

Traffic Road Signs

SPECIALIST OF:
All Road Signs
&
Road Markings

- **WARNING SIGNS**
- **INFORMATORY SIGNS**
- **ROAD PROJECT DIRECTORIES**
- **DIRECTIONAL SIGNS**
- **ROAD FURNITURES & ALL ROAD MARKINGS**

GIVE WAY

STOP

CHILDREN

STOP

50

SCHOOL Z

8-9³⁰ AM

Serving in East Africa:



*Kenya



*Tanzania



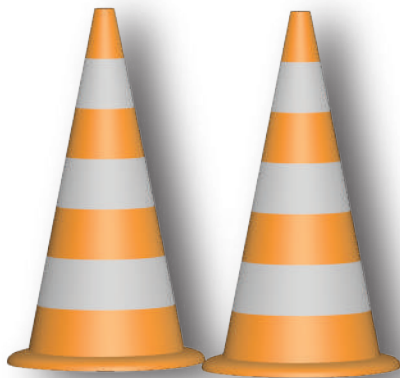
*Uganda

Since 2003

 **Smart Sign**
& ROAD FURNITURE LTD.



**For all your Road Signs,
Banners and Safety solutions....**



About Smartsign & Road Furniture Ltd



Smart Sign and Road Furniture Ltd is East Africa's largest signage company based in Industrial Area, Nairobi, Kenya, covering all aspects of signs from **Road Sign & Road Furniture, building signage and vehicle graphics to 3D Router cut lettering and large scale digital printing.** Smart Sign & Road Furniture Ltd has a team with a wealth of knowledge and expertise in signage production and digital print management collectively spanning over 10 years. We are a privately owned company, founded in 2003.

During that time we've evolved our business to its present position as one of the leading signage manufacturers in East Africa. Wherever possible we have proactively sought new technologies and opportunities and acquired new complex state-of-the-art machineries, and by adopting these into our factory and processes, we've stayed at the forefront of our industry.

We pride ourselves on challenges, and innovation which is at the forefront of our organization. Our culture is one of continuous improvement, and this is reflected in our workplace and the manufacturing process that has become an integral part of our business.

With a purpose built building size of 1200sqm and a workshop of 900sqm it gives us the ability to handle any job no matter the size or complex the sign is. Our company is appointed and authorized signage converter and distributor for 3M Company Traffic Safety and Security Division (www.3m.com) in recognition of its quality, experience and strength in the Road Signs and Furniture sector in E.A.

We are a truly Kenyan based company conforming to international standards, with a newly purpose built signage workshop in Industrial Area Nairobi. Our client base varies from small enterprises to multinationals and work with customers all over East Africa-Kenya, Uganda, Tanzania, Rwanda, Burundi and Ethiopia- and looking to expanding to Africa at large and all over the world.



Core Business

Our Company is consistently recognized for **QUALITY** products, friendly prices to meet our customers' needs. We offer variety of solutions to satisfy your needs. Our core production is in **Traffic Signage and other Road Furniture, Conspicuity tapes for (Trucks, Trailers and Tankers) Banners, Back lit Signs, Light Pole Flags, Wall banners, Sign Fabrication, Sign Printing, Sign Erection, Indoor & Outdoor Signs, Promotional Items, Pylons, Corporate Gift Items, 3D Signs and Skeleton Letters.** Whatever you need, you can be assured Smart Sign & Road Furniture Ltd is "Always a Good Sign" of knowledge and satisfaction.

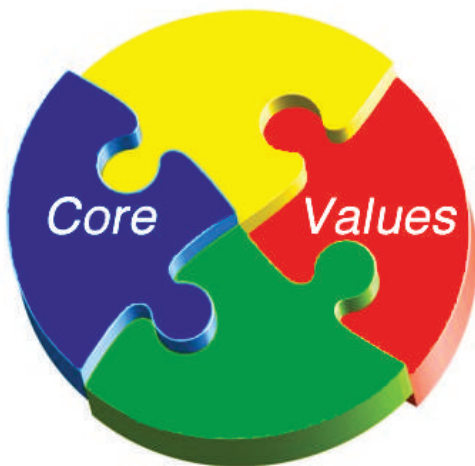


Our Mission in Kenya:

Our main mission is to support Ministry of Highways Kenya to improve the **Traffic Safety** all over **Kenya Road Network** and decrease the accidents that are caused by the insufficient **Traffic Signs, Road Marking, Traffic signals** and other necessary **Traffic Safety Equipments**.

Developing Kenya:

Kenya is one of the most developing countries in Africa continent and due to rapid economic growth in the last years, this triggered **astronomical increase in vehicles** starting from the major cities and villages. Simultaneously Kenya witnessed and increase in the accidents, injuries and deaths also.



Core Values

Taking pride in what we do, and continuously pursuing excellence in all our services with professionalism and accountability. Being ethical and acting in respect, integrity, fairness and care in our dealing with our clients. Welfare of employees, Associates and Clients is our primary concern. Our Road Signs and Furniture have been approved by the Ministry of Roads and Infrastructure and attained the Diamond Mark of Quality from the Kenya Bureau of Standard (KEBS). For further information you can log in to our website at www.smartsign.co.ke

Kenya Road Network:

Kenya has the largest road network in East Africa and the second largest East of the Sahara, with the National and Local road networks are currently estimated to be 161,451 Km.

Road transport is the most commonly used mode of transportation in Kenya

The Objective

To decrease accidents, injuries and deaths by improving all Kenya Road Network with the help of High Quality, Long-term Durability Traffic Safety Signs, Road Markings, Traffic Signals and other Traffic Safety Equipments.



The Goals

Improve Traffic Safety for pedestrians and drivers in a Short-Term period and work coordinated with Ministry of Highways to increase the Quality of Roads in Kenya



The Solutions

Implement the Latest Technologies with High Quality and Long-Term Durable Traffic Safety Equipments to Kenya Road Network Review National Transport and Safety Authority (NTSA) and suggest solutions if needed.

The Proposal

As a supporter of Ministry of Highways we want to work all-time coordinated and share our experience about Traffic Safety Solutions for continuous reduction in the number and severity of accidents



Warning Signs (Kenya Only)



Warning Signs (Kenya Only)



Priority Signs (Kenya Only)



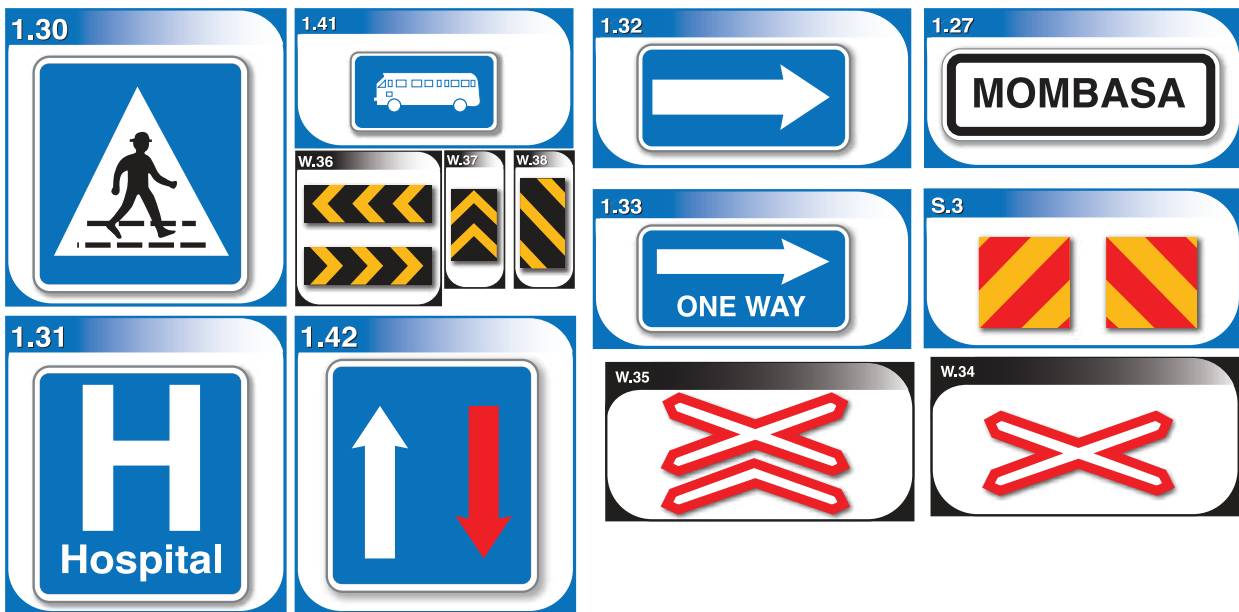
Prohibitory Signs (Kenya Only)



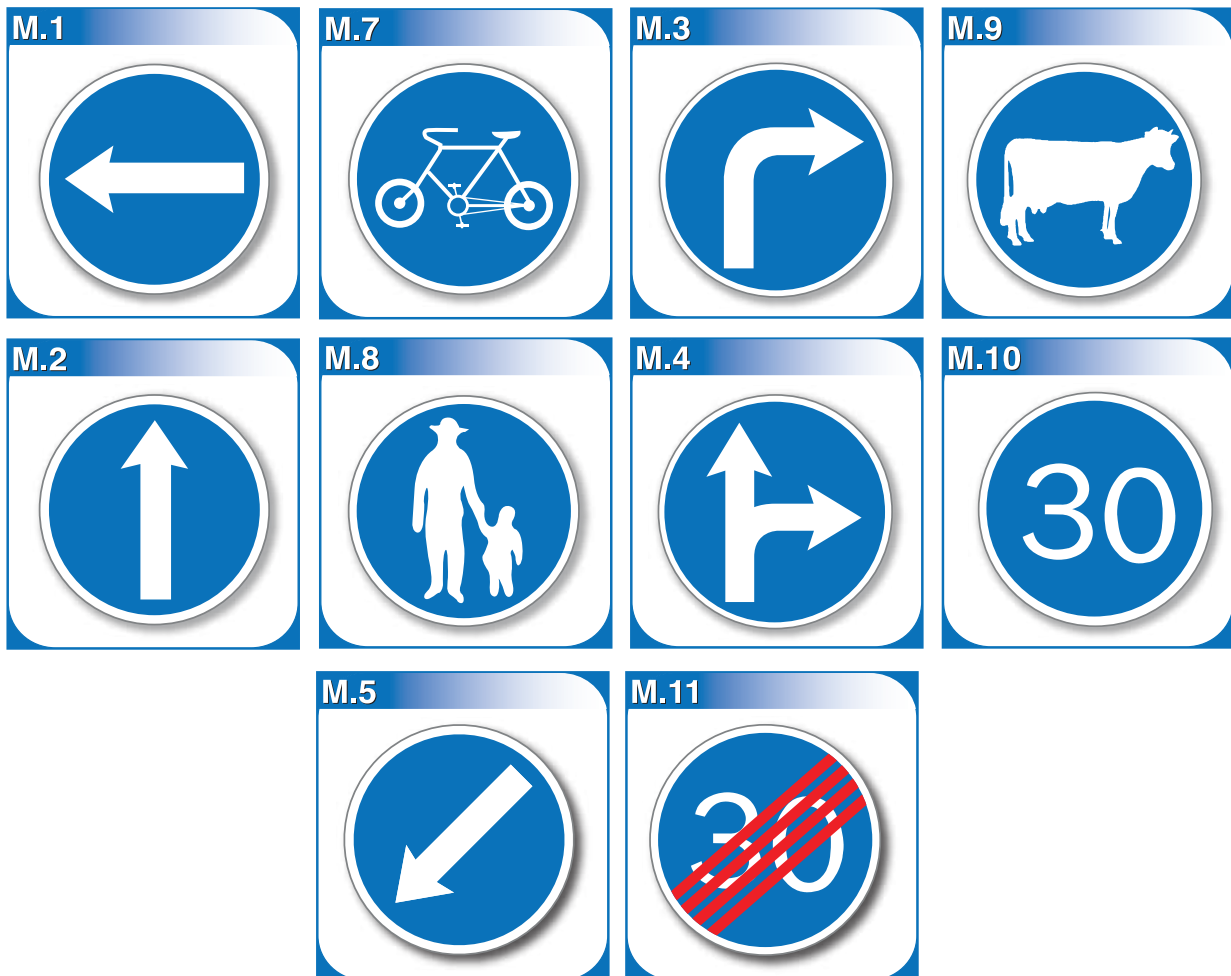
Prohibitory Signs (Kenya Only)



Information Signs (Kenya Only)

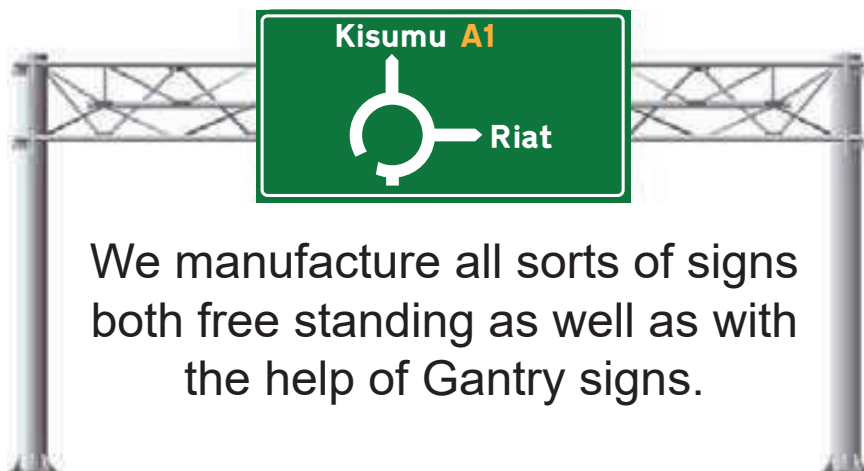


Mandatory Signs (Kenya Only)

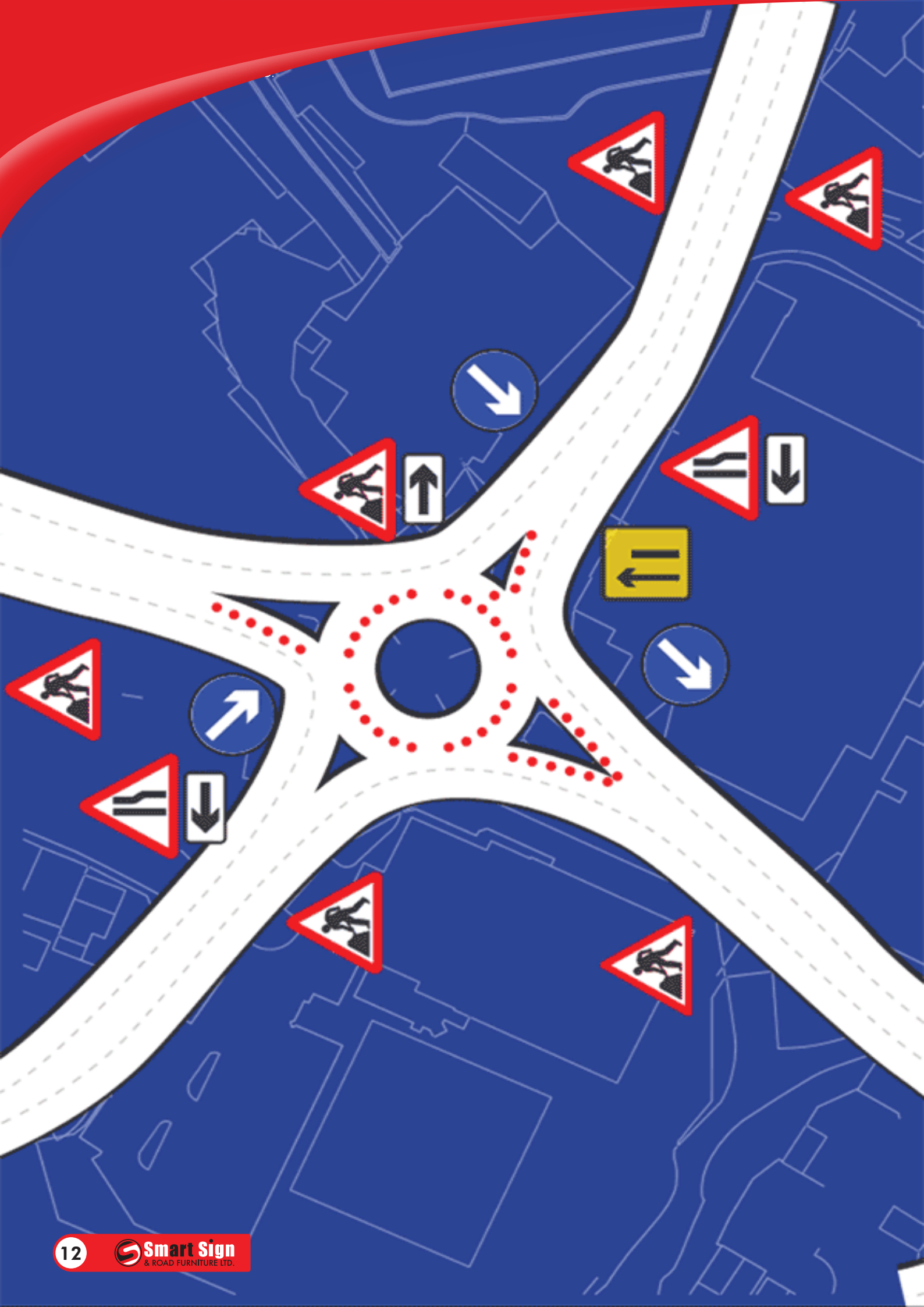


Permanent Road Signs

Information Board Panel Profiles



We manufacture all sorts of signs both free standing as well as with the help of Gantry signs.



Temporary Road Signs

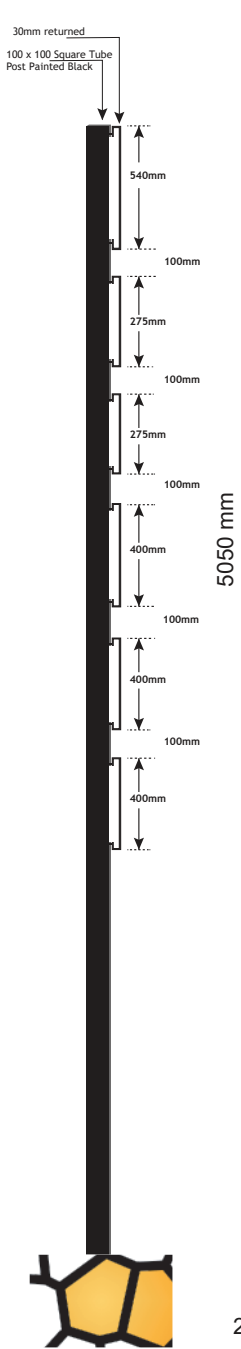


Road Projects and Construction Site temporary signs

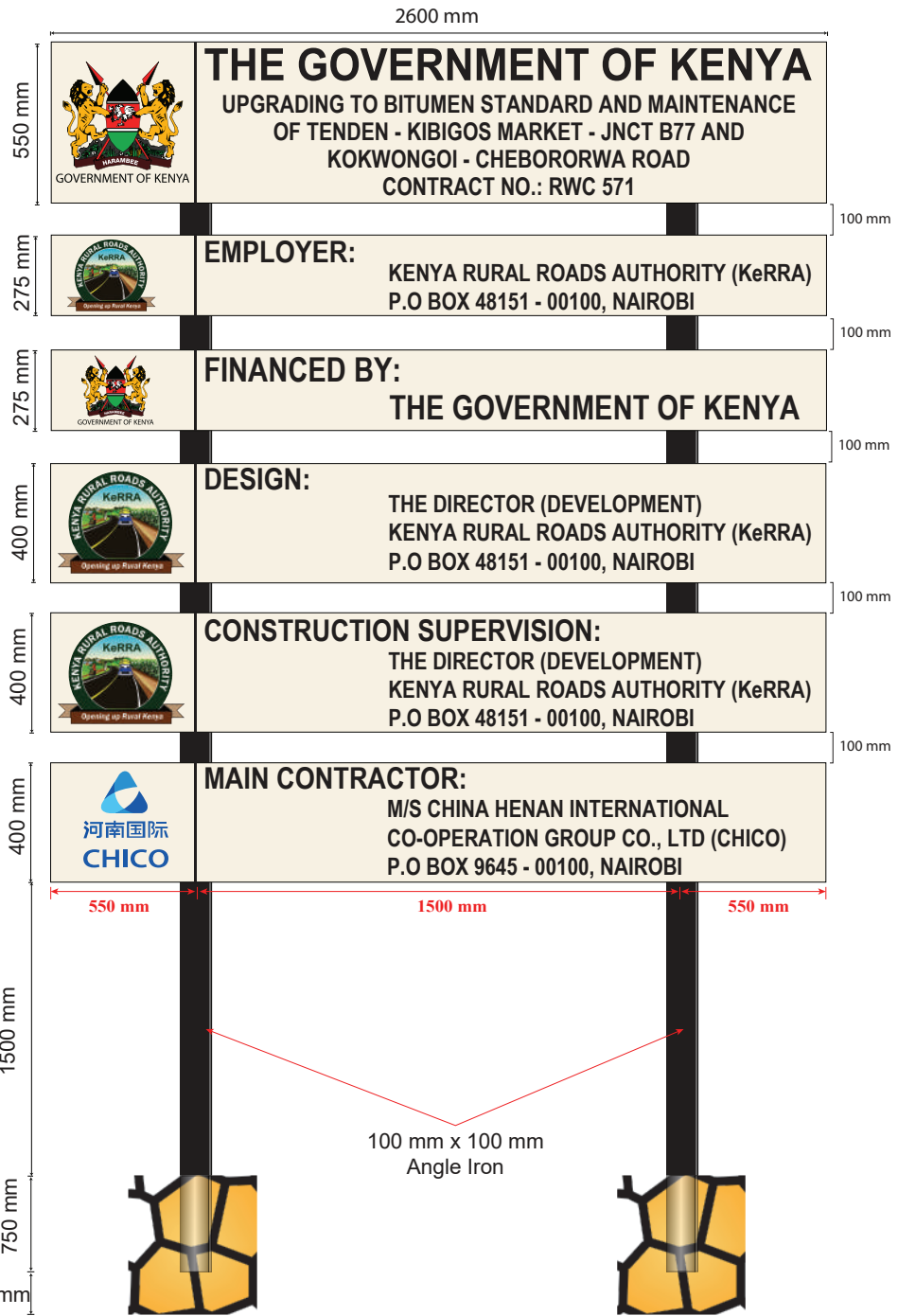


Road Project Directories

Side View



Front View







Source	Smart Sign & ROAD FURNITURE LTD.
Client	CHINA HENAN INTERNATIONAL CO-OPERATION GROUP Co. LTD (CHICO)

We manufacture all sorts of Project Directories for our clients that aid in identifying the Projects.

Round Delineators

- Delineator posts and flaps are designed with a reactive spring and made from flexible original TPU raw material to give which impact and rebound towards traffic.
- When posts and flaps are damaged, they can be exchanged easily with their spare parts.
- Effective and continuous warning with Micro-prismatic reflective sheeting and high performance visibility.
- UV inhibited to prevent fading.
- Warning effects can be enhanced by attaching lamps and signboards on the top of posts.
- Easy fixed on to ground with epoxy gluing or screwing.
- Heat resistance between -20° to +60° C.

Specifications

Model Type				
Product Order Code	OD-1000 (-O,-Y,-W,-B)	OD-750 (-O,-Y,-W,-B)	OD-450 (-O,-Y,-W,-B)	OD-300 (-O,-Y,-W,-B)
Size (ØXH)	80 X1000	80 X 750	80 X 450	80 X300
Base size	Ø200mm			
Weight (ap.)	1,500 kg	1,200 kg	0,930 kg	0,700 kg
Material	PU			
Features	Reflective sheeting			
	Elastic reflective sheeting back is unbroken when bending			
	Rebound spring-flexible design			
	Unbroken			
	UV inhibited bright orange, yellow, white & black			
	Smart sign solar lamps / boards attachable			
Visibility	500meters (Night)			
Certificated By	DIN EN ISO 9001:2008			
Applications	Fixed on the road with Ø18xL90xØ10 mm screw anchors			



Round Delineators

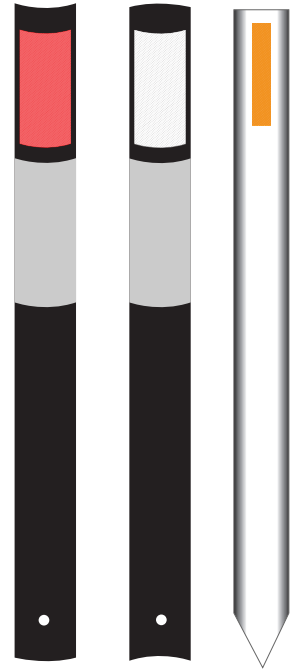


Smart Edge Marker Post

The Smart Edge Marker Post is designed to indicate road boundaries with white reflective material on the left side and red reflective material on the right side of the road. The post stands one metre above the ground.

Set up a Lifesaver in front and behind your vehicle to alert other motorists of the danger.

The Smart Edge Marker Post is strong, long lasting and is maintenance free. We offer all technical information on how best to use the Smart Edge Marker post.



Smart Traffic Cones



Smart Traffic Cones are designed to give excellent hazard warning and traffic control capabilities throughout commercial, industrial and leisure environments.

This range of cones are specially made to meet the highest standards as required by the road act.

They are available in:

- 1) 750mm & 1mtr height.
- 2) Made from super tough red polymers
- 3) Has a white reflective sleeve.

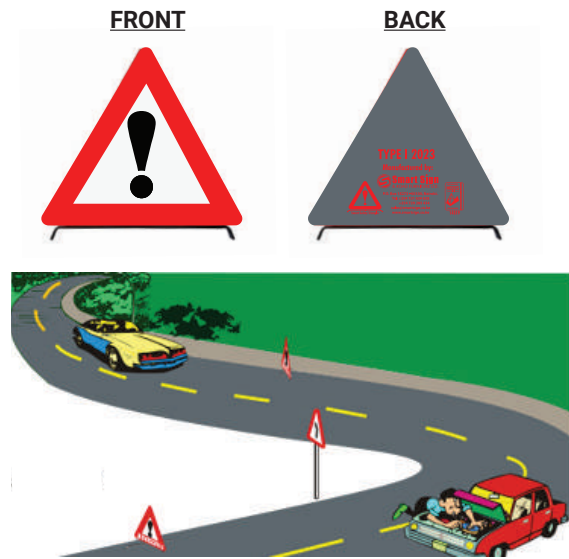
Smart Safety Triangle

If your vehicle breaks down on the road, there is an immediate danger of other motorists crashing into your vehicle.

Set up a safety triangle in front and behind your vehicle to alert other motorists of the danger.

Our Smart Safety Triangle has a sturdy construction with a firm base and will not be blown away by passing traffic wind. It is packed in a plastic cover which can be used as an emergency petrol funnel. Every vehicle must carry a pair of safety triangles!

The first safety triangle should be placed 30 meters behind your vehicle and the second one placed 30 metres ahead of the Vehicle as shown in the illustration below. Our Safety Triangle is approved by Automobile Association of Kenya and the Kenya Bureau of Standards.



Smart Vehicle Chevron

The Smart Chevrons are red and yellow reflectors fixed behind all commercial vehicles. Our Chevrons are available in two sizes: the small size which is 300mm x 300mm and the larger size which is 300mm x 600mm.

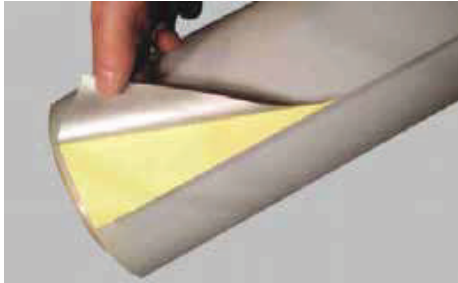
The Smart Chevron is a high quality product made of weather resistant reflective material. It is visible during the day, night and also in foggy conditions . For best results it is advisable to change Chevrons every 3 years.

The Smart Chevron is approved by the Automobile Association of Kenya and the Kenya Bureau of Standards.



Reflective Sheets

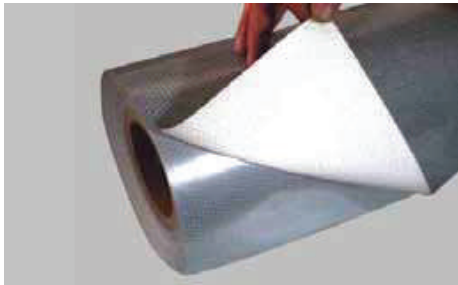
Normal Performance Type 1



Specifications:
 Roll Dimensions: 1.26x45.7mt
 Durability: 7 years (All-Climate Conditions)
 Colors:



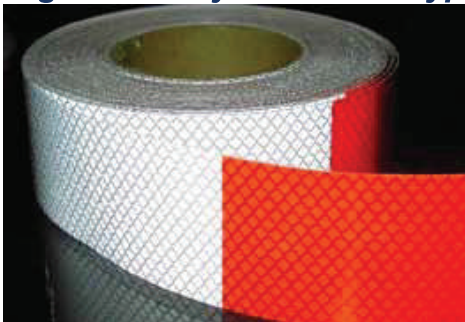
High Performance Type 3



Specifications:
 Roll Dimensions: 1.26x45.7mt
 Durability: 7-10 years (All-Climate Conditions)
 Colors:



High Intensity Prismatic Type 3&4



Specifications:
 Roll Dimensions: 1.26x45.7mt
 Durability: 10 years (All-Climate Conditions) (**high brightness**)
 Colors:



Diamond Grade Type 3&4&10









Specifications:
 Roll Dimensions: 1.26x45.7mt
 Durability: 12 years (All-Climate Conditions) (**nearly twice as bright as prismatic sign sheeting**)
 Colors:



Research shows that use of higher performing reflective sheeting resulting in brighter, more visible signs—**reduces crashes**. Upgrading signs from High Performance sheeting to **High Intensity Prismatic** or **Diamond Grade** Reflective Sheeting helps **improve safety** and has a **positive cost-to-benefit** ratio.

▶ Plastic Barriers

Picture	Order No	Description
	AC6701	Length : 560mm Upper Width : 150mm Bottom Width : 430mm High : 560mm
	AC6702	Length : 1700mm Upper Width : 200mm Bottom Width : 500mm High : 700mm
	AC6702S	Length : 1650mm Upper Width : 150mm Bottom Width : 450mm High : 650mm
	AC6703	Length : 1450mm Upper Width : 250mm Bottom Width : 490mm High : 800mm
	AC6704	High : 820mm Diameter : 580mm
	AC6704B	High : 920mm Diameter : 900mm
	AC6705	Length : 1800mm Width: 900mm High : 900mm

Picture	Order No	Description
	AC6706	Length : 1000mm Upper Width : 200mm Bottom Width : 560mm High : 800mm
	AC6707	Length : 1500mm Upper Width : 150mm Bottom Width : 430mm High : 1200mm
	AC6707S	Length : 1200mm Upper Width : 80mm Bottom Width : 260mm High : 600mm
	AC6710	Length : 2000mm Upper Width : 145mm Bottom Width : 400mm High : 800mm
	AC6711	Length : 1285mm Upper Width : 200mm Bottom Width : 400mm High : 65mm
	AC6712	Length : 2480mm Upper Width : 240mm Bottom Width : 600mm High : 800mm

Bridge Bearing PAD



We, Smartsign and Road Furniture Ltd, we do supply Elastomeric Bridge Bearing Pads for superstructures constructed all across Kenya. Based on the requirements, we do supply bridge pads for all sizes as per KeNHa and Standards of Kenya with the required load carrying capacity.

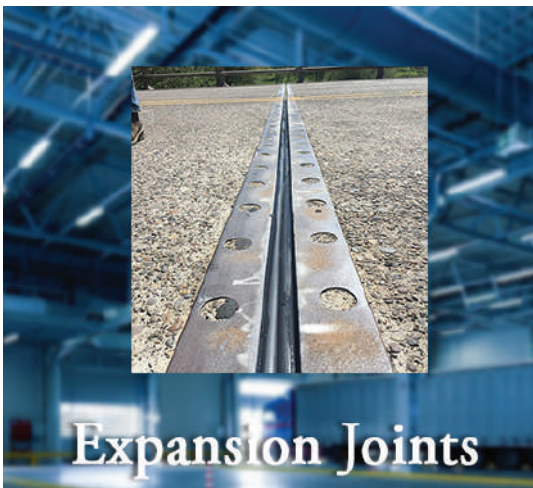
The Bridge Bearing pads are placed in between the bridge beams and the vertical supports called piers. The primary function is to absorb the load and distribute superstructure loads to the substructure and allow the superstructure to undergo necessary movements in different environmental conditions without creating any dangerous stresses. Absence of the pads will result in collapse of the bridge. Along with this, the Bridge Bearing Pads extend the life of the bridge by reducing wear and tear on bridge material.

In the Bridge Bearing pads, Steel plates are bonded to the rubber through a vulcanization process, this increases the resistance of the bearings to vertical loads. The steel plates are fully embedded along with the elastomer so that they are protected against corrosion.

Expansion Joints

Concrete is not an elastic substance, and therefore it does not bend or stretch without failure. However, concrete moves during expansion and shrinkage, due to which the structural elements shift slightly.

Bridge expansion joints are structural components designed to provide smooth passage over the gap

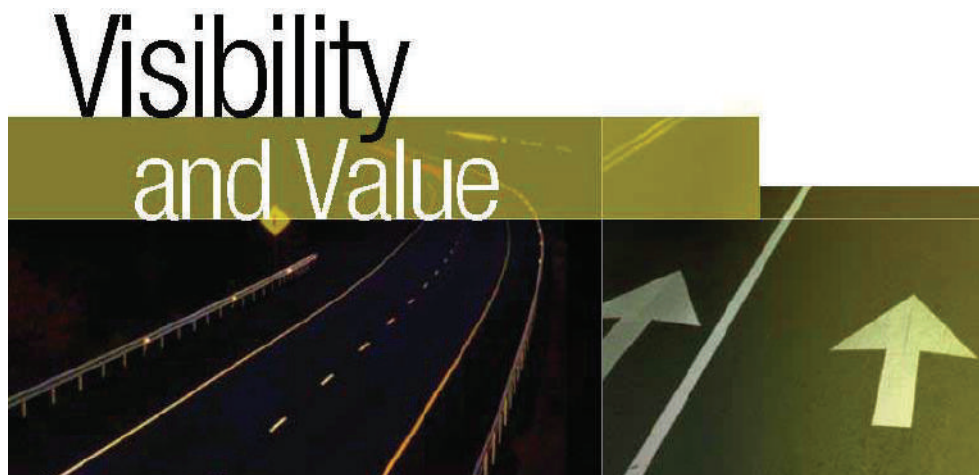


between adjacent sides of a deck joint, while also permitting relative translation and/or rotation of the two sides of a bridge deck (deck movement joint).

A deck movement joint is generally defined as a structural discontinuity between two elements, at least one of which is a deck element, and is designed to allow relative translations and rotations due to: thermal expansion and contraction of the superstructure, concrete shrinkage or creep, elastic shortening due to pre-stressing, displacement of the structure under load, or any other action the desk is subjected to.

Road Marking

1) Smart Sign Pavement Marking Tape Series



- > Designed for use on edge lines, rural roads and other roads with low to medium average daily traffic.
- > Symbols and legends.
- > “Extended season” application down to 4.4°C with the use of surface preparation adhesive
- > Easy to apply without the use of surface preparation during typical marking season
- > Superior color and visibility, day and night, with bright, microcrystalline ceramic beads and a scattered diamond pattern

THE ADVANTAGES ARE EASY TO SEE

Pavement markings are the key to safe roadway navigation. Drivers depend on the visual guidance pavement markings provide, particularly on roads without ambient light, like highways outside urban areas or dark rural roads. For applications like these, agencies need both performance and an affordable solution.

That's why Smart sign Pavement Marking Tape Series pavement marking tape offers visibility and value through a combination of innovations in high index optics, adhesive technology and polyurethane chemistry.

Smart sign Pavement Marking Tape Series is designed for lane and edge lines on roads with medium to low traffic volumes, and is also available in symbols and legends. Offered in white and lead chromate-free yellow to conform to standard highway colors, Smartsign Pavement Marking Tape Series has distinctive color properties, along with superior initial and good retained reflective performance, providing excellent value in a durable pavement marking tape.

2) Two Component Road Marking



Technical Specifications

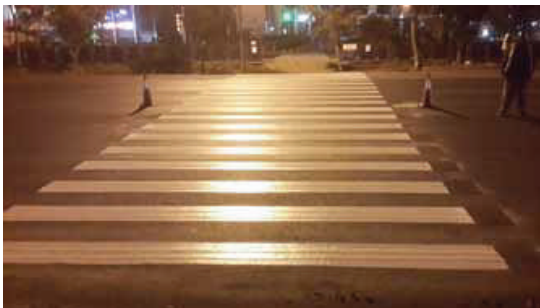
- > Specific Weight: 1.85 - 2.05 gr/cm³
- > Slip Resistance: Min. 45 SRT, Max. 55 SRT
- > Application Thickness: Spreading from 0.8 to 3mm
- > Spray: 0.4 to 0.8 mm
View: 10 to 15 mm
- > Application Temperature: 5-35 ° C
- > Mixing Measures: 1-2% hardener



Two Component Road Marking Advantages

- > Solvent-free and do not harm the environment
- > Symbol-quality and easy application
- > Water-resistant and long lasting
- > High resistance against shear
- > Many color choices can be made with the application

Durability: Depending on the traffic and the road structure **24 to 36 months**



Two Component Road Marking Details

Two component road marking paints, as a binder using methyl methacrylate based reactive resins, UV rays protective plastic coating from the situation and catalyst.

This paint can be applied to the dry and clean the road and the road can be opened to traffic within **10-30 minutes**.

In 45-minute period of time all the physical and chemical completed and the final version.



Smart sign is implementing Two Component Road Marking Paint to Highways, Inside and Outside of City Roads, Airport runways and as Pedestrian Marking

3) Thermoplastic Road Marking



Durability: Depending on the traffic and the road structure **12 to 16 months.**



Technical Specifications

- > Features: Easy-melting, high whiteness, long-lasting
- > Luminance: Older than 70 (Y value)
- > Viscosity: Solid at room temperature, 170 °C fluid
- > Specific Gravity : 2.04 g/cm³
- > Slip Resistance: 45 S.R.T. greater than
- > Drying Time: 2 min.
- > Flash Point: 240 ° C
- > Application Thickness : 2 to 5 mm
- > Application Temperature: 160 to 180 °C.

Thermoplastic Road Marking

Advantages

- > Have good adhesion property of the road
- > Low cost

Thermoplastic Road Marking Details

Thermoplastic road marking paints, generally, has the implementation of 1-2 mm thickness with spray method.

Solid resins, thermoplastic road marking paints made by heating 180-200 ° C is applied by spraying or spreading by means of special machines.

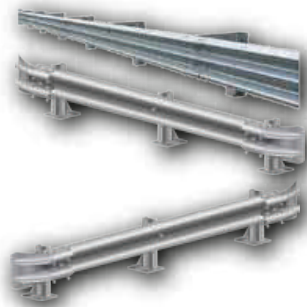
According to the preferred area the colors yellow or white can be used

Smart sign is implementing Thermoplastic Road Marking Paint to inner city and sub-urban roads, drawing, traffic signs, airports, bus stops and parking areas.

GABIONS



GUARD RAILS



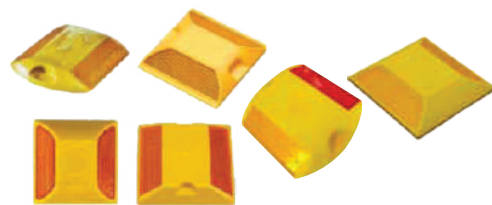
CONSPICUITY TAPES



SAFETY TRIANGLES (with Cover)



CAT EYES



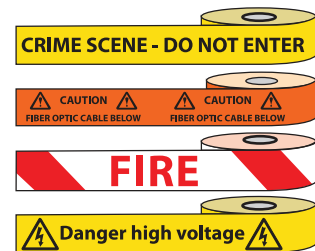
GUARD RAIL REFLECTORS



WATER GAUGES



UNDERGROUND TAPES







HIGH QUALITY PRODUCT SOLUTIONS FOR GEOTECHNICAL, ENVIRONMENTAL AND CIVIL ENGINEERING

Smart sign and Road Furniture Ltd is one of the leading Geotechnical, Environmental and Civil Engineering in Kenya. Established in 2011, and led by an experienced team, We have successfully completed many projects across Kenya and abroad in no time.

We provide environmentally friendly solutions for the full spectrum of Geotechnical Engineering capability from planning, designing, innovation, implementation and Supervision.

Our project line-up includes work in major sectors bridges & highways, commercial Infrastructure, & river bank etc

INTRODUCTION

Looking at constantly changing environment and its challenging impact, whether those challenges in-mates from forces of nature or whether they come from the ever increasing difficulties of people living within this environment with the need for infrastructure development and better utilization of available land. Smart sign And Road Furniture Ltd is Fencing provides complete solutions from planning, design developing, implementing and maintaining all turnkey projects of our clients.

ABOUT US

Smartsign and Road Furniture Ltd has grown from a small startup to a professional organization with better understanding and successful completion of projects with great innovation and scientific procedure. At SS&RF, we have established our reputation as a company committed to providing engineering solutions to complex geotechnical problems as well as developing economic and safe designs for environmental problems.



For us at SS&RF, **QUALITY** is a habit, to actively pursue on a routine basis, not something that is unwillingly and are aware of the implications of our work in nation building. We work with the motto **We protect environment today for tomorrows progress**

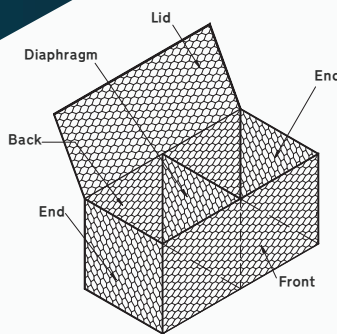
GABION BOX

Smartsign & Road Furniture Ltd
 Gabion box is hexagonal shape wire mesh container of variable sizes, uniformly partitioned into internal cells, interconnected with other similar units and filled with stone at the project site to form flexible, permeable monolithic structures to protect land from erosion, construction of earth retaining structure, river embankment etc. A non-raveling mesh made by twisting continuous pairs of wire through two one half turn (Generally refer as Double Twist) to form hexagonal shape openings which are then interconnected to adjacent wires to form hexagonal openings.

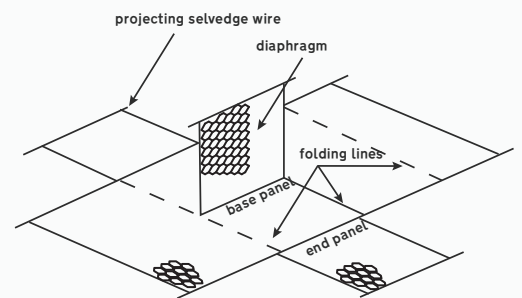
DOUBLE TWIST HEXAGONAL SHAPE GABION BOX



The Hot dip galvanised wire used to manufacture the double twisted hexagonal wire mesh is soft annealed, low carbon content mild steel wire with heavy zinc coating as per IS 280, EN10224/ASTM A 641. For aggressive natural conditions, further coating of advance Polymer / Polyvinyl Chloride (PVC) is done of 0.50mm thickness uniformly.

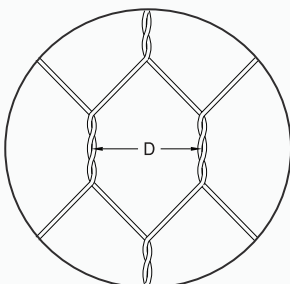


Gabion Mesh (Showing Mesh wire, Selvedge wire and Edge wire)



Gabion Mesh (Showing Mesh wire, Selvedge wire and Edge wire)

MESH TYPE & SIZES

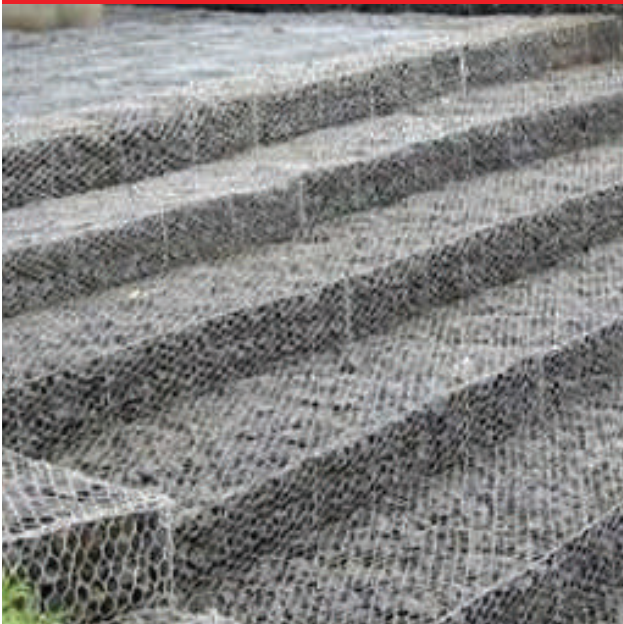


Mesh Size :- Mesh size (D) is average distance measured at right angles between the twisted wire.

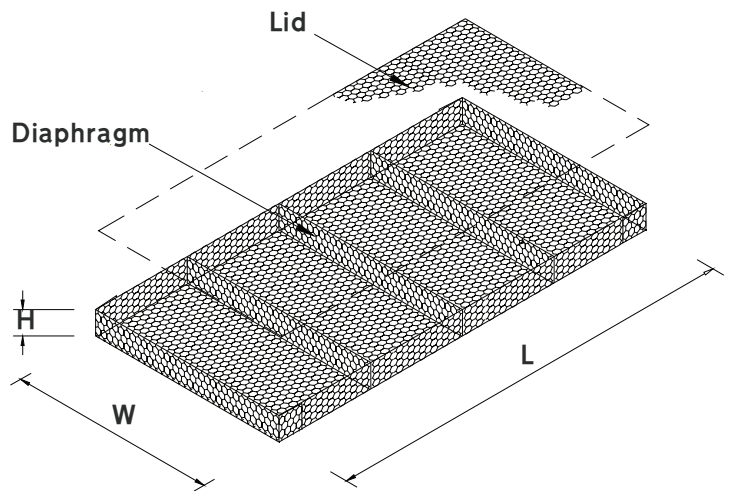
Mesh Type	Nominal Size (D Value)	Tolerance
100mm X 120mm	100mm	10% / - 10%
80mm X 100mm	80mm	10% / - 10%
60mm X 80mm	60mm	10% / - 10%



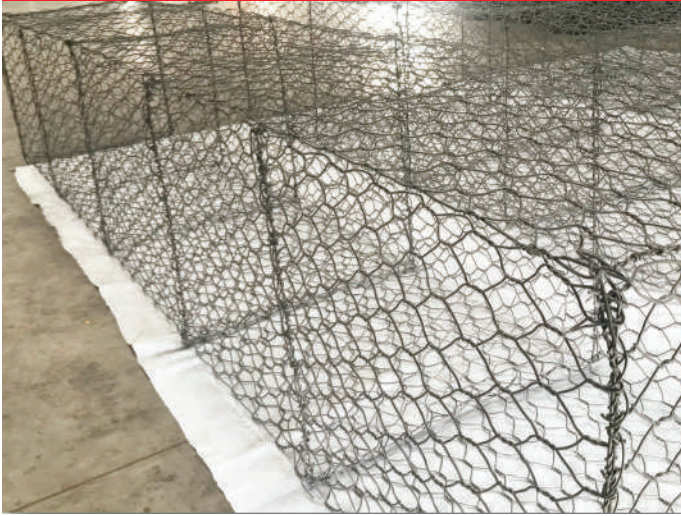
DOUBLE TWIST HEXAGONAL SHAPE GABION MATTRESS



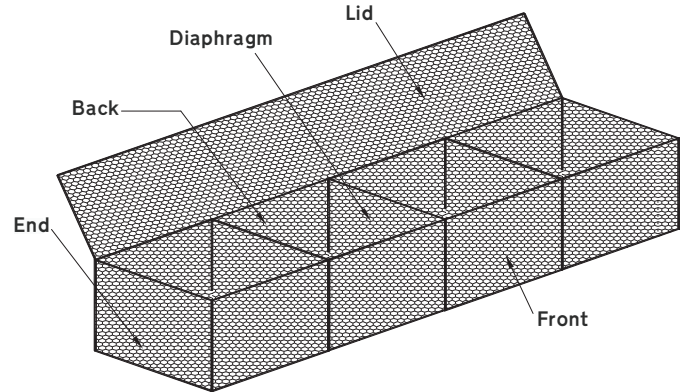
SS&RF LTD Revet Mattress is hexagonal shape wire mesh container of variable sizes, uniformly partitioned in to internal cells with relatively smaller height in relation to other dimensions, having smaller mesh opening than the mesh used for gabions, revet mattresses are generally used for river bank protection and channel linings. Generally the height of revet mattresses is less than 0.50 meter and it is used together to reduce the water velocity and recapture river bed sediment in streams and widely used in river course where soil erosion is a problem.



DOUBLE TWIST JUMBO GABION BOX



Smart sign and Road Furniture Ltd Jumbo Gabion box are larger than regular Gabion Box and are used for large scale civil engineering projects. Jumbo Gabion are similar to regular Gabion in all other aspect. Usually in Jumbo Gabion width is 1.5 meter and 2.0 meter compare to 1.0 meter width in regular Gabion.



JUMBO BOX SIZES

- 1 3.0 (L) X 1.5 (W) X 1.0 (H)/ 2 Centre Diaphragm
- 2 3.0 (L) X 2.0 (W) X 1.0 (H)/ 2 Centre Diaphragm
- 3 4.0 (L) X 1.5 (W) X 1.0 (H)/ 3 Centre Diaphragm
- 4 4.0 (L) X 2.0 (W) X 1.0 (H)/ 3 Centre Diaphragm
- 5 5.0 (L) X 1.5 (W) X 1.0 (H)/ 4 Centre Diaphragm
- 6 5.0 (L) X 2.0 (W) X 1.0 (H)/ 4 Centre Diaphragm



TECHNICAL DATA

S. No	Characteristics	Mesh Type 10 × 12 D = 100 mm			Mesh Type 8 × 10 D = 80 mm		
		Only Zinc	Zinc Alloy ² coated	Zinc / Zinc Alloy ² + Polymer coated	Only Zinc	Zinc Alloy ² coated	Zinc / Zinc Alloy ² + Polymer coated
01	Mesh wire dia, mm	2.70	3.00	2.70/3.70	2.70	3.00	2.70/3.70
02	Edge/Selvage wire dia, mm	3.40	3.90	3.40/4.40	3.40	3.90	3.40/4.40
03	Lacing wire dia, mm	2.20	2.20	2.20/3.20	2.20	2.20	2.20/3.20
04	Polymer coating thickness, mm	NA	NA	Nominal – 0.50 Minimum – 0.40	NA	NA	Nominal – 0.50 Minimum – 0.40
05	Typical sizes Length × Width × Height (m) (Number of diaphragms)	4 × 1 × 1 (3 Nos.), 3 × 1 × 1 (2 Nos.), 2 × 1 × 1 (1 No.), 1.5 × 1 × 1 (0 No.), 2 × 1 × 0.5 (1 No.), 3 × 1 × 0.5 (2 Nos.), 4 × 1 × 0.5 (3 Nos.), 2 × 1 × 0.3 (1 No.), 3 × 1 × 0.3 (2 Nos.), 4 × 1 × 0.3 (3 Nos.)					
06	Tolerances in size of gabion boxes	Height < 0.3 m... ± 10 Percent Length and Width... ± 5 Percent; Height > 0.3 m... ± 5 percent and					

TECHNICAL DATA

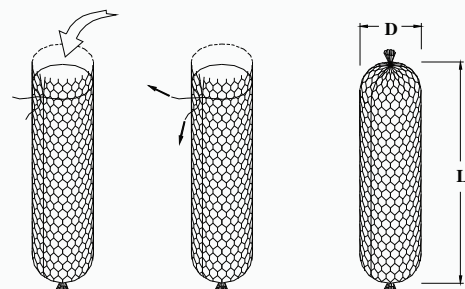
S. No	Characteristics	Mesh Type 6×8 D = 60 mm	
		Only Zinc / Zinc Alloy ² coated	Zinc / Zinc Alloy ² +Polymer coated
01	Mesh wire dia, mm	2.20	2.20/3.20
02	Edge/Selvedge wire dia, mm	2.70	2.70/3.70
03	Lacing wire dia, mm	2.20	2.20/3.20
04	Polymer coating thickness, mm	NA	Nominal – 0.50 Minimum– 0.40
05	Typical sizes Length × Width × Height (m) (Number of diaphragms)	4 × 1 × 1 (3 Nos.), 3 × 1 × 1 (2 Nos.), 2 × 1 × 1 (1 No.), 1.5 × 1 × 1 (0 No.), 2 × 1 × 0.5 (1 No.), 3 × 1 × 0.5 (2 Nos.), 4 × 1 × 0.5 (3 Nos.), 2 × 1 × 0.3 (1 No.), 3 × 1 × 0.3 (2 Nos.), 4 × 1 × 0.3 (3 Nos.)	
06	Tolerances in size of gabion boxes	Length and Width... ± 5 percent; Height < 0.3 m... ±10 percent and	

We ensure 100% quality product by complying quality assurance plan under meeting the quality standard and international standard.

DOUBLE TWIST CYLINDRICAL/ SACK GABION



SS&RF Ltd Cylindrical/Sack Gabion is hexagonal shape wire mesh unit with a lateral opening to allow the stone filling or Geotextile encased sand filling at site. Cylindrical / Sack Gabion are generally used for river bank protection, scour protection of bridge or a situation where immediate protection is required from erosion effect of water. These cylindrical units of Gabion are filled with stone lifted into position using suitable equipment and stacked upon one another to make structure of contained rocks.





TECHNICAL DATA

S. No	Characteristics	Mesh Type 10 × 12 D = 100 mm			Mesh Type 8 × 10 D = 80 mm		
		Only Zinc	Zinc Alloy ² coated	Zinc / Zinc Alloy ² + Polymer coated	Only Zinc	Zinc Alloy ² coated	Zinc Alloy ² coated
01	Mesh wire dia, mm	2.70	3.00	2.70/3.70	2.70	3.00	2.70/3.70
02	Edge/Selvedge wire dia, mm	3.40	3.90	3.40/4.40	3.40	3.90	3.40/4.40
03	Lacing wire dia, mm	2.20	2.20	2.20/3.20	2.20	2.20	2.20/3.20
04	Polymer coating thickness, mm	NA	NA	Nominal – 0.50 Minimum - 0.40	NA	NA	Nominal – 0.50 Minimum – 0.40
05	Typical sizes Length × Width × Height (m) (Number of diaphragms)	1.5x0.74, 2x0.96					
06	Tolerances in size of gabion boxes	Length and Width... ± 5 percent; Height > 0.3 m... ± 5 percent and Height < 0.3 m... ± 10 percent					

SECURE MESH SYSTEM

SS&RF Ltd Securemesh system is one of the systems used in the construction of reinforced soil retaining structures. Reinforced soil retaining structures are executed by combining the embankment behind the front side of the retaining structure with tensile elements such as geomesh, hexagonal mesh, traps, etc. This type of structure is stable thanks to the interaction of tensile elements and the surrounding backfilled soil. The front side of the structure serves an aesthetic purpose and prevents local erosion, but does not significantly contribute to the overall stability of the structure as a whole.



DOUBLE SECURE MESH SYSTEM



SS&RF Ltd Double Secure mesh System (Double twist hexagonal shape Gabion Facia with integrated tail) for Reinforcement is a unit for reinforced soil structures and slope consolidation. This is mainly used for structures with vertical facing units. It is made with continuous base panel for the reinforcement and the facing portion of the structure. It can be used for the smaller height structure of up to 8 meter (depending upon geological conditions) and for the taller slopes or structure; it can be used with our Geo grid.

Further, for the structure requirement Gabion Facia can be made at both side (LHS and RHS) with integrated tail for reinforcement. Tail is common for both the facia unit.

The face section of the unit is formed by connecting a back panel and central diaphragms to the main facia unit, this creates the rectangular shape cells used for stone confinement.

CONCLUSION

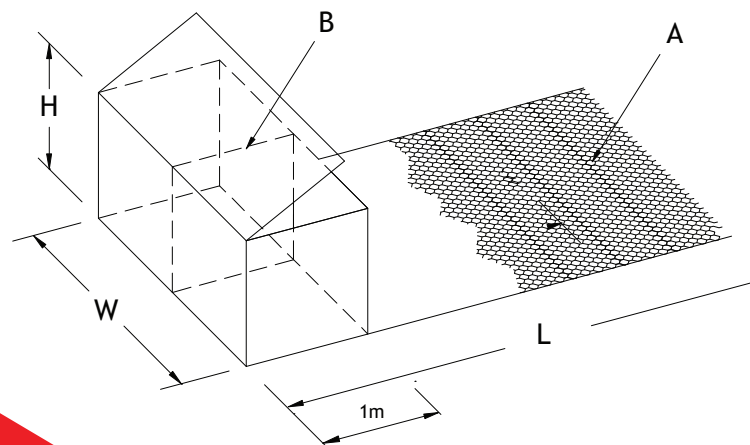
The construction of retaining structures using Secure mesh systems and other reinforced soil systems has significant advantages:

- Height of retaining structures made using reinforced soil can exceed 50.0 m.
- Possibility of filling with excavation material.
- Resistance to significant settlements and displacements (flexible structures)
- Possibility of greening the front side (aesthetically acceptable solution).
- Speed and ease of execution.



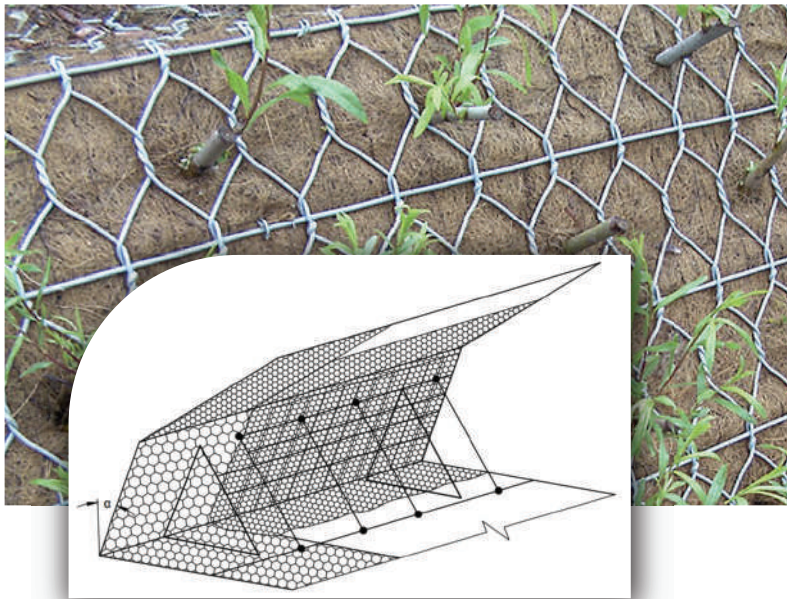
TECHNICAL DATA

S. No	Characteristics	Mesh Type 10×12 D = 100 mm	Mesh Type 8×10 D = 80 mm
		Zinc / Zinc Alloy ² + Polymer coated	Zinc / Zinc Alloy ² + Polymer coated
01	Mesh wire dia, mm	2.70/3.70	2.70/3.70
02	Edge/Selvedge wire dia, mm	3.40/4.40	3.40/4.40
03	Lacing wire dia, mm	2.20/3.20	2.20/3.20
04	Polymer coating thickness, mm	Nominal – 0.50 Minimum – 0.40	Nominal – 0.50 Minimum – 0.40
05	Typical sizes Length × Width × Height (m) (Number of diaphragms)	3 × 2 × 0.5 (1 No.), 3 × 3 × 0.5 (2 Nos.), 4 × 2 × 0.5 (1 No.), 4 × 3 × 0.5 (2 Nos.), 5 × 2 × 0.5 (1 No.), 5 × 3 × 0.5 (2 Nos.), 6 × 2 × 0.5 (1 No.), 6 × 3 × 0.5 (2 Nos.) 3 × 2 × 1 (1 No.), 3 × 3 × 1 (2 Nos.), 4 × 2 × 1 (1 No.), 4 × 3 × 1 (2 Nos.), 5 × 2 × 1 (2 Nos.), 5 × 3 × 1 (2 Nos.) 3 × 2 × 1 (1 No.), 6 × 3 × 1 (2 Nos.) 3 × 2 × 0.8 (1 No.), 3 × 3 × 0.8 (2 Nos.), 4 × 2 × 0.8 (1 No.), 4 × 3 × 0.8 (2 Nos.), 5 × 2 × 0.8 (2 Nos.), 5 × 3 × 0.8 (2 Nos.), 3 × 2 × 0.8 (1 No.), 6 × 3 × 0.8 (2 Nos.)	
06	Tolerances in size of gabion boxes	Length and Width... ± 5 percent; Height > 0.3 m... ± 5 percent and Height < 0.3 m... ± 10 percent	



Gabion Facia Unit with Integrated Tail

GREEN SECUREMESH SYSTEM



SS&RF Ltd Green Securemesh System soil reinforcement units for retaining structure are Gabion Facia with integrated tail for Reinforcement for soil structures and slope consolidation. This mainly used for inclined structures are made with continuous base panel for the reinforcement and provided with a welded mesh panel for facing and Geotextile (Erosion control blanket) for soil retention. The Angular front face unit with erosion control blanket help in natural vegetation.



TECHNICAL DATA

S. No	Characteristics	Mesh Type 10 × 12 D = 100 mm	Mesh Type 8 × 10 D = 80 mm
		Zinc / Zinc Alloy ²⁺ Polymer coated	Zinc / Zinc Alloy ²⁺ Polymer coated
01	Mesh wire dia, mm	2.70/3.70	2.70/3.70
02	Edge/Selvedge wire dia, mm	3.40/4.40	3.40/4.40
03	Lacing wire dia, mm	2.20/3.20	2.20/3.20
04	Polymer coating thickness, mm	Nominal – 0.50 Minimum – 0.40	Nominal – 0.50 Minimum – 0.40
05	Typical sizes Length × Width × Height (m) (Number of diaphragms)	3 × 2 × 0.63 (45), 3 × 2 × 0.76 (60), 3 × 2 × 0.83 (70), 3 × 3 × 0.63 (45), 3 × 3 × 0.76 (60), 3 × 3 × 0.8 (65), 3 × 3 × 0.83 (70), 4 × 2 × 0.63 (45), 4 × 2 × 0.76 (60), 4 × 2 × 0.80 (65), 4 × 2 × 0.83 (70), 4 × 3 × 0.63 (45), 4 × 3 × 0.76 (65), 4 × 3 × 0.83 (70), 5 × 2 × 0.63 (45), 5 × 2 × 0.76 (60), 5 × 2 × 0.80 (65), 5 × 2 × 0.83 (70), 5 × 3 × 0.63 (60), 5 × 3 × 0.8 (65), 5 × 3 × 0.83 (70), 6 × 2 × 0.63 (45), 6 × 2 × 0.76 (60), 6 × 2 × 0.80 (65), 6 × 2 × 0.83 (70), 6 × 3 × 0.63 (45), 6 × 3 × 0.80 (65), 6 × 3 × 0.83 (70),	
06	Tolerances in size of gabion boxes	Length and Width... ± 5 percent; Height > 0.3 m... ± 5 percent and Height < 0.3 m... ± 10 percent	

SECURE WIRE ROPE PANEL



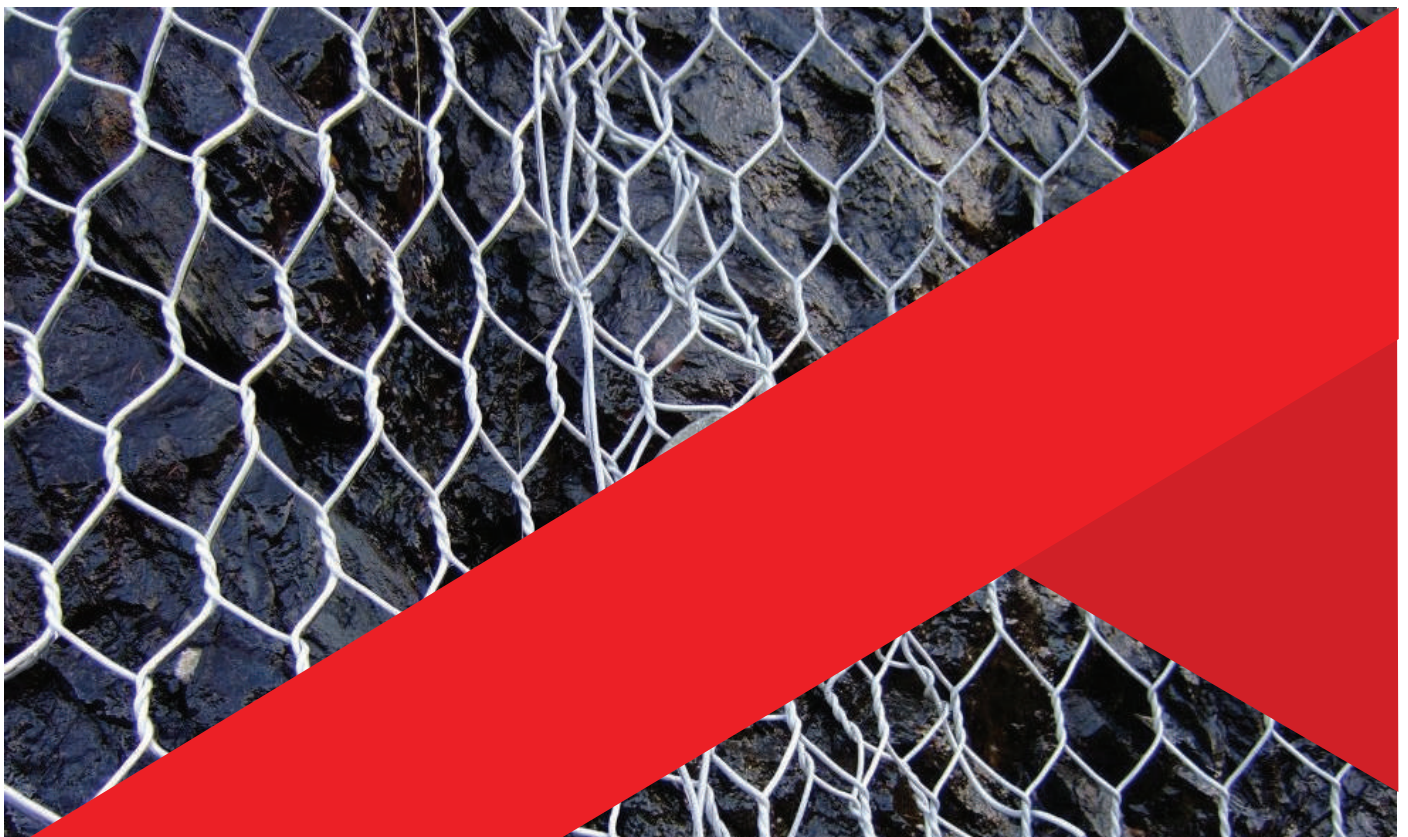
SS&RF Secure Wire Rope panel (Boulder Net) are used for rockfall protection which is inherent hazard in hilly terrain causing life and property hazard and disrupt smooth operations of traffic at Highways and Railways. In this product stiffness is more important than tensile strength and it helps in absorption of high energy of the falling stone.

Secure Wire rope panels (Boulder Net) are made by weaving continuous wire rope of high tensile strength and joined by 'Knot' at each interception connection.

SECURE GRID SYSTEM



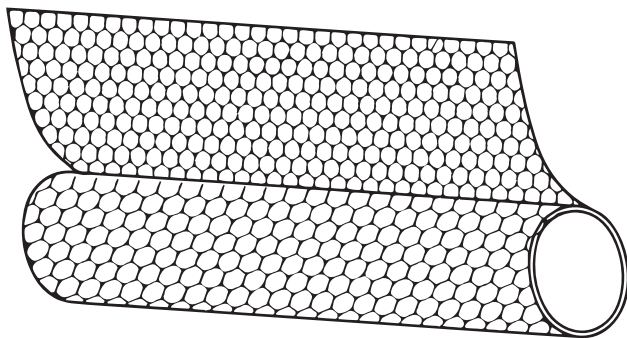
SS&RF Secure grid system is used for rockfall protection which is inherent hazard in hilly terrain causing life and property hazard and disrupt smooth operations of traffic at Highways and Railways. In this product Traditional Double Twist Mesh is combined with wire rope to provide high stiffness and used as drapery system. This is easy to install and can be used along with wire rope panel (boulder net) for areas prone to frequent rockfall. It helps in absorption of high energy of the falling stone.



DOUBLE TWIST (DT) HEXAGONAL ROCKFALL NETTING



SS&RF Double Twist Mesh Rockfall Netting is used for rockfall mitigation and is used as drapery system to prevent rocks and debris falling on to road, highways and railways. Due to non-raveling mesh made by twisting continuous pairs of wire through three one half turn (Generally refer as Double Twist) to form hexagonal shape openings, the steel wire mesh can withstand the punching force of the falling stone and without unraveling in the event of wire breakage, thus minimizing loss of property or life .



TECHNICAL DATA

S. No	Characteristics	Mesh Type 10×12 D = 100 mm			Mesh Type 8×10 D = 80 mm			Mesh Type 6×8 D = 60 mm	
		Only Zinc / Zinc Alloy ² Coated	Zinc / Zinc Alloy ² + Polymer Coated	Zinc / Zinc Alloy ² + Polymer Coated	Only Zinc / Zinc Alloy ² Coated	Zinc / Zinc Alloy ² + Polymer Coated	Zinc / Zinc Alloy ² + Polymer Coated	Only Zinc / Zinc Alloy ² Coated	Zinc / Zinc Alloy ² + Polymer Coated
01	Mesh wire dia, mm	2.70	3.00	2.70/3.70	2.70	3.00	2.70/3.70	2.2	2.2/3.2
02	Edge/Selvedge wire dia, mm	3.40	3.90	3.40/4.40	3.40	3.90	3.40/4.40	2.7	2.7/3.7
03	Lacing wire dia, mm	2.20	2.20	2.20/3.20	2.20	2.20	2.20/3.20	2.20	2.20/3.20
04	Polymer coating thickness, mm	NA	NA	Nominal – 0.50 Minimum – 0.40	NA	NA	Nominal – 0.50 Minimum – 0.40	NA	Nominal – 0.50 Minimum – 0.40
05	Typical sizes Length × Width × Height (m) (Number of diaphragms)	25 × 2, 25 × 3 and 25 × 4							
06	Tolerances in size of gabion boxes	Length and Width... ± 5 percent; Height > 0.3 m... ± 5 percent and Length + 1.0m to -0.0m, width + "D"							

SECURE EROSION CONTROL BLANKET

Secure Erosion control blanket is natural biodegradable solution for surface erosion protection. It provides immediate protection against highly vulnerable slopes. Secure Erosion control blanket support the natural vegetation by placing on top soil and are seeded. It is preformed protective blanket of coil fibers designed to protect soil from the impact of precipitation and overland flow, and retain moisture to facilitate vegetation. It biodegrades over a period of time (Normally 4-5 Years) thus the protection function is done by vegetation. Secure Erosion control blanket is good option for slopes or even low velocity water ways. They help hold the soil in place and avoid issues with detachment of the soil caused by raindrops.



These erosion control blankets are used as face protection in soil reinforcement work which secures facia and protects the washout of top soil.

SECURE GEOBAG

Secure Geo-bag is made from Non woven & Woven Geotextile of Polyester or Polypropylene and filled with sand. Secure Geo-bags are used for prevention of soil erosion and scouring at riverbanks. They are cost effective alternative to control flood and used for construction of ports, dams and harbours.

Secure Geo-bags give flexibility in their use, are eco-friendly and environmentally safe. These are highly economical as compared to conventional material and are engineered for strength and durability.

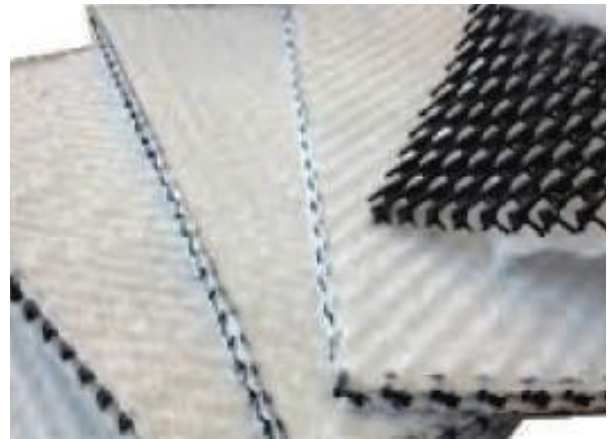
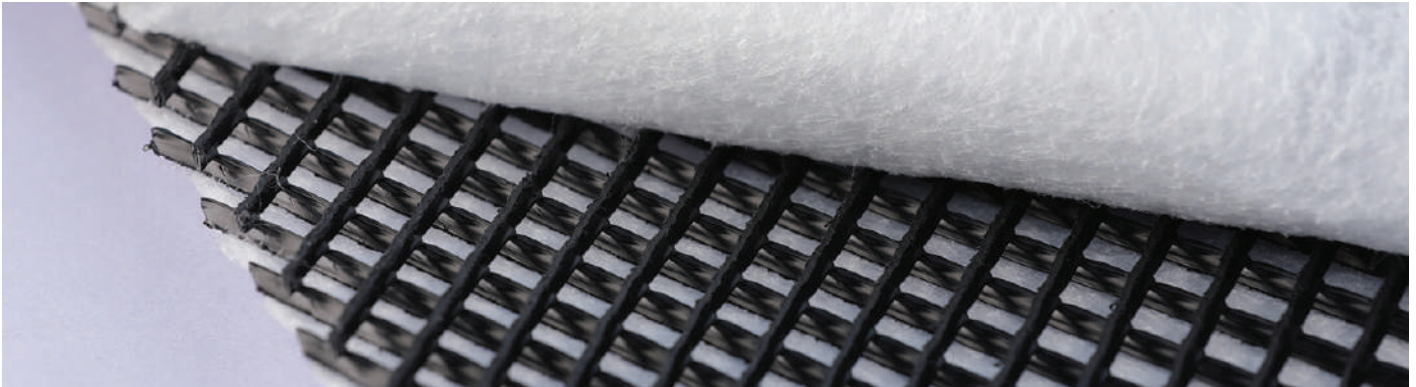


SECURE DRAINAGE COMPOSITE

Secure Drainage Composite is a specifically designed Geo-composite to meet the drainage and protection requirements in structurally demanding water draining applications. It effectively eliminate hydrostatic pressure by collecting and conveying groundwater to a drain pipe for discharge.

Typical Drainage Composite are made of lightweight three dimensional, high compressive strength polymeric core and non-woven geotextile, provided on one side or both sides as per requirements. Depending upon the application, Drainage Composite may also be provided with a Geo-membrane or laminated geotextile on one side of it to act as hydraulic barrier and at the same time drain of excess water for area above the drainage composite.

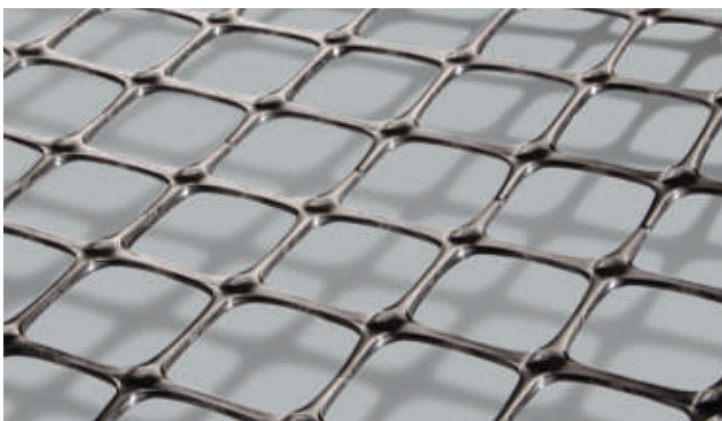
Drainage composite reduces the pore water pressure and thus increases the overall stability of earth retaining structures.



TECHNICAL DATA

Properties	Standard	Unit	GeoDrain GNGT 4.2
GEODRAIN GEOCOMPOSITE			
Thickness @ 2 kPa	EN ISO 9863	mm	≥ 4.5
Mass	EN ISO 9864	g/m ²	≥ 710
Tensile Strength	EN ISO 10319	kN/m	≥ 16
Puncture Strength (CBR)	EN ISO12236	N	≥ 3000
In Plane Permeability	EN ISO 12958	l/(m.s)	≥ 0.55
Hydraulic Gradient, i=1@100kPa	EN ISO 12958	l/(m.s)	≥ 0.55
Hydraulic Gradient, i=1@200kPa	EN ISO 12958	l/(m.s)	≥ 0.45
DRAINAGE CORE (GeoNet)			
Structure : Sets of parallel ribs overlaid and integrally connected having a Rhomboidal shape			
Raw Material : High density Polyethylene (HDPE), UV stabilized by carbon black, (black colour)			
Width		Cms.	200 to 400
EXTERNAL FILTER (Geotextile)			
Structure : Needle Punched and/or Thermally Bonded Non-woven Geotextiles			
Permittivity	ASTM D 4491	s-1	≥ 0.5
A.O.S	ASTM D 4751	mm	≤ 0.22
DIMENSION OF COMPOSITE			
Roll Dimensions (L X W)		Mtrs.	50/100 X 2.0
Filter Overlay (one side)		mm	100

SECURELINK - GEOGRID



Securelink is Polyester (PET) Geogrid made up of high tenacity, high molecular weight and low carboxyl end polyester filament yarn with outer coating of advance polymer/pvc by sophisticated warp knitting technology to form quality Securelink Geogrid.



Ground Improvement/Basal Reinforcement



Retaining Walls & Soil Reinforcement

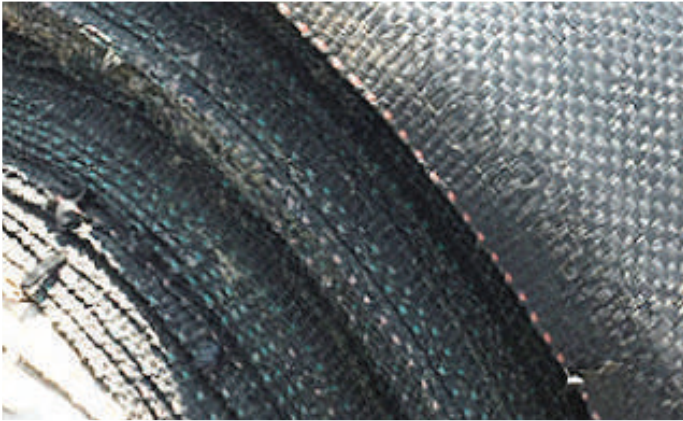


Slope Protection & Stabilization

TECHNICAL DATA

Properties	Test Method	Unit	CTMGGU 40/20	CTMGGU 60/20	CTMGGU 80/30	CTMGGU 100/30	CTMGGU 120/30	CTMGGU 150/30	CTMGGU 180/30	CTMGGU 200/30	CTMGGU 250/30	CTMGGU 300/30
Peak Tensile Strength (Minimum Average Roll Values)												
Machine Direction	ASTM- 6637-2010	kN/m	40	60	80	100	120	150	180	200	250	300
Cross Machine Direction			20	20	30	30	30	30	30	30	30	30
Reduction Factors												
Creep-RF _{ca} @20 C & 100 years	ASTM D 6992/ISO 10319		1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49
Installation Damage-RF _{in} Sand, D50 = 1.00 mm	ASTM D 5818/ISO 10319		1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Durability-RFD 4<pH<9	Q		1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15
LTDS - 100 years, Sand, 4<pH<9		kN/m	21.27	31.91	42.53	53.19	63.82	79.78	95.74	106.38	132.97	159.57
Pullout Interaction Coefficient, C	ASTM-6706		0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Physical Properties												
Colour			Black									
Coating Type			PVC									
Textile Type			High Tenacity Low Shrinkage Polyester Yarn									
Yarn - Carboxyl End Group (CEG) Count	ASTM D 7409, GRI-GG7)	mmol/kg	12.1									
Yarn - Molecular Weight by Viscosity	ASTM D 4603, GRI-GG8)	g/mol	37106									
Roll Length		m	100	100	100	100	100	50	50	50	50	50
Roll Width (±4%)		m	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
Roll Area		sq.m	240	240	240	240	240	120	120	120	120	120
Roll Length (core tube)		mm	2600 mm									

WOVEN GEOTEXTILE



Woven geotextiles are manufactured by interweaving of a number of polypropylene threads perpendicular to each other which allow to obtain excellent mechanical properties. They perform the functions of separation and reinforcement. Woven geotextiles are referred to by their tensile strength and is suitable for long term applications. They have a very high load capacity and are commonly used to construct retaining structures, linear constructions, waste deposits, drainage systems etc.



Ground Improvement/Basal Reinforcement



Retaining Walls & Soil Reinforcement



Hydraulic Works

NON WOVEN GEOTEXTILE



Non Woven Geotextile are permeable geosynthetics made of non woven materials used with soil, rock, or other geotechnical-related material as an integral part of a civil engineering project, structure, or system. Non Woven Geotextile are made from high quality polypropylene staple fibre that are needle punched to form a dimensionally stable fibre network. Their primary functions include filtration, drainage, separation, reinforcement and erosion control.

TECHNICAL DATA

Properties	Test Method	Unit	SP 100	SP 150	SP 200	SP 250	SP 300	SP 350	SP 400	SP 700	SP 1000
Mechanical Properties											
Tensile strength	ASTM D 4595	kN/m	6.0	10	12	16	20	24	28	45	60
Elongation at break	ASTM D 4595	%	> 50	> 50	> 50	> 50	> 50	> 50	> 50	> 50	> 50
Grab Tensile Strength	ASTM D 4632	N	330	550	710	850	1050	1250	1450	2300	3350
Elongation at break	ASTM D 4595	%	> 55	> 55	> 55	> 55	> 55	> 55	> 55	> 55	> 55
Trapezoidal Tear Strength	ASTM D 4533	N	120	180	270	320	400	450	510	750	1150
Puncture Strength (CBR)	ASTM D 6241	N	750	1400	1850	2300	3000	3500	4000	7000	9500
Hydraulic Properties											
A.O.S	ASTM D 4751	microns	100	100	80	80	75	75	75	75	75
Flow Water Rate (@ 50mm head)	ASTM D4491	l/m ² /sec	70	70	50	50	40	40	40	30	30
Physical properties											
Mass Per Unit	ASTM D 5261	g/m ²	100	150	200	250	300	350	400	700	1000
Thickness	ASTM D 5199	mm	0.6	1.2	1.6	1.8	2.2	2.4	2.6	4	5



**ROAD,
RAILWAY
& HIGHWAY**

Our extensive participation in projects of various kinds guarantees our clients that we can comprehend their infrastructure issues and adapt solutions to match their specific needs. Shri Sai Eco Solutions can assist clients with infrastructure projects of any size.



**ENVIRONMENTAL
PROTECTION**

The environmental protection industry encompasses a wide range of industries that must protect the environment from contamination. Landfills, agricultural works, storm water attenuation zones, storage ponds, and leachate lagoons in mining operations are examples of typical applications for our systems.



**RIVER BANK
& COASTAL
PROTECTION**

For coastal and river management projects, we've increased our solution range. We may now choose from a logically graded set of interventions to tailor the solution to our clients' needs.



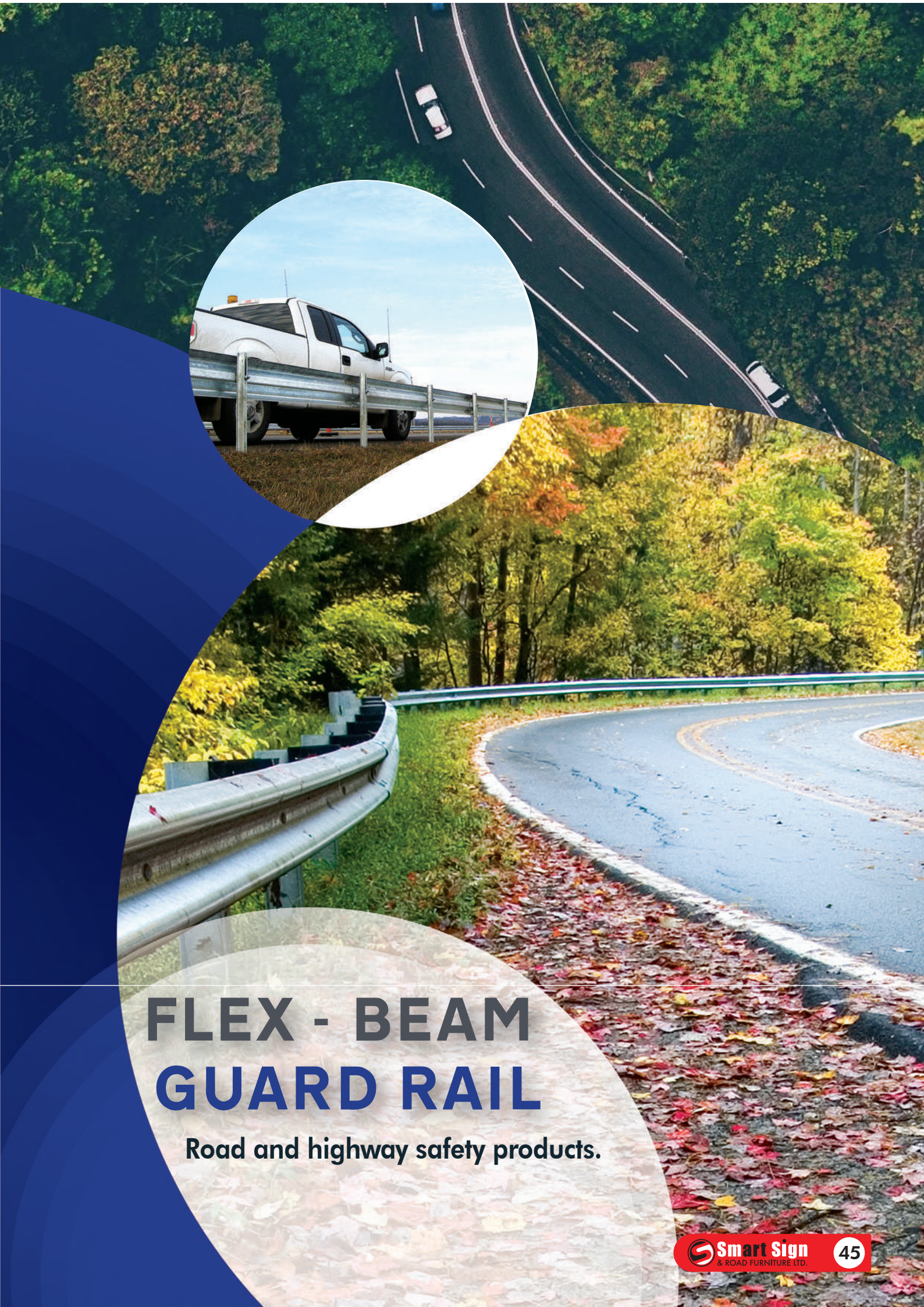
**POWER, MINING
& HEAVY
INDUSTRIES**

To minimise mining productivity disruption, mine owners and operators demand high-quality geotechnical, geological, and hydraulic solutions that are supplied on time and installed quickly.



**URBAN
DEVELOPEMNT
/REAL ESTATE**

Geotechnical operations are of importance with respect to soil sampling, investigating geomaterials properties, controlling groundwater level and flow as well as environmental and hydrological interactions.



FLEX - BEAM GUARD RAIL

Road and highway safety products.

Guardrail

Ensuring Safety On Kenyan Highways

The economics, versatility, and performance of Guardrail surpass all other roadside barrier systems. Guardrail provides highly-visible protection in all Weather conditions helping to increase driver Confidence. The Guardrail system absorbs the impact of out-of-control vehicles while guiding the vehicle to Safer stops. Proven results and consistent material quality Make steel Guardrail systems the right barrier choice



Guardrail is Safe, Reliable, and Cost Effective.

Economics

- Low initial material costs
- Straightforward installation and uncomplicated repairs. When repairs are required, only damaged rail or posts need to be replaced. The remaining section of Guardrail still provides effective protection
- Routine maintenance is not required. Adjustment or tightening is not necessary during the service life of the barrier
- Systems can have a service life of 30 years or longer

Versatility

- Applications include parking lots, single and multi-lane highways, bridges and bridge approaches
- Guardrail systems can be tailored to any application
- Shop-manufactured rail can be radiused to fit convex and concave curves
- Rail systems can be designed with wood or steel posts and offset blocks
- Numerous end treatments are available to meet all design requirements and standards
- Post to rail ratios can be varied to meet safety requirements
- Rail thickness is available in 2.8mm (12ga) or 3.5mm (10ga)
- Standard lengths are 3.81m or 7.62m. Custom lengths are also available

Performance

- Minimizes accident severity and injuries when collisions occur
- Guides vehicle away from the hazard by the "ribbon effect" of the continuous guardrail during vehicle impact
- W - Beam guardrail provides an enhanced performance because of its larger face, which provides reduced deflections and improved resistance to vehicles overturning

CONTENT

1. The barriers ensure minimum damage to the vehicle and its occupants.
2. During collision, the beam absorbs maximum energy by flattening out laterally and restrains the vehicle from veering over.
3. Prevents the vehicle from skidding back onto the carriageway by Controlling exit angles through gradual deceleration and effective redirection of the vehicle back on to the road.
4. Enables quick repairs in case of accidents.
5. All components are galvanized for longer life.
6. Prevents the pedestrians and the animals from entering the road.
7. Reasonable in price and good in quality.

Advantages of thrie beam highway guardrail

1. Safety: the thrie beam highway guardrail is mostly installed on the roadside where is danger and where the car is with high speed, to keep the car is on the right way and the things or animals go into the road, to ensure people safety.
2. High strength: anti-corrosion thrie beam highway guardrail is made of Q235/Q345 steel, it is high strength with toughness.
3. Long life: after cold rolled, the thrie beam highway guardrail will do hot dipped galvanized in the zine pool with high temperature, improves its antioxidant capacity and corrosion resistance.
4. Eco-friendly: the Q235/Q345 steel, the material of thrie beam highway Guardrail, is recyclable and reusable. It can be made the other products once the guardrail is changed and recycled.
5. Easy install and repair: bots and nuts assembly, the thrie beam highway guardrail is easy to install and change the guardrail beam.
6. Beautiful color: we can do powder spray with different color on the thrie beam highway guardrail, make it more beautiful and suitable with the road sight.
7. Cost-effective: compare with the other crash barrier (roller barrier, plastic barrier and so on), the steel highway guardrail is cheaper price and longer life.

SHOCK ABSORBING QUALITIES

Flex-Beam Guardrail is a widely accepted highway safety product, used the world over as a safety system providing not only traffic system providing not only traffic delineation, but also protection in the evenly of vehicular loss of control.

Installed in the median of a divided highway, or along the curb lanes of highways and two lane roads, The continuous steel guardrail absorbs the shock of vehicle impact and guides the shock of vehicle impact and guides the vehicle in the direction of the traffic flow. The net results of this system is to reduce the tendency for out of control vehicles to rebound in to the path of following or on-coming traffic.

LONGITUDINAL STRENGTH

In Addition to its ability to absorb impact at steep angles of incidence, the continuous nature of flex-beam also provides great longitudinal strength, thus minimizing the chance of a break through occurrence. Rails are spliced with a 160mm overlap and joined with M16 x 35mm high strength button Bolt and Nut. Button - Head bolts provide protection against treating damage and preserve the continuous ribbon-like quality of the system.

LOW MAINTENANCE

Once installed Flex-Beam Guardrail requires minimum maintenance. all steel components are hot-dip galvanized after fabrication. Posts are either of pressure - treated wood or of Galvanised steel. In Heavy salt use areas, periodic veins of the guardrail with prolong the useful service life of at least thirty years can be expected under most Condition.

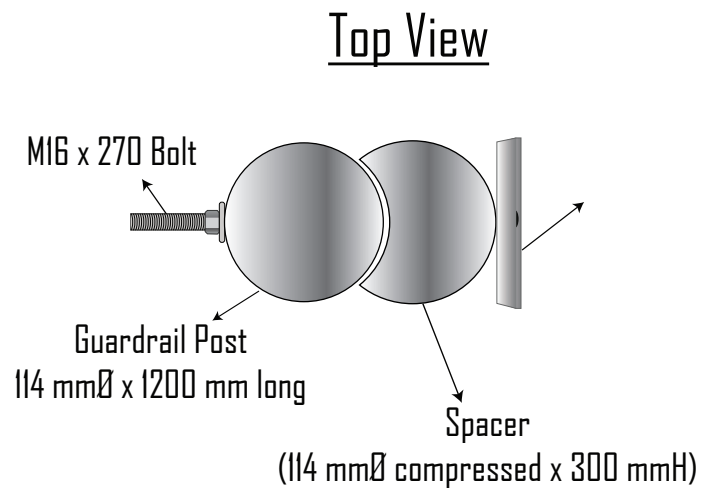
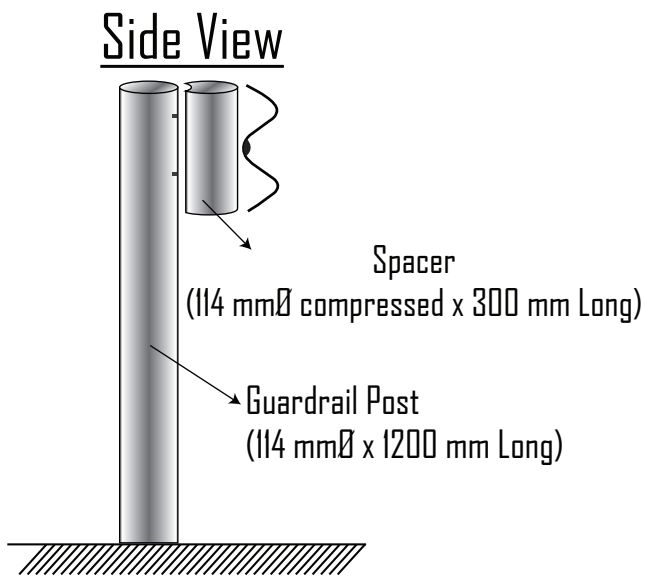
ECONOMY

Flex-Beam Guardrail offers Economy not only in the material cost of the system, but also in installation cost. No specialized equipment or heavy lifting equipments is required for the majority of installation different post configurations can be supplied for installing flex-beam in confined spaces, on bridge decks or on bridge approaches removal and replacement of damaged sections can be easily undertaken due to the lightweight modular layout and bolted connection use signing icants quantities of rail can be carried on standards trucks.

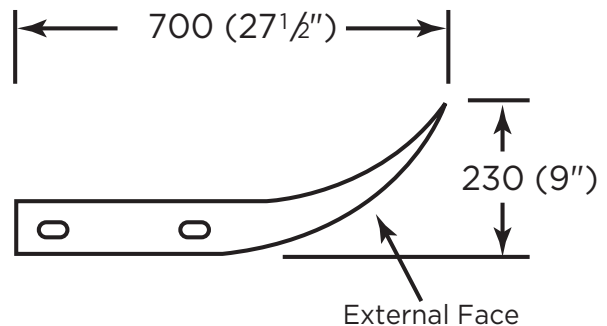
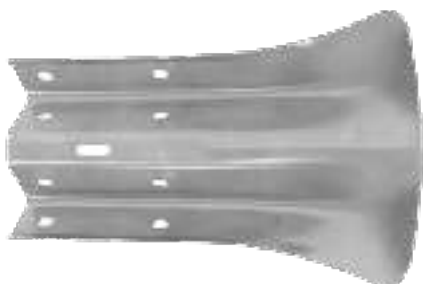
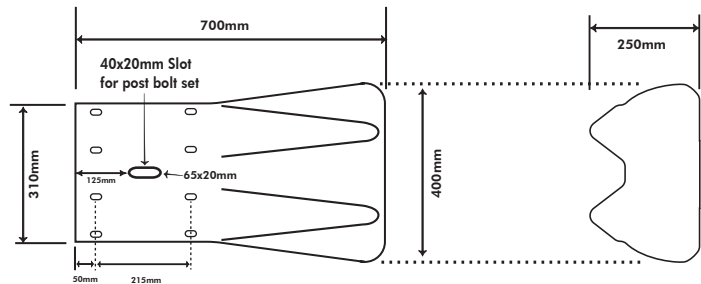
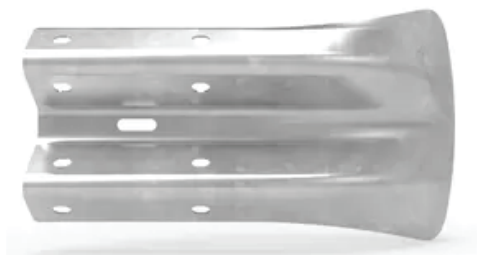
ACCEPTANCE

Flex-Beam Guardrail has been widely accepted by Highway Departments and Municipalities across Kenya for many decades

Round Posts and Offsets



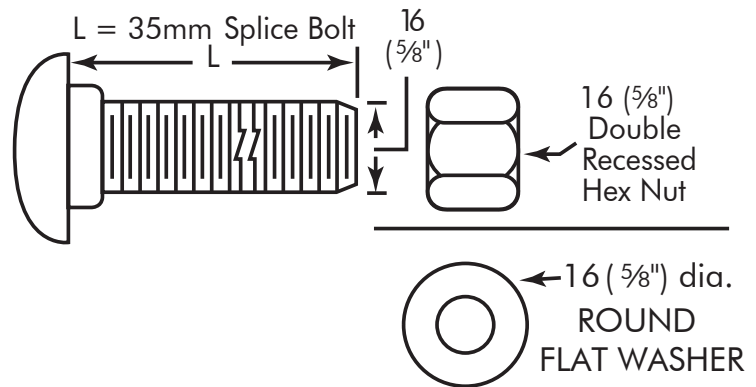
End Section and Transitions



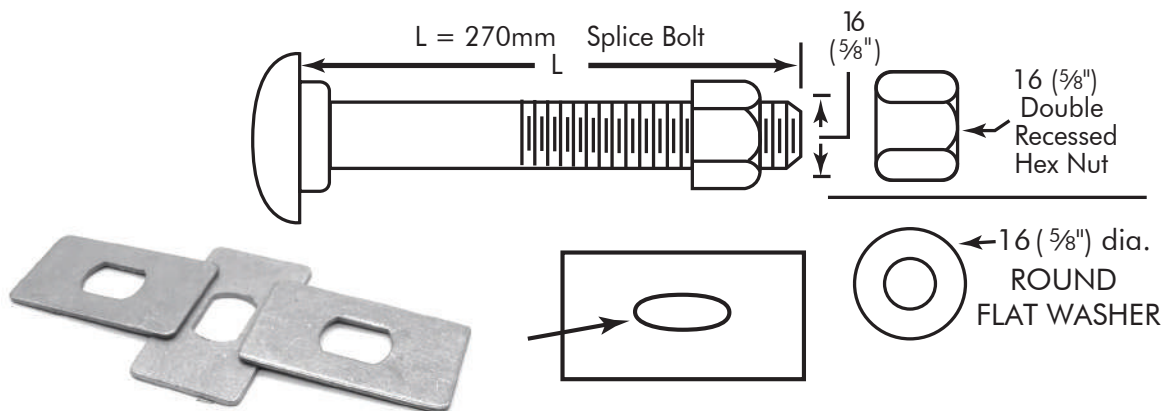
Fasteners and Reflector



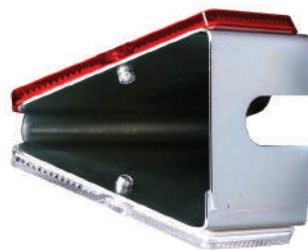
Button Head Bolts & Hex Nuts Connect two Guard rails



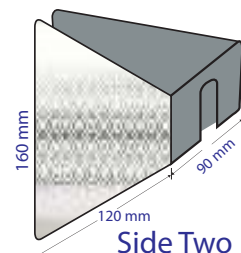
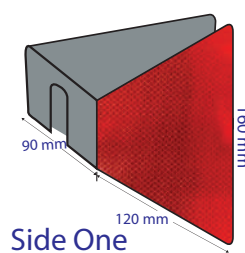
Button Head Bolts & Hex Nuts Connect Post-Spacer and Guard Rails



Reflector



M16 x 35mm
Nut & Bolt





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