ROCLA

OUR DIFFERENCE IS CONCRETE

The future of road safety starts here...

Vehicle restraint systems in accordance with SANS 51317-2 : 2009 and EN 1317-5 : 2007 & A1 : 2008

REBLOC®

ROCLA

OUR DIFFERENCE IS CONCRETE

With over 100 years of experience and engineering ‘know how’, Rocla is the clear leader in Precast Concrete Products in South Africa.

From custom made concrete products and accessories through to our full product range, we pride ourselves in absolute quality and above average service. Our technical team is always on the look-out for the latest technologies and innovations from all over the world.

Making us your preferred partner for all things precast, ensures that you always benefit from the Rocla difference, which is indeed, concrete.

With the local drive to ensure that South African roads meet international safety standards, we decided to investigate how and where, we could add value to this industry.

After exhaustive research into the precast concrete road barrier industry, we recognised that the development of a state-of-the-art system such as REBLOC is very complicated, expensive and time consuming. We therefore decided that the best option would be to try and partner with the current market leader and there-by benefit from their expertise.

We are excited to announce our new partnership with REBLOC systems of Austria. We have been appointed the exclusive license holders for the REBLOC system of Road Barriers to Southern Africa.

REBLOC®

REBLOC combines almost 100 years of experience in the manufacture of concrete elements with the latest innovations and concepts in modern vehicle restraint systems.

REBLOC technology, patents pending, enables the most stringent safety specifications to be met while raising the bar concerning rapid installation and cost effectiveness.

As an autonomous company within the Oberndorfer Group, REBLOC develops, manufactures and markets state-of-the-art concrete vehicle restraint systems to enhance traffic safety. The comprehensive system offers the right solution for all main fields of application.

TIME IS MONEY, AND ROAD SAFETY, PRIORITY...

Introducing the REBLOC system:

One of the objectives of the development engineers at REBLOC was to develop a system that works without additional fastening components. This is because quick installation and straightforward logistics minimise the time taken to finish the work on-site. Plus, the lower the disruption to traffic flow, the higher the level of road safety. No loose parts, ensures that the system is installed correctly and remains that way.

“Concrete does not travel economically”. This is a fact that REBLOC takes very seriously and encouraged the development of lighter and longer elements. The narrow elements represent a significant saving in material and weight compared to conventional systems. Installation and logistics are accelerated as a result and transport can be organised more efficiently.

The REBLOC system offers products for permanent separation of traffic flow in the central reservation and along the verge of the road as well as temporary safety systems for managing roadwork sites. A range of special elements rounds off the system to offer technically superior solutions even for the most difficult installation situations.

REBLOC systems feature very low maintenance and servicing requirements, further enhancing the level of road safety and cost saving.

Conforming to standards, is... well... standard...

Introducing ‘state-of-the-art’ in road barriers:

Usually, the road administrators of a country prescribe a procedure for the procurement of barriers to ensure the use of safe products on national roads. This would include the containment levels required for different road types. Manufacturers must make reference to this in order to ensure that all barriers are tested and certified to the required standards.

Safety barriers, irrespective of material used, must be crash tested with real vehicles in order to demonstrate their ability to safely redirect moving vehicles. These test procedures are fully documented in the European Code EN 1317 which has been included in SANS 51317-2 : 2009

Accordingly, several levels of performance are given for the three main criteria relating to the restraint of a road vehicle:

- The containment Level, (T1, T2, T3, N1, N2, H1, H2, H3, H4a and H4b), refers to the category of containment achieved by the barrier. This is determined by different crash test conditions. (see page 17)
- The impact severity level (ASI). This refers to the level of safety to the occupants of the vehicle. Sans allows for A or B, where A is safer than B with regards the safety of the passengers of light vehicles. This also includes THIV and PHD measurements. (see page 17)
- The deformation of the barrier system, as expressed by the working width (W1- W8). This defines how far the barrier can be expected to move after the specified collision. (see page 17)

Failure... Is not an option...

A barrier has failed if, (amongst other reasons):

- Break-through or break-up of the system occurs.
- ASI value exceeds those stipulated in the code.
- The exit angle of the vehicle is not within limits.
- Vehicle overturns.

Containment Levels that different barriers will be rated against:

Table 1 on page 17, (from EN and SANS standards), refers:

- T1, T2 and T3 are generally intended for use as very low speed temporary safety barriers.
- N1 and N2 are medium containment levels.
- H1, H2 and H3 offer higher containment levels.
- H4a and H4b offer the maximum available containment levels.
- The column showing kinetic energy of impact reflects these increasing levels.

Acceptance Tests that define barrier rating

TB tests define the containment level with each rating referring to a different set of test requirements including:

- Size and mass of vehicles from a small passenger car to a 38ton truck,
- Impact angles from 8 degrees up to 20 degrees,
- Speeds of impact from 65 km/h up to 110 km/h
- Kinetic energy of impact ranging from 6.2 KJ up to 724.6 KJ

More than simple steel and concrete...

The next leap in technology, is already integrated:

The innovative coupling system integrated into the elements, joins the individual sections to form a very high strength continuous chain that safely absorbs energy and force applied to the restraint system in the event of impact from a vehicle.

A major benefit is that NO additional fastenings or rubber spacers are required, making the REBLOC system much easier and safer to install, ensuring that all required parts are installed and secured. The symmetrical configuration of the couplings enables elements to be installed from either side. If repairs, maintenance or modifications are required, individual elements can simply be lifted out of the continuous chain and then slotted back in again.

The full length of steel tension bar inside the concrete elements, together with the ingeniously designed reinforcement, efficiently absorbs impact, safely preventing even heavy vehicles from breaking through the restraint system. This, whilst minimising damage to the element itself.

The extended length of the elements creates a cost effective system, which, in combination with the integrated coupling and full length steel tension bar, reliably controls the deflection of vehicles. The dimensions of the elements also facilitate a quick and efficient installation.

Road safety at the highest level...

Proven reliability in rigorous impact tests:

REBLOC products have been subjected to real impact tests in accordance with European Standard EN 1317 and have been proven to meet all the specifications of a modern vehicle restraint system. Meeting specifications regarding high containment levels ensures that the risk of vehicle breakthrough is eliminated as best as possible.

This versatile and flexible system enhances the safety of drivers and passengers inside lighter-weight vehicles in the event of an accident. The values reached for impact severity (ASI, THIV, PHD) are well below the limits in the specification. The ASI figures (acceleration severity index) are within level A or B and demonstrate the extent to which REBLOC fulfils safety specifications. The safety of motorcyclists is also increased to a great extent thanks to the uninterrupted smooth surface of the REBLOC system

The low working widths of the system are a major safety advantage, allowing the restraint elements to be used even on very narrow stretches of road.

It simply doesn't get better than precast...

The benefit of concrete barriers, is no grey area:

Concrete road barriers, compared by classification, are generally more cost effective than other types of barriers and have the advantage of being less dependant on constantly fluctuating prices of other materials.

Compared to other types of guard rails, concrete barriers have considerably reduced maintenance requirements and a high level of safety for motorists and motorcyclists alike.

Advantages of PRECAST concrete barriers

- Quick and easy to install,
- Quick and easy to repair or replace,
- Installation irrespective of weather conditions,
- Can be opened or moved at any time and placed in case of emergency or for road / construction works,
- Flexible and adaptable to local circumstances,
- Relatively little damage to concrete barriers in the case of an impact with medium speed relative to the classification of the barrier,
- Quality assured if manufactured off-site at a facility with SABS and ISO accreditation,
- Generally superior finish to the product,
- Can be used for temporary and permanent barrier applications.

State of the art, absolutely...

The most intelligent option and system available:

REBLOC elements in South Africa use the F-Shape profile, which is well established all over the world and conforms to SANRAL's standard profile requirements.

Advantages of REBLOC precast concrete barriers

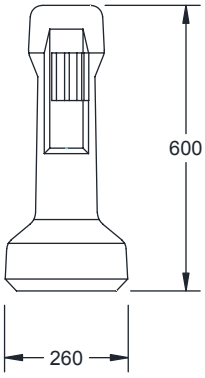
- All materials are placed as delivered - no secure storage areas required,
- Coupling is fully integrated and no loose parts are required,
- 100% Guaranteed effective - no need to check if coupling has been placed and/or positioned correctly,
- Vandalism proof as coupling cannot be stolen,
- Quick and safe installation, from any side - symmetrical units,
- Quick and easy to change single elements at any place in the chain,
- REBLOC is available in a standard element length of 6m - allowing for cost savings over shorter elements due to less couplings, and faster installation. Shorter elements (2m & 4m) are available to form narrow curves,
- REBLOC adjacent edges are radiused to eliminate the need for loose rubber inserts between blocks
- A full set of standard, terminal, transition and bifurcation elements are available - allowing the system to adapt to almost all local circumstances and attach to all existing systems,
- Best technical results (containment levels, ASI, working widths) combined with lowest cost offer the customer the best option available today,
- Only terminal elements at each end of a barrier chain are anchored to the road surface / foundation block in order to manage impact at that point.

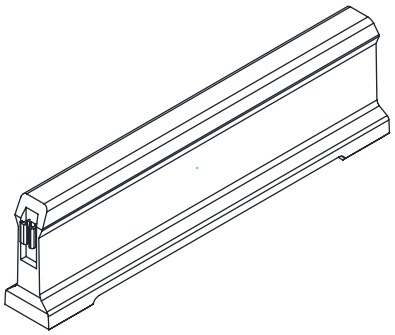
Not just made for the road...

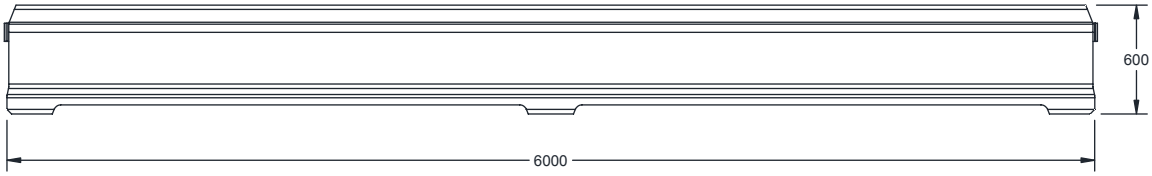
Precast concrete barriers can also be used for:

- Permanent or temporary road barriers either in the central reserve or on the verge, to the sides of bridges or during periods of road works.
- Securing railways and airports,
- First line of defence against terror attacks on high security areas,
- First line of defence to prevent vehicles penetrating warehouses with the intention of theft of goods there-in,
- Large function and concert venues as parking rails, guardrails or to direct traffic through congested or restricted areas,
- At the base of mountains and hills to control debris from land and mudslides,
- Preventing illegal dumping,
- Blocking entrances to building sites and other areas with health and safety access requirements,
- Prevent explosive items (like butane or other fuel tanks) from being struck by vehicles, either by accident or on purpose
- Deterring unwanted traffic from entering driveways or access points to facilities with access control.
- To segregate bulk materials - to keep different grades of coal, salt, or different types of landscape materials separate,
- Permanent or temporary barrier for child safety,
- Securing vacant land or buildings - ideal perimeter security walling creating an effective barrier to vehicles.

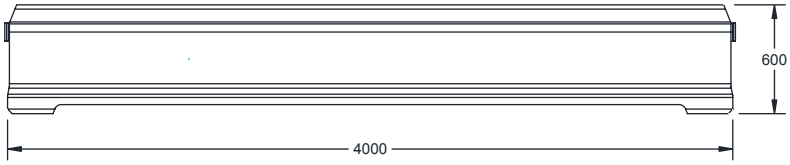
Meet the family RB60...



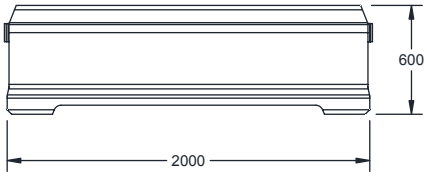




REBLOC RB60_6

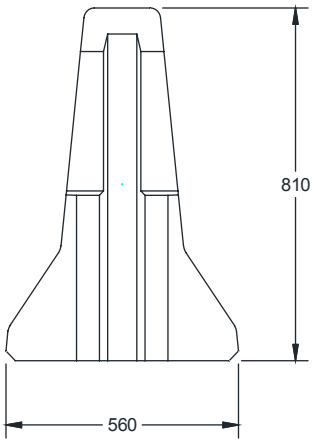


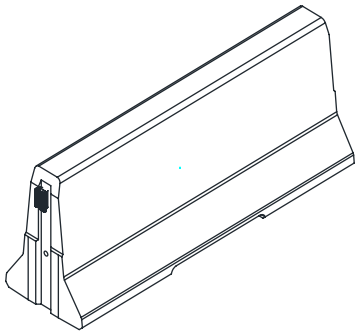
REBLOC RB60_4

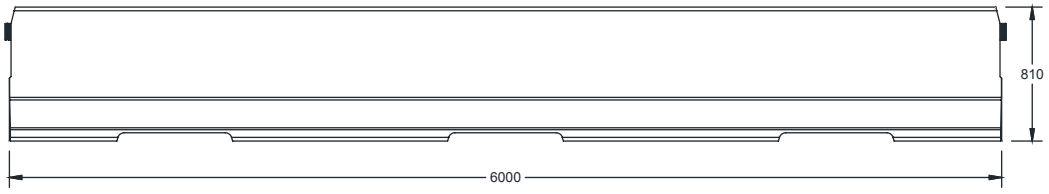


REBLOC RB60_2

Meet the family RB81







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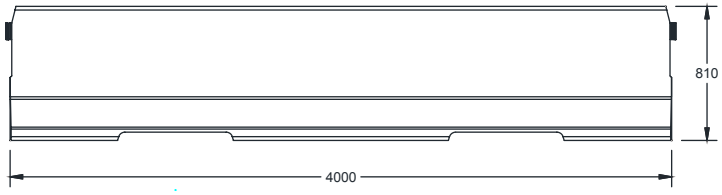

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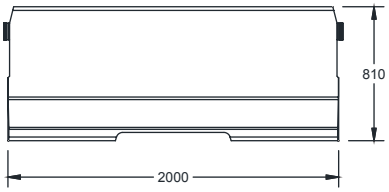

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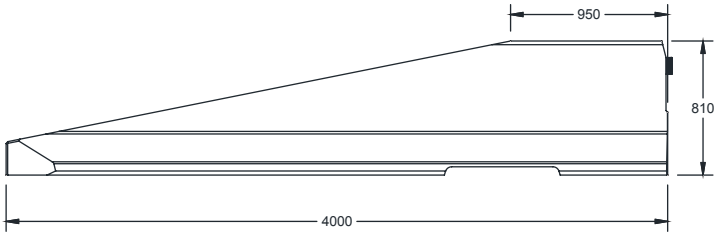
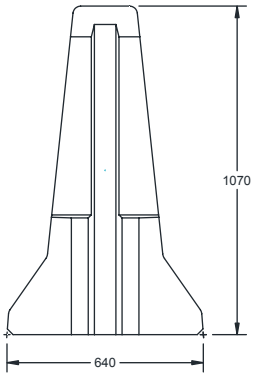
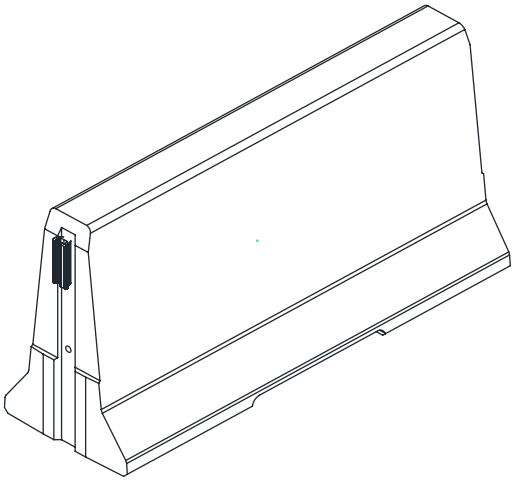
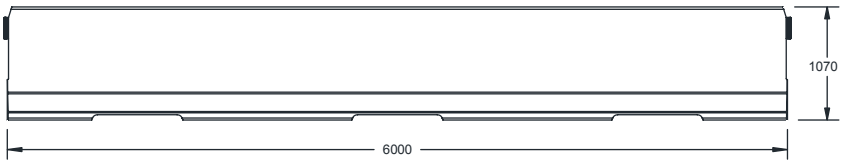


REBLOC RB81_4 TERMINAL

Meet the family RB107







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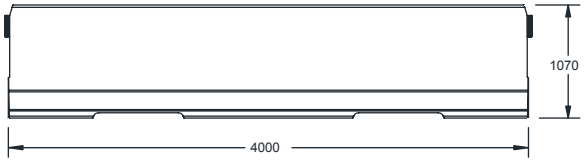

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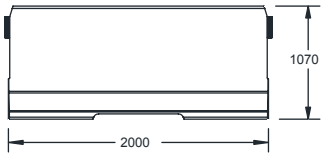
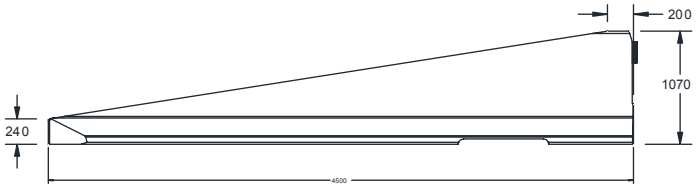
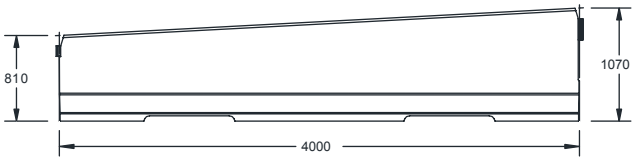


REBLOC RB107_2



REBLOC RB107_4.5 TERMINAL



REBLOC RB81-107 TRANSITIONAL




Installation, one, two, three...

So simple, it's beautiful:

Basically, REBLOC systems are free standing, such that individual elements are not connected with the subsoil. The restraint function is achieved by the strong connection of the single elements to a continuous tension chain.

Only terminal elements are anchored into either the road pavement (asphalt/concrete) or a local concrete foundation.

Elements are delivered to site and taken from the truck with suitable lifting apparatus (tongs, belts or lifting holes and pins) and an appropriate crane. Elements are removed and placed directly into position along a predefined mark on the surface.

The coupling of the unit must be positioned over the coupling of the already positioned unit such that both couplings lap in the view from above. A handler places a hand on the top edge of the new unit to slightly tip this edge downward, ensuring that no collision occurs between the bottom of this unit and the top of the previous unit.

The integrated guidance channel simplifies the positioning of the two elements such that both couplings fit into each other as the new unit is lowered onto the road surface.

Maintenance! What maintenance?

So independent, you'll forget about it:

The REBLOC road restraint system is very maintenance-friendly. The connecting facilities are integrated into the specially profiled concrete ensuring that there are no loose parts or accessories that would require maintenance. This provides maximum safety and peace-of-mind against vandalism and theft.

Maintenance may be required only in the event of a collision with the road barrier. This will be determined by the severity of impact with the barrier:

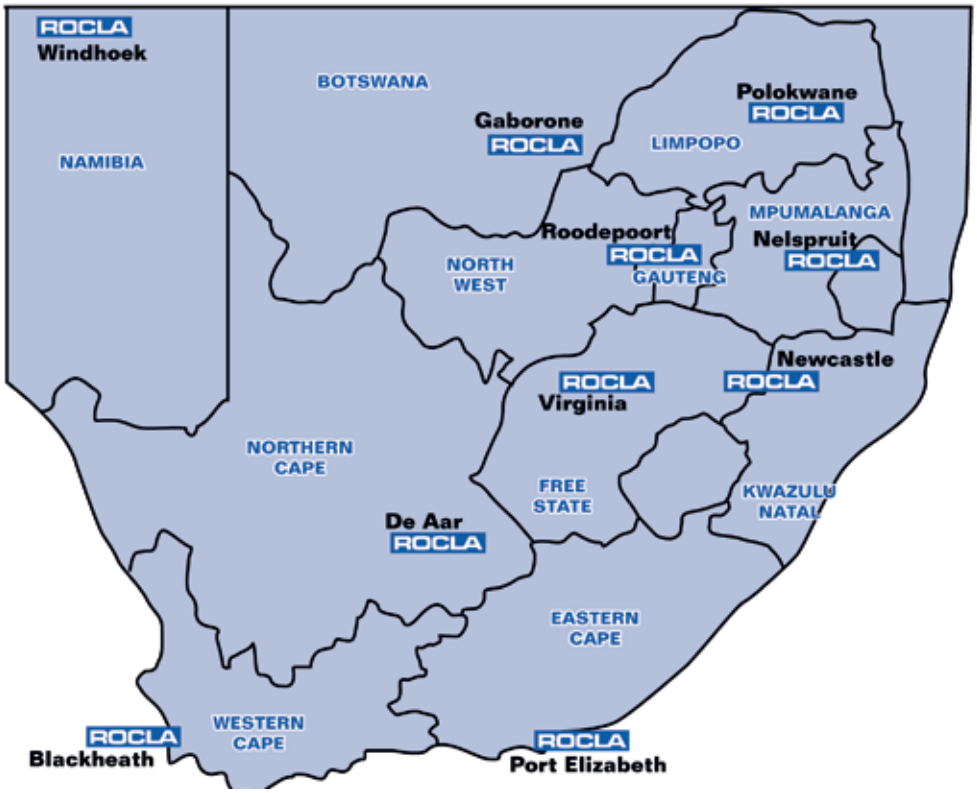
- If there are visible scratches or abrasion marks, but no cracks, and the system has not displaced, no maintenance or repairs are required.
- If no damage or cracking is visible, but the system has displaced, it will be sufficient to just move these elements back to their original positions.
- If cracks larger than 0.2mm are visible, or parts of the reinforcement are exposed due to spalling of concrete, the integrity of the barrier system could still be intact. Nevertheless, to ensure durability and peace-of-mind, the affected units should be replaced instead of repositioned.
- If severe cracks or spalling have occurred with or without damage or deformation to the coupling, the restraint system will be considered to be compromised. Affected elements must be replaced immediately.

These conditions also apply to terminal elements and their anchorages, including the foundation, anchorage bolts and plates.

Road safety, on location...

Rocla & REBLOC - always close to your projects:

A network of production facilities and sales teams enable us to supply products cost effectively throughout Southern Africa, with 10 production facilities at key locations in South Africa, Namibia and Botswana, Rocla is best positioned to respond timeously and cost effectively to all your requirements.



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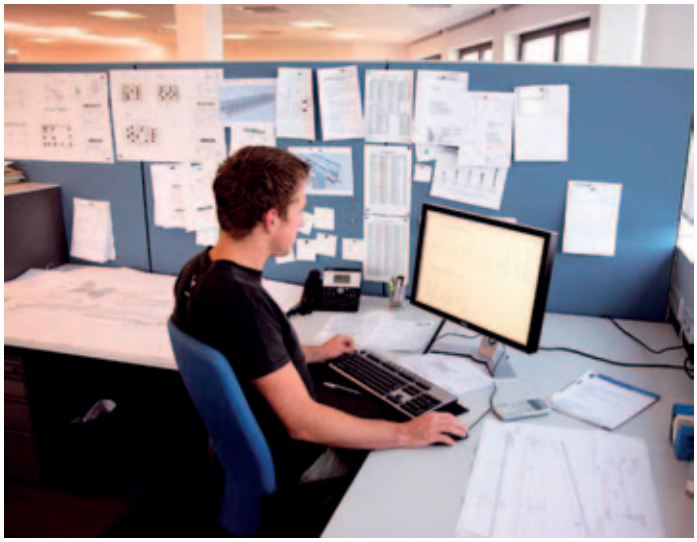

Raising the bar with research and development

Applying technology to protect and save lives:

All REBLOC systems are based on the principle of ongoing innovative development. A principle that is taken very seriously, which explains constant investment into new ideas and industry leading development. In addition to meeting technical specifications, REBLOC engineers take into consideration the ease of use and durability of their systems.

State-of-the-art simulation and calculation methods, complex testing facilities and instrumentation as well as a strong team of development engineers and material experts help keep up the pace in creating new technologies. Short decision channels and many years of expertise make it possible to respond quickly to new requirements and offer suitable solutions within a very short time-frame.

Table 1

Containment levels	Acceptance Test	Vehicle Mass (kg)	Impact Speed (km/h)	Impact Angle (°)	Kinetic Energy (kJ)
T1	TB21	1 300	80	8	6,2
T2	TB22	1 300	80	15	21,5
T3	TB21	1 300	80	8	-
	TB41	10 000	70	8	36,6
N1	TB31	1 500	80	20	43,3
	TB11	900	100	20	-
N2	TB32	1 500	110	20	81,9
	TB11	900	100	20	-
H1	TB42	10 000	70	15	126,6
	TB11	900	100	20	-
H2	TB51	13 000	70	20	287,5
	TB11	900	100	20	-
H3	TB61	16 000	80	20	462,1
	TB11	900	100	20	-
H4a	TB71	30 000	65	20	572,0
	TB11	900	100	20	-
H4b	TB81	38 000	65	20	724,6
	TB11	900	100	20	-

Classes of Working Width	Working Width Levels (m)
W2	W < = 0.8
W3	W < = 1.0
W4	W < = 1.3
W5	W < = 1.7
W6	W < = 2.1
W7	W < = 2.5
W8	W < = 3.5

Impact Severity Assessment Indices		
ASI Values	A	ASI < = 1.0
	B	ASI < = 1.4

THIV	< = 33 Km/h
PHD	< = 20g

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Technical

Product SA	RB60_6	RB81_2	RB81_4	RB81_6	RB107_2	RB107_4	RB107_6
Product EU (tested)	RB60_12	RB80_2	RB80_4	RB80_8	RB100_2	RB100_4	RB100_8
Unit Length	6 m	2 m	4 m	6 m	2 m	4 m	6 m
Unit Heigth	600 mm	810 mm	810 mm	810 mm	1 070 mm	1 070 mm	1 070 mm
Unit Width	260 mm	560 mm	560 mm	560 mm	640 mm	640 mm	640 mm
Unit Mass	2,20 t	1,20 t	2,40 t	3,60 t	1,90 t	3,80 t	5,60 t
Min. Istallation Length	120 m	-	-	112 m	64 m	-	104 m
Curve Radius (r > =)	-	r > = 27 m	r > = 54 m	r > = 108 m	r > = 27 m	r > = 54 m	r > = 108 m
Anchorage	Not Anchored	Only Terminal Elements			Only Terminal Elements		
Installation	All system scan be utilised as a single (central reserve, verge) or double (central reserve) row installation						

Product Family

Product Family	RB60_6_T3	RB81_6_N2	RB81_6_H1	RB107_2_H3	RB107_6_H2	RB107_6_H4b
Product Tested	RB60_12_T3	RB80_8_N2	RB80_8_H1	RB100_2_H2	RB100_8_H2	RB100_8_H4b
Containment level	T3/W2	N2/W3	H1/W4	H2/W5	H2/W5	H4b/W6
WW Level	W < = 0.8m	W < = 1.0m	W < = 1.3m	W < = 1.7m	W < = 1.7m	W < = 2.1m

Tested Working Width	W1	W2	W2	W3	W2	W4	W5	W2	W5	W2	W6
Acceptance Test	TB21	TB41	TB11	TB32	TB11	TB42	TB51	TB11	TB51	TB11	TB81
Vehicle Mass (Kg)	1,300	10,000	900	1,500	900	10,000	13,000	900	13,000	900	38,000
Impact Speed (Km/h)	80	70	100	110	100	70	70	100	70	100	65
Impact Angle (°)	8	8	20	20	20	15	20	20	20	20	20
Kinetic Energy (KJ)	-	36,6	-	81,9	-	126,6	287,5	-	287,5	-	724,6
ASI Classification	A	B	B		B		B	B		B	
THIV	Theoretical Head Impact Velocity is tested only for passenger vehicle tests Rebloc is within required limits (<= 33 Km/h)										
PHD	Post-Impact Head Deceleration is tested only for passenger vehicle tests Rebloc is within required limits (< = 20g)										

Rocla nationwide

Positioned to serve your needs, Rocla's 11 factories and depots are strategically located throughout South Africa's nine provinces and in Namibia and Botswana.

South Africa and offshore markets are cost effectively supplied by road, rail and sea.

- **Head Office, Roodepoort:** Tel (011) 670-7600, Fax: 086 677 1510
- **Blackheath:** Tel: (021) 905-1270, Fax: (021) 905-2913
- **De Aar:** Tel (053) 631-3601/2, Fax: (053) 631-3351
- **Newcastle:** Tel: (034) 375-7848/9, Fax: (034) 375-6941
- **Nelspruit:** Tel: 087 354 9202, Fax: 086 681 1052
- **Polokwane:** Tel: (015) 293-1857/8, Fax: (015) 293-2821
- **Port Elizabeth:** Tel: (041) 486-1462, Fax: (041) 486-2835
- **Roodepoort:** Tel (011) 670-7600, Fax: 086 677 1510
- **Virginia:** Tel: 087 354 8688, Fax: 086 687 2456
- **Stilfontein Depot:** Tel: 087 354 8693, Fax: 086 685 1148
- **Windhoek, Rocla Pipes:** Tel: 002646 126-3128, Fax: 002646 121-5149
- **Gaborone, Kwena Rocla:** Tel: 00267 390-4032, Fax: 00267 390-7160

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Infrastructure Specialist Group