liquids from penetrating the concrete. It further strengthens the concrete and protects against acid rain, UV rays and dust, in turn, protecting its appearance. ImperGuard does not change the appearance once applied.

Protects kerbs against:

- ✔ Water Infiltration
- ✔ Acid Attack
- ✔ Efflorescense & Black Attack
- ✔ Colour Fading

Hardens the surface of kerbs

Easy to apply

probst handling equipment

made in Germany

✔ Safe and Reliable ✔ Simple to Operate ✔ Save Time and Money

Probst Kerb Laying Clamp

The Probst Kerb Laying Clamp is designed for easy and safe handling of precast kerbs and other large paving elements.

It can be used by two people or it can be attached to various types of mechanical equipment. The tool allows for a small jointing gap through its one-sided angular support, which is placed on the adjoining kerb. It has the ability to grip longitudinally, enabling it to be used in tight spaces.

Technical Specifications:

- Gripping Range (width): 500mm – 1045mm
- Carrying Capacity: 120kg
- Dead Weight: 12kg

Probst Universal Clamp

The Probst Universal Clamp is an ideal tool for handling most precast kerbs, paving slabs and other related design components.

The versatility of this product is evident in its design, with a large adjustable gripping range and interchangeable rubber clamping jaws.

Technical Specifications:

- Gripping Range (width): 0mm – 550mm
- Inside Height: 210mm
- Gripper Length: 200mm
- Carrying Capacity: 200kg
- Dead Weight: 12kg

CONTACT DETAILS

GAUTENG
Tel: 011 310 1176
Fax: 011 310 1178
Email: gp@bosun.co.za

Physical Address:
Corner Cresset & Musket Roads
Midrand Industrial Park
Midrand

NORTH WEST
Tel: 012 250 1711
Fax: 012 250 1708
Email: nw@bosun.co.za

Physical Address:
1892 Pendoring Street
Brits Industrial Area
Brits

EASTERN CAPE
Tel: 041 405 0100
Fax: 041 405 0199
Email: ec@bosun.co.za

Physical Address:
Corner Neptune Road & MR435
Coega Industrial Development Zone
Port Elizabeth

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Expect the Best

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Retaining Walls

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Installation guidelines

The strength of a wall comes from the design – not the blocks. It is therefore critical to consult an engineer when a wall is higher than 1.4m. Bear in mind that a retaining wall must resist the lateral pressures generated by the soils behind it or, in some cases water pressure too. Every retaining wall supports a "wedge" of soil. As the setback of the wall increases, the size of the sliding "wedge" is reduced. This reduction lowers the pressure on the retaining wall.

The most important consideration in proper design and installation of retaining walls is to recognise and counteract the tendency of the retained soil to move downslope due to gravity. This creates lateral earth pressure behind the wall which depends on the angle of internal friction and the cohesive strength of the retained material.

Lateral earth pressures are zero at the top of the wall and - in homogenous soil - increase proportionally to a maximum value at the lowest depth. Earth pressures will push the wall forward or overturn it if not properly designed. Also, any groundwater behind the wall that is not dissipated by a drainage system causes further hydrostatic pressure on the wall.

It is critical to have proper drainage behind the wall in order to limit the pressure to the wall's design. Drainage materials will reduce or eliminate the hydrostatic pressure and improve the stability of the material behind the wall.

When the weight of blocks alone is not enough to resist soil loads (walls higher than 1m), horizontal layers of geotextiles are used to reinforce soil behind walls. With proper soil reinforcement and design, retaining walls can be constructed to heights in excess of 20m.

Why retaining walls fail:
- Insufficient drainage
- Incorrect or non-use of Geotextiles
- Insufficient compaction of soil behind the wall
- Inadequate foundations

CRITICAL CONSIDERATIONS:
- The NHBRC stipulation is that a wall of up to 1.4m doesn't need an engineer's approval if the soil is good compactible soil without excessive storm water and there is no load pressure on the wall such as vehicular traffic or buildings. Retaining walls which are higher than 1.4m need an engineer's approval.
- You cannot build a retaining wall where clay and non-compactible sand conditions exist.
- For a wall which is higher than 3m the common rule is to use Geotextile in every third layer (we recommend that with a Bosun Robust Block that a Geotextile is used in every second layer).
- Consider available space, drainage and water management.

FOUNDATION:
All retaining walls should have a foundation, even if the wall isn't high.
- After excavating and digging the foundation the soil must be levelled and compacted.
- Foundation dimensions are custom designed.
- For walls which are more than 6 layers high, construct a concrete foundation. If walls are less than 6 layers high the soil needs to be compacted and cement can be added.
- Wet your concrete foundation regularly for 24 hours for better curing and to prevent cracking.

SOIL COMPACTION:
- Inadequate soil compaction is the most common reason for retaining wall failures according to engineers.
- The wall blocks are merely the 'skin'. Compaction is what determines structural integrity.
- Compaction needs to be done layer by layer behind the blocks. Lay one row of blocks and compact behind and inside the blocks using a mechanical compactor or roller and a hand tamper respectively before laying the next row.
- Every layer must be moist when compacted (neither dry nor muddy).
- Make sure to obtain the compaction density as per design. Normally 90-95% MOD ASSHTO.

Bosun VFC Retaining Wall System

The VFC (Vertical Fixed Connection) retaining wall system producing a vertical wall.

Page 4

Robust Block

The Robust block is a cost-effective solution for large, engineered solutions.

Page 10

Versoblock

The Versoblock - a standard retaining wall block, cost effective for both small installations and larger engineered installations.

Page 14

Bosun VFC Retaining Wall System

90-Degree Segmental Concrete Block Retaining Wall Solution

The VFC (Vertical Fixed Connection) retaining wall system is designed to construct 90° concrete block retaining walls. In addition, the VFC system meets SANRAL's requirements for vertical retaining walls outlined in South Africa COTO specification for roads 2019.

The system uses a positive mechanical interlock connection between the geogrid and the block through an oval shaped interlocking pin. In addition to the fixed connection, the VFC uses a double nib system, resulting in increased shear resistance than what a single nib system can offer.

The innovativeness of this system is evident in the fact that the company holds two direct patents and one indirect patent on various aspects of its design.

A positive mechanical connection and double nib system:

- The VFC block features a specially shaped channel that enables the connection of geogrid to a custom-designed concrete pin (locking mechanism). The system mechanically secures the geogrid to the block, enabling the building of vertical, 90 degree retaining walls. Patent: ZA 2018/04934
- Vertical walls are required on various infrastructure projects with space constraints. The VFC creates more usable ground space.
- The VFC further boasts a double nib system, resulting in increased shear resistance than what a single nib system could offer.
- The VFC block is compliant with SANS8006-1 and tests have been conducted in accordance with ASTM D6638 and ASTM D6916 to verify the local facing stability.
- The VFC block has been designed for use with a variety of both imported and locally manufactured geotextiles available in South Africa.

Easy to use and install:

As with the patented Bosun Castle Bottom kerbs (Patent ZA: 2012\09544), the VFC Base Block has cavities on its bottom surface. These cavities make the base block much quicker and easier to install. Where an imperfect bedding layer forced installers to uplift, fill up and re-lay conventional blocks it is easier to manoeuvre the Castellated block into place, with the bedding layer/levelling pad material being displaced into the cavities in the base block.

- The castellated base block simplifies bedding and sets the levels for all succeeding layers.
- The base block comes with a simple jig which enables the placement of a spirit level across both axes. This, in turn, facilitates accuracy and ease of setting out.
- The base block can be inverted and used as capping on the top of the wall.
- The locking of the geogrid into the VFC block is quick and simple.
- The weight of the standard VFC block is approximately 24kg, making it light enough for one man to handle, in turn promoting hand labour.
- The VFC block complies with SANS 508 and block heights in particular, are guaranteed to be consistent.

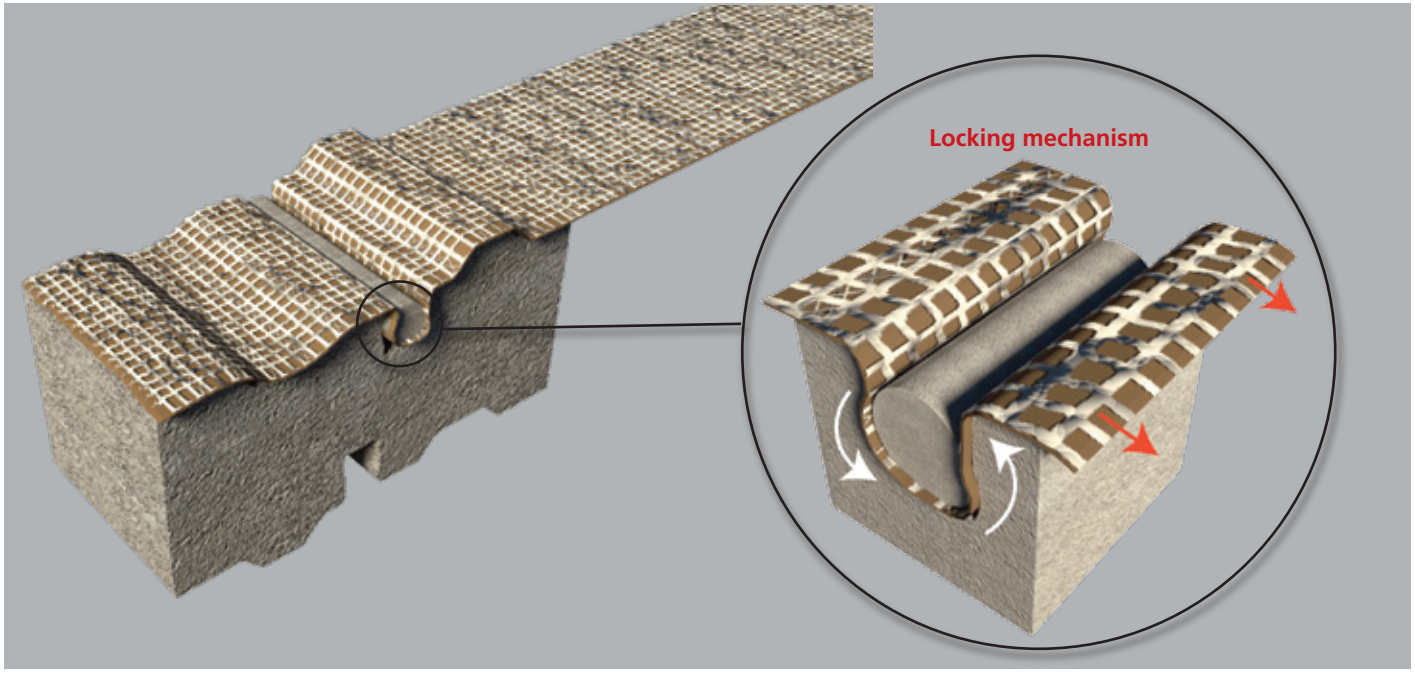
VFC block

Dimensions	300mm x 300mm
Height	140mm
Mass per Block	± 26kg

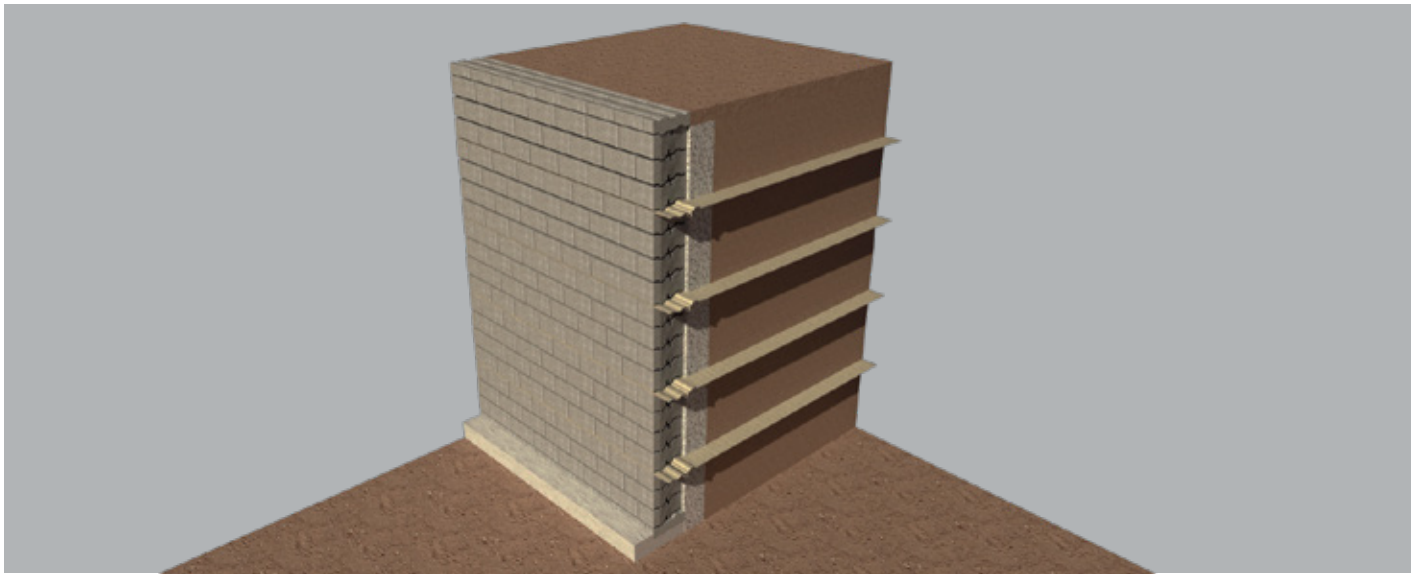
VFC base block

Dimensions	300mm x 250mm
Height	80mm
Mass per Block	± 13kg

Positive mechanical connection (locking mechanism):



Design concept:



Interchangeable face:

The VFC features an interchangeable face. This means that it can be used to construct linear, concave and convex wall geometries with a 2m radius. No concrete infill or cutting of blocks is required when constructing curves.

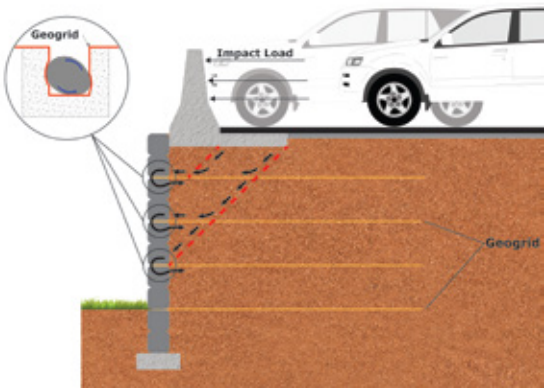
The larger block face is used by default, while concave curves can be achieved by simply flipping the VFC block over from front to back. (Patent: ZA 2017/08449).

Convex curves can be achieved by shifting the rear parts of the blocks towards each other. This will result in less cutting on site.

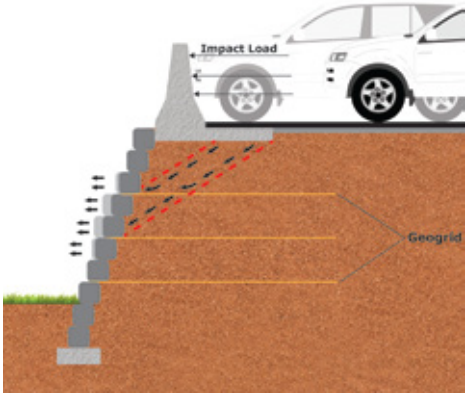
Practical advantages:

Roads built on the VFC system are better equipped to handle potential impacts on barriers. Conventional retaining wall systems using friction principles may fail as opposed to the fixed connection system used with the VFC.

VFC System

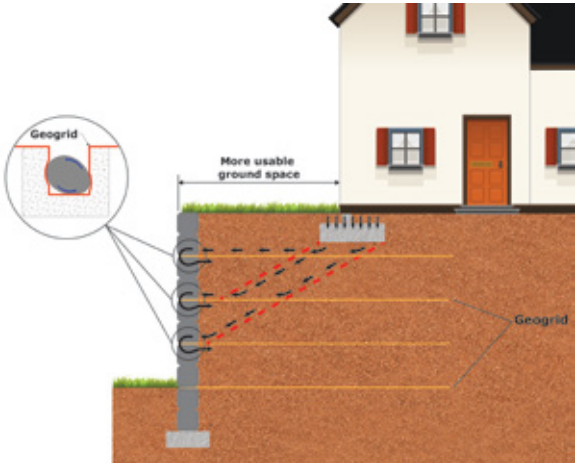


Conventional System

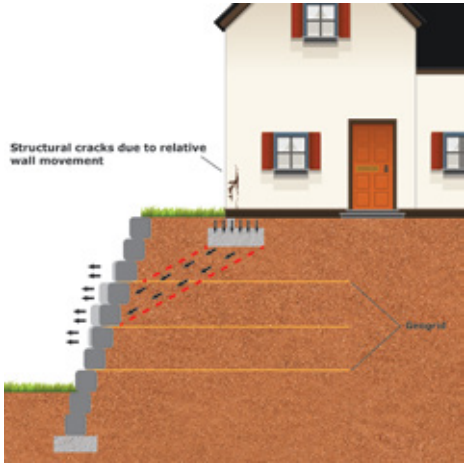


Due to the fixed connection and strong nibs, zero relative displacement occurs between blocks experiencing building surcharge.

VFC System



Conventional System



Robust Block

The Robust Retaining Wall Block, developed and manufactured by Bosun, is an innovation in the retaining wall market. The block features new patented design elements with better weight distribution and height tolerances compared to standard retaining wall blocks. The specially designed nib also offers excellent shear resistance. The Robust Block is a cost-effective solution for large, engineered solutions.

The Robust Block can be used in either a closed or open face formation, with the open face being extremely popular due to the economic advantage of using less blocks and saving on costs. At 5.1 blocks/m² using an open formation, it is one of the most competitive in the market.

An open face formation can be transformed into a closed face by using a cost-effective slider between the blocks. The slider prevents soil erosion between the blocks and most importantly on the top row – regardless of formation.

Robust block

Dimensions	440mm x 300mm
Height	250mm
Mass per Block	±47kg

PATENTED DESIGN

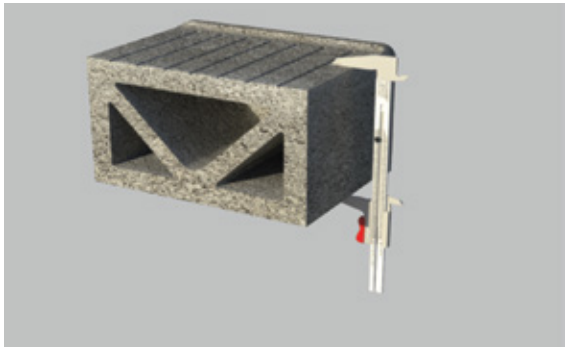
Bosun Robust Block Advantages

100% consistent block heights

A critical aspect with retaining wall blocks is consistency in block heights. SANS 508, (the official South African specification for retaining wall blocks) **specifies dimensional differences of not more than ±3mm. The Bosun Robust Block guarantees these height tolerances or your money back.** If there are any dimensional inaccuracies, it is at the back of the block that can't be seen and it doesn't have any structural influence.

Why are blocks of consistent heights important?

- The layer on top of irregular blocks will rock back and forth.
- There will be uneven weight distribution of blocks placed on top of an uneven layer, leading to stress points and, ultimately, block failure.
- Geotextiles placed between uneven rows of blocks might tear or rip out.
- It wastes a lot of time to level blocks on site with little stones, etc.
  (Patent: ZA 2016/00519)



Special V-shaped stiffeners

The Bosun Robust Block has a superior crushing strength compared to most standard concrete retaining blocks. The crushing strength is derived from various design elements, including the unique V-shape stiffeners in the block. Because of the Bosun Robust Block's superior crushing strength, the construction of retaining walls which are 10m high is possible it.

The V-shaped stiffeners also offers a better distribution of force and, in combination with the flat top of the block, offers better resistance to deflection on the sides and top of the block.

Flat surface

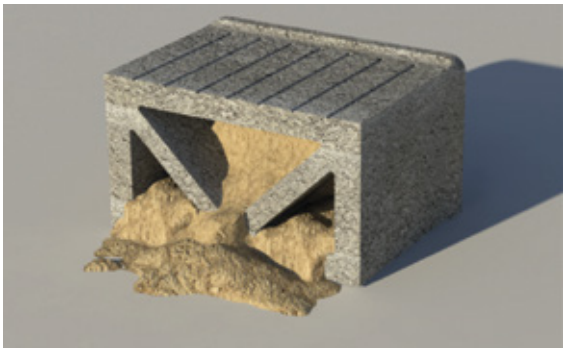
Because this block has a flat surface, vertical pressure from above is displaced more evenly and point loads are more widely spread than with conventional retaining blocks.

Nib

The Bosun Robust Block offers excellent horizontal shear (sliding from the back) resistance because of its specially designed nib.

Other advantages of the nib are:

- Fewer blocks are used in closed laying method.
- Gaps between the blocks are smaller in the open laying method.
- There is less chance of soil falling through gaps in the open installation method.
- It is possible to build steep walls at angles of up to 80°.



0pen blocks

Soil erodes into the block at the back (open side) of the Robust Block. This means that soil doesn't leave the retaining structure when it erodes.

Installation guides

The Robust Block offers installation guides on the top part of the block. These lines will ensure consistent overlapping of blocks on site.

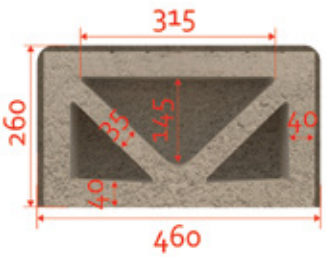
Handling

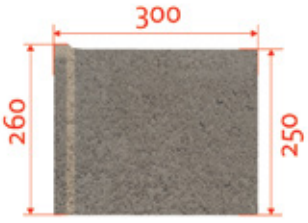
The blocks is easy to pick up and handle on site. It is possible to carry six blocks with a gravity clamp.

Slider for closed face installations

The use of the slider allows for a more cost-effective closed face option which prevents soil erosion between the blocks and most importantly on the top row, regardless of formation. In addition, the slider can improve the aesthetics of the wall as it promotes plant growth within the retained soil.

Dimensions	320mm x 60mm
Height	230mm
Mass	±9kg





Versoblock

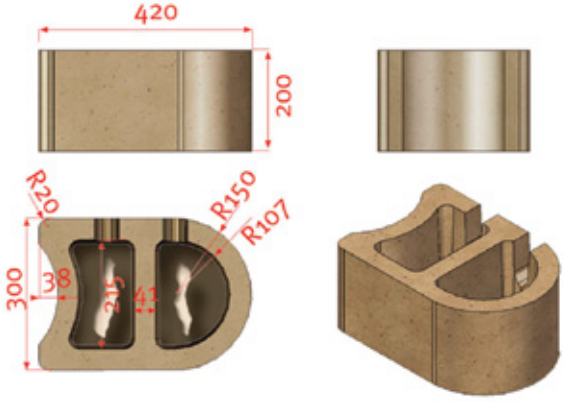
The Versoblock offers superb versatility – a standard retaining wall block, cost effective for both small installations and larger engineered installations. The lip helps to ensure that the blocks above keep their position behind the blocks below.

- Versoblocks could be used with either the front, back or side exposed, to create different finishes.
- Versoblock could be installed closed, creating a solid retaining feature – or open in order to create a living wall of plant life.
- The load is carried on five points on the block, compared to three points on similar systems – thereby increasing the stability of the wall.
- Versoblocks are available with a lip which simplifies installation and increases stability.

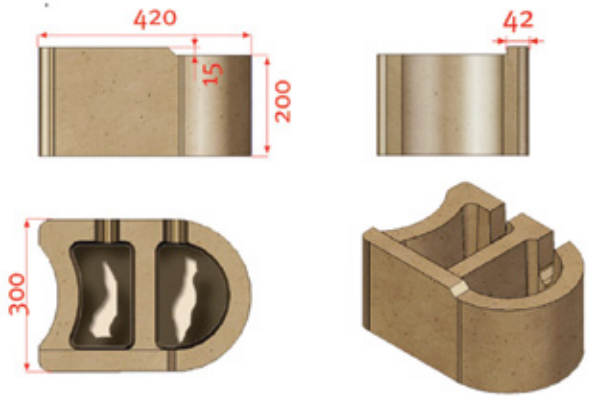
The load is carried on five points on the block, compared with three points on similar systems. This increases the stability of the retaining wall.

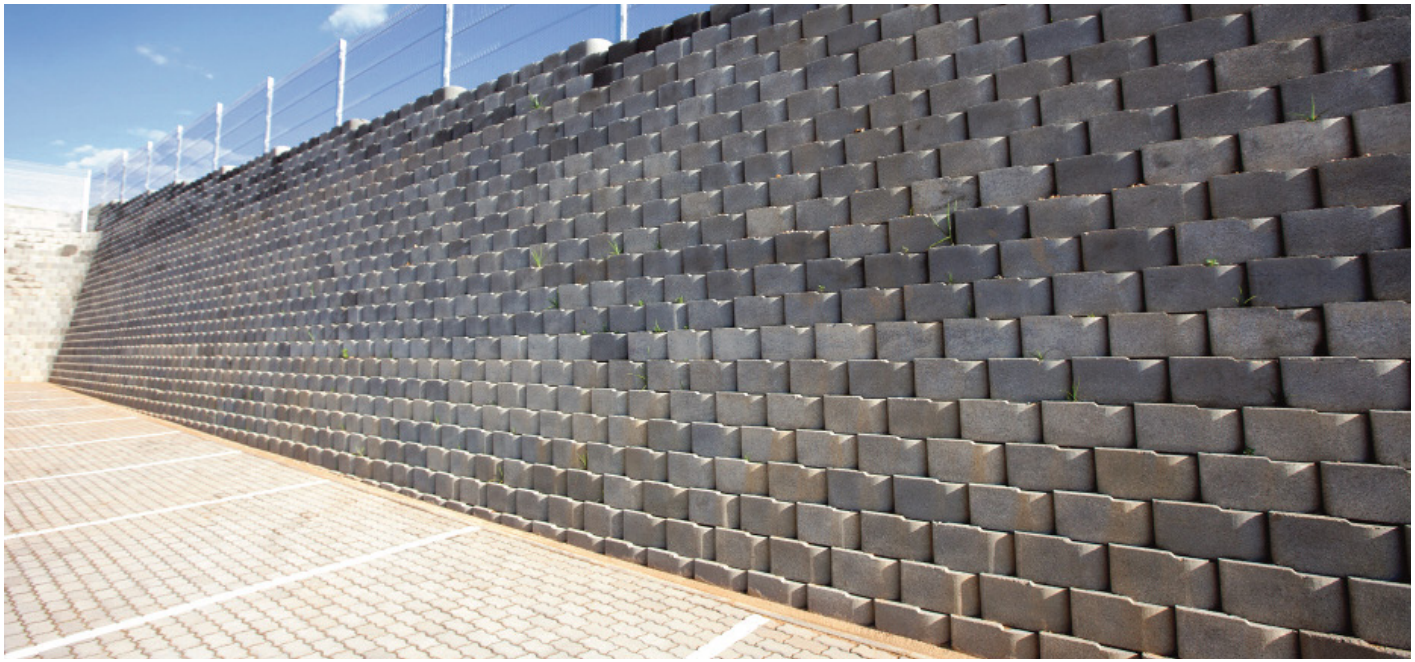
Profile without lip

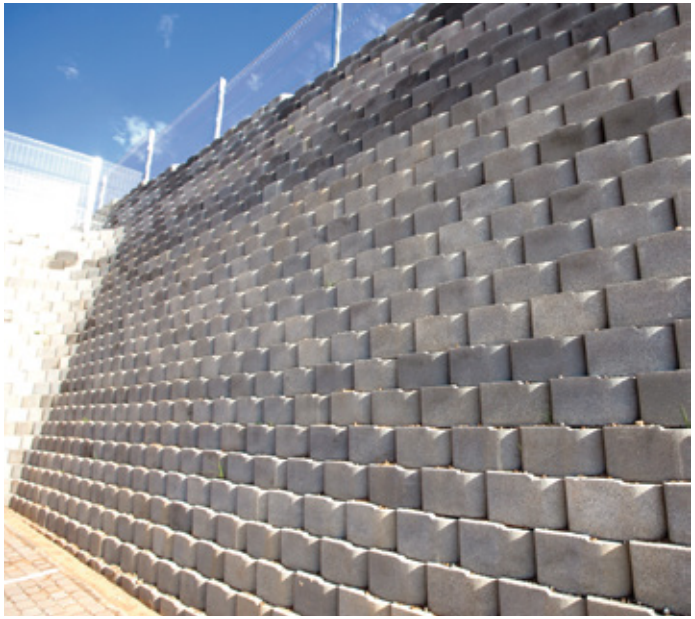
Unit of measurement: mm



Profile with lip







CONTACT DETAILS

GAUTENG
Tel: 011 310 1176
Fax: 011 310 1178
Email: gp@bosun.co.za

Physical Address:
Corner Cresset & Musket Roads
Midrand Industrial Park
Midrand

NORTH WEST
Tel: 012 250 1711
Fax: 012 250 1708
Email: nw@bosun.co.za

Physical Address:
1892 Pendoring Street
Brits Industrial Area
Brits

EASTERN CAPE
Tel: 041 405 0100
Fax: 041 405 0199
Email: ec@bosun.co.za

Physical Address:
Corner Neptune Road & MR435
Coega Industrial Development Zone
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