BAMBURI
SPECIAL PRODUCTS

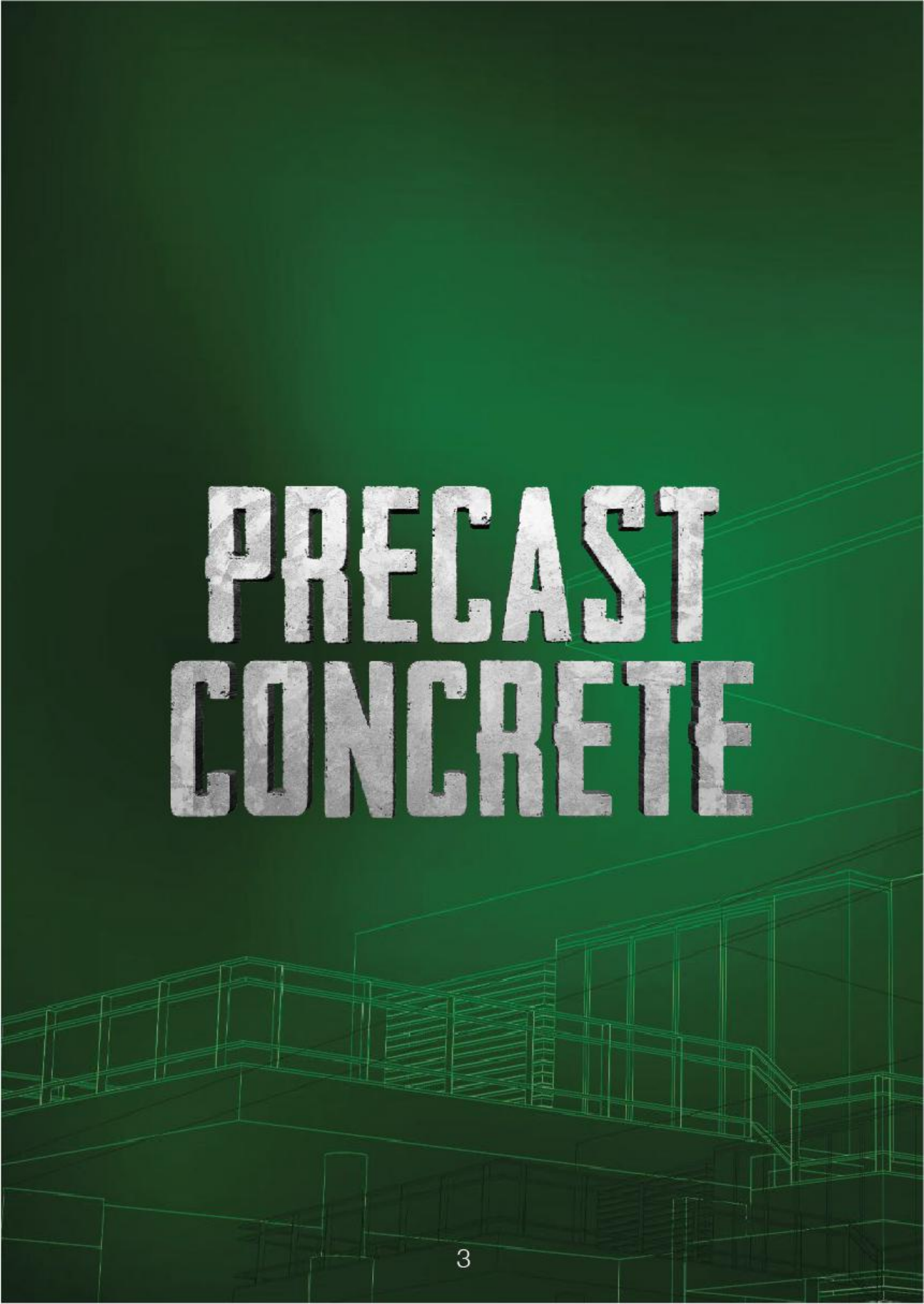
CONCRETE SOLUTIONS TO SIMPLIFY YOUR CONSTRUCTION PROCESS

BUILD PROUDLY WITH US FROM START TO FINISH

Bamburi special products ltd

TABLE OF CONTENTS

PRECAST CONCRETE



1.PAVING BLOCKS

Precast paving blocks offer a durable, aesthetic, easy to use and great value for money exterior pavement application. These blocks are comfortable to walk on, extremely durable, and easy to maintain. They come in different varieties and designs that are suited for use. Our Precast paving blocks adhere to the Reference Standard: KS 827: 2003.

Standard paving blocks

	Dimensions (mm)	Weight (kg/m²)	Pieces (m²)
Quad 	200 x 100 x 80	180	50
	200 x 100 x 60	135	50
	200 x 100 x 50	101	50
Interlock 	200 x 100 x 80	80	50
	200 x 100 x 60	135	50
	200 x 100 x 50	101	50
Hexagon 	Thickness 60	118	38
Machine Cobbles 	100 x 100 x 60	130	100
Diplomat 	Thickness 50	92	42
Dumbbell 	265 x 175 x 60	135	27
Idole 	225 x 175 x 60	113	24

Colored paving blocks

Colored paving blocks are suitable to mater your taste and preference in construction, we offer colored blocks in red, green, black, etc...

	Dimensions (mm)	Weight (kg/m²)	Pieces (m²)
Dumbell 	265 x 175 x 60	135	27
Interlocking 	265 x 175 x 60	135	50
Idole 	225 x 175 x 60	113	24
Cobbles 	100 x 100 x 60	130	100
Quad 	200 x 100 x 60	135	50

Landscaping Solutions

These are products used in the process of making a garden or other piece of land more attractive by altering the existing design, adding ornamental features, and planting trees and shrubs. The products include; paving slabs, eclipse, lattice among others. They adhere to reference standard KS 830:1994

	Dimensions(mm)	Weight	Pieces (m²)
Paving slab 	600 x 600 X 50	40 Kg/piece	
Eclipse 	300 x 260 x 190	273 Kg/Sq. metre	13
Lattice 	600 x 400 x 80	108 Kg/Sq. metre	4

2.BUILDING BLOCKS

These are building units with standard sizes used for walling and slabs. They include hollow blocks, hollow pots and solid blocks. Reference standard: KS 625:1986- Specifications for precast masonry unit

	Dimensions (mm)	Weight (kg/piece)
Hollow pot 	380 x 230 x 190 390 x 230 x 200	22 26
Hollow Block 	380 x 230 x 190 390 x 200 x 200 390 x 150 x 200 390 x 100 x 200	22 24 23 18
Solid Block 	390 x 200 x 200 390 x 150 x 200 390 x 100 x 200	26 20 16

Fencing solutions

Our fencing solutions offer a wide range of options that are used to confine or exclude people or animals, to define boundaries, or for the purposes of decoration. The fencing solutions conform to the Reference Standard: KS 1186: 2003 – Specification for reinforced concrete fencing posts and struts/concrete and concrete products, that ensures the product guarantee is maintained.

	Dimensions (mm)	Weight (kg/piece)
Pillar coping 	450 x 450 x 50 400 x 400 x 50	24 20
Wall coping 	600 x 300 x 50 600 x 225 x 50	19 16
Fencing post strainers 	150 x 100 x 2750	88
Walling panel 	1530 x 300 x 50	35
Walling post 	150 x 150 x 2400 (8ft) 150 x 150 x 2700 (9ft) 150 x 150 x 3000 (10ft) 150 x 150 x 3300 (11ft) 150 x 150 x 3600 (12ft)	92 103 115 128 138
Fencing posts 	150 x 100 x 3650 150 x 100 x 3350 150 x 100 x 3600	115 110 105

Drainage and Edge restraints

An edge restraint is any rigid obstruction that resists lateral shifting of pavers outside their design perimeter. This includes road kerbs and channels that are typically located at the edge of a road, designed to provide road drainage. They also act as a barrier to prevent vehicles from leaving the road carriageway. Reference Standard: KS 829: 2000 – Specification for precast concrete flags, kerbs, channels, edgings and quadrants.

	Dimensions (mm)	Weight (kg/piece)
Inverted Block Drainage 	150 diameter x 155 x 610 300 diameter x 250 x 610	45 91
Paving Slab 	600 x 600 x 60	
Side Slab 	75 x 230 x 610	27
Road channel 	100 x 125 x 900	160
Road kerb 	125 x 255 x 900	60
Culvert 	300 diameter x 1000 450 diameter x 1000 600 diameter x 1000 900 diameter x 1000	

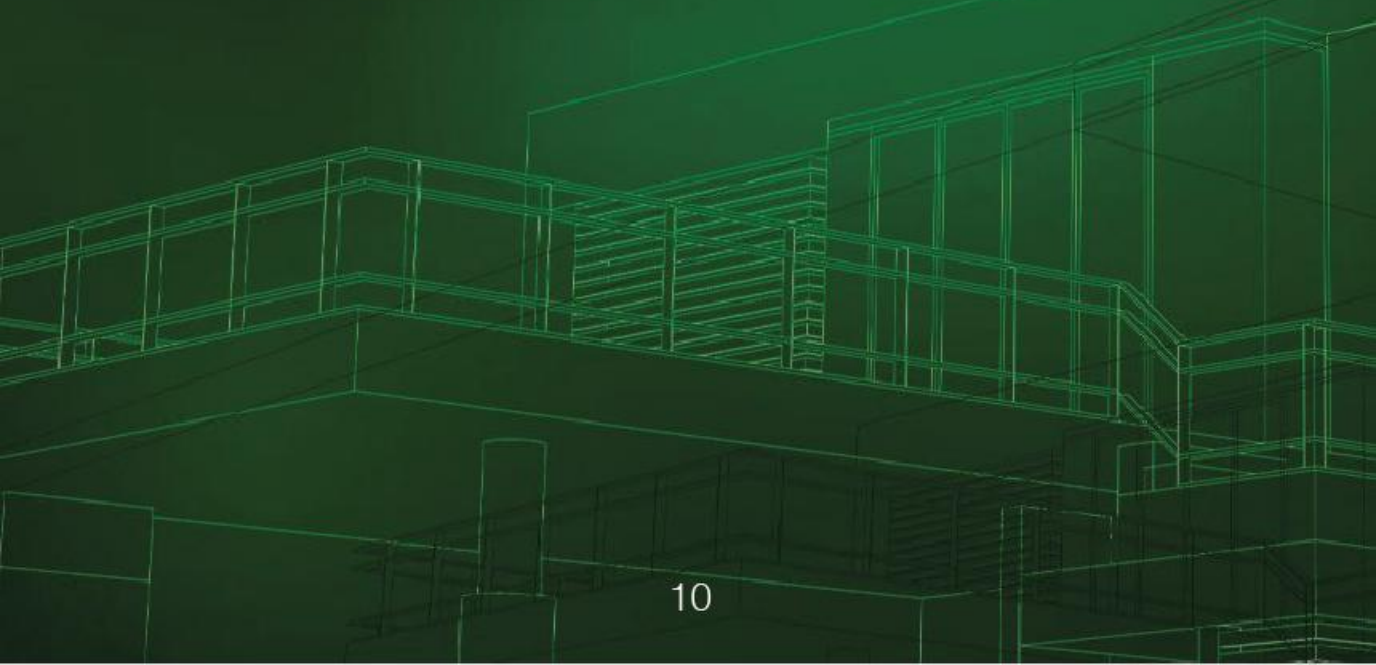
Drainage solutions

The products conform to KS 548: 1985 – Specification for precast concrete pipes and fittings for drainage, sewerage and culverts.

	Dimensions (mm)	Weight (kg/piece)
Inverted Block Drainage (IBDs) 	300 diameter x 250 x 610mm 450 diameter x 250 x 610mm	45 91
Side slabs 	610 x 230 x 75	24
Half culvert 	900 diameter x 1000	40 104

	Internal Diameter (mm)	Length (mm)	Concrete Class
Pipe culvert 	300 450 600 900 1200	1000 1000 1000 1000 1000	30 30 30 30 30

READYMIX CONCRETE



1.NORMAL CONCRETE

Standard concrete:

- Available for concrete strengths ranging from 15MPa to 40MPa.
- High Strength concrete: Available for concrete strengths above 40 MPa.The concrete is formulated to suit delivery over extended duration of time and to allow for placing by both skip and pump mechanisms.

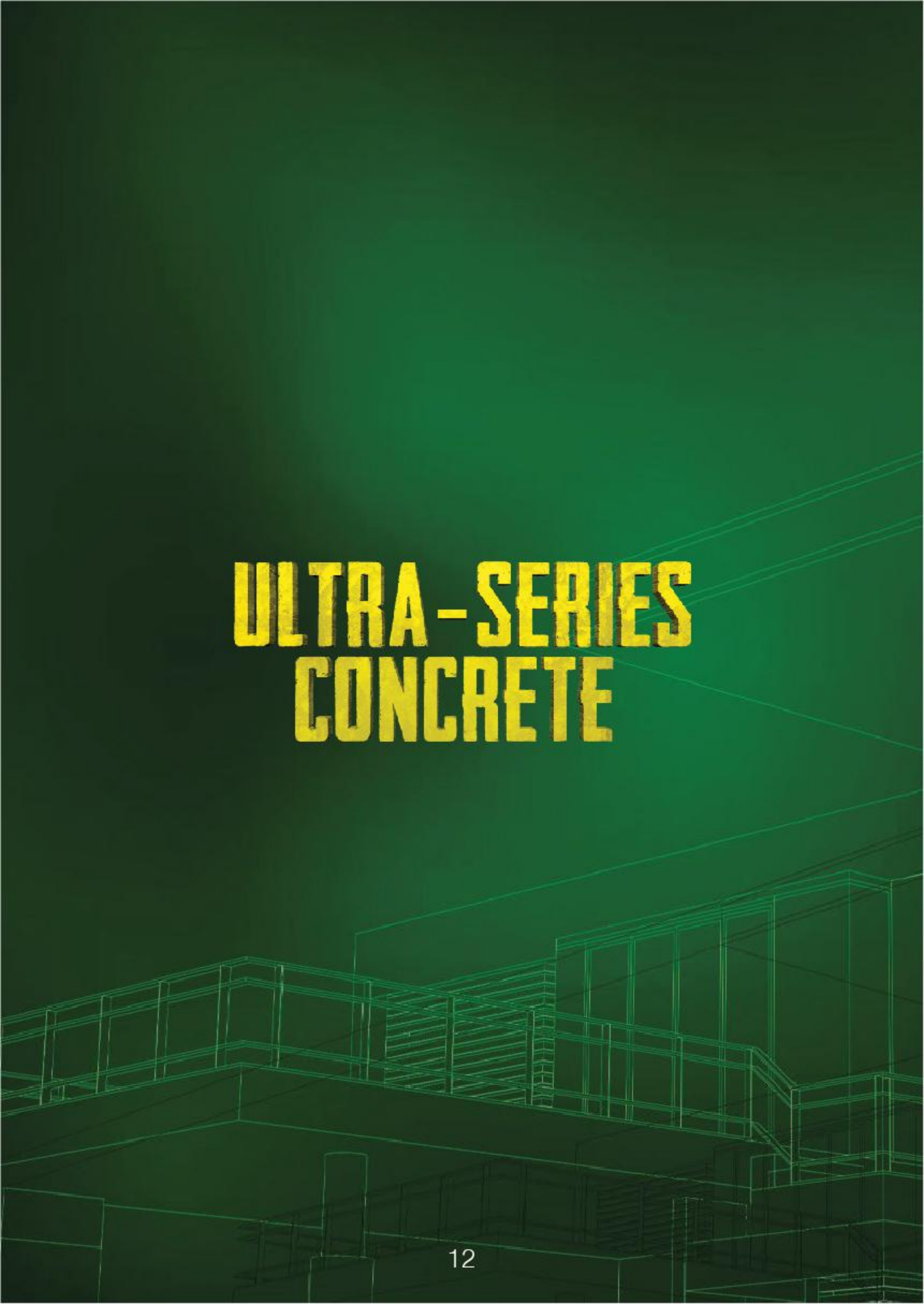
Attributes/features:

- Concrete produced using high-quality raw materials, tested and verified to meet local and international standards.
- Manufactured in controlled conditions for consistent quality.
- Tested both in fresh and hardened states to assure quality to local, project and international standards.
- Available in a wide range of workability levels from low (S2) to high (S4) slump ranges per standards for concrete.

Standard concrete and their applications

C15	Blinding, Domestic Grounds, Road Drainage, Pavement Kerbs
C20	Domestic Floors (Ground And Suspended), Sheds, Garages
C25	Domestic & Commercial Floors, Retaining Walls, Columns Of Low-rise Buildings, Foundations
C30	Raft Foundations, Columns, Retaining Walls, Industrial Floors, Driveways
C35	Concrete Exposed To Heavy Impacts, Harsh Weather & Some Chemicals
C40	Piling, Water-retaining Structures, Infrastructure

ULTRA-SERIES CONCRETE



A.ULTRA-WATERPROOF CONCRETE

About bamburi ultra-waterproof concrete

Bamburi Ultra-Waterproof Concrete is specially formulated to contain the latest pore-blocking waterproofing technology. This makes it an ideal solution for concrete applications exposed to water and moisture.

Bamburi Ultra-Waterproof Concrete also conforms to additional requirements on waterproofing. It conforms to EN 12390 8:2009 Depth of Penetration of Water under Pressure, EN 206-1:2013 and KS EAS 131-1:2008.

Benefits

- Offers superior and economic waterproofing solution
- Extremely effective against hydrostatic pressure

Applications

Bamburi Ultra-Waterproof Concrete is typically used in concrete applications exposed to moisture.

These include:

- Water retaining structures (pools, aquariums, reservoirs, dams)
- Below grade concrete works (basements, cellars, retaining walls etc)
- Flat roofs, podium slabs, parking structures
- Water treatment plants
- Tunnels and subway systems
- Bridge works
- Marine structures
- Stadiums
- Waste water treatment plants

B.ULTRA-SELF COMPACTING CONCRETE

About bamburi ultra-self compacting concrete

Bamburi Ultra-Self Compacting Concrete (Ultra-SCC) is a uniquely formulated concrete that has the ability to flow under its own weight, effectively filling a form area and achieving full compaction on its own without vibration. Bamburi Ultra-SCC Conforms to BS EN 206, Constituent Materials of SCC, Specifications, and Conformity Criteria and European Guidelines for Self-Compacting Concrete: Specification, Production and use.

Characteristics & properties

Flowability - ease of flow of fresh Ultra-SCC when unconfined by formwork and/or reinforcement
Viscosity - resistance to flow of fresh SCC once flow has commenced
Passing ability - ability of the fresh concrete to flow through tight openings such as spaces between rebar reinforcement without segregating or blocking
Segregation resistance - ability of the SCC to remain homogenous while in its fresh state

Bamburi's Ultra-SCC importance is that it maintains designed concrete strength, durability and other engineering properties while meeting other desired performance requirements.

Characteristics of bamburi ultra-self compacting Concrete

Bamburi Ultra-SCC is designed to satisfy the following properties and requirements as outlined in the referenced standard and guideline.

Property	Criteria
Slump-flow class SF1	≥ 550mm, ≤ 650mm
Slump-flow class SF2	≥ 660mm, ≤ 750mm
Slump-flow class SF3	≥ 760mm, ≤ 850mm
V-funnel class VF1	< 9s
V-funnel class VF2	≥ 9s, ≤ 25s
L-box class PA1	≥ 0.80 (with 2 bars)
L-box class PA2	≥ 0.80 (with 3 bars)
Sieve segregation resistance class SR1	≤ 20%
Sieve segregation resistance class SR2	≤ 15%

Advantages of bamburi ultra-self Compacting concrete

- Faster placement of concrete with no vibration or mechanical compaction
- Cost effective due to reduced labour requirements and equipment on site.
- Shorter construction periods – allows for acceleration of project schedule resulting in cost savings
- Produces superior and more uniform surface finishes
- Enhanced strength due to superior compaction and uniformity of concrete
- Minimizes voids on highly reinforced areas by easily flowing around the congested steel
- Allows for innovative architectural features due to ability to flow into complex forms
- Allows for easier and faster pumping
- Improved tolerances (levels) of floors and slabs
- Elimination of vibrator noise potentially increasing construction hours in urban areas

Areas of application

The innovative concrete design technology of Bamburi Ultra-SCC to enhance both Fluidity (flow ability) and Stability (non-segregation) enables this product to suit several worksite applications including but not limited to the following:

- Structures with heavily reinforced sections/elements
- Areas/sections with difficulty in access such as underwater concrete, sections with complex shapes, thin sections etc.
- Horizontal applications with large coverage requiring high level of flatness (high tolerance floors)
- Retaining walls
- Construction of raft and pile foundations
- Thin walls and column sections which would traditionally be classified as 'slow jobs'
- Sections with complex Architectural Designs and formwork
- Mass concrete foundations e.g. Raft foundations
- Jobs requiring rapid demoulding/early formwork strike-off (Removal of props subject to engineer's approval)

Minimum standards for self compacting concrete

Grade of concrete:	25 MPa minimum
Cement type:	Bamburi cement 32.5, 42.5, 52.5
Aggregate size:	20mm maximum aggregate size (MAS) and 10mm MAS mixed with sand
	(Note: Client to confirm requirements based on size of thinnest section)
Workability:	Collapse and flow

SELF COMPACTING CONCRETE TEST

L-BOX TEST

V-FUNNEL TEST

FLOW TEST

Special considerations

Note that standard practices and good procedures in concrete placing and curing must be strictly adhered to with proper curing procedures as required by normal concrete mixes.

In addition to this, the following additional points need to be considered when working with Bamburi Ultra-SCC:

- Formwork should be designed to withstand the fluid concrete pressure that will be higher than that of normal concrete
- Formwork should be placed to have airtight joints to prevent paste loss.
- Ultra-SCC will have to be placed in lifts for taller elements

C.PERVIOUS CONCRETE

About bamburi pervious concrete

Bamburi Pervious Concrete is an ideal solution for surface and storm water management. Typically containing 20-35% void space, it allows water to penetrate through at a permeability of 150 – 1000l/min/m2.

Areas of application

- Residential roads and parking lots (maximum load 7.5T)
- Pavements, bike and pedestrian pathways
- Patios
- Tennis Courts
- Alleyways
- Pavement edge drains etc.

Benefits of bamburi pervious concrete

- Faster Draining
- Smooth clean look
- Easy to place with a paver
- Available with integral colour
- Can form part of a cost-effective Sustainable Urban Drainage System (SUDS)
- Mitigates contamination of groundwater by surface pollutants

Technical features of bamburi pervious concrete

- Unit weight is up to 70% less than conventional concrete
- Can retain workability for upto 90 minutes
- Compressive strength between 10-20MPa
- Excellent permeability at a rate of 150-1000 l/min/m2

Safety features

- Reduces Glare from wet pavements
- Reduces the concentration time of runoff water
- Eliminates water accumulation due to rain

Important recommendations

The standard rules for good concrete practice must be strictly observed with proper curing procedures as required by normal concrete mixes but more rapidly implemented.

Special considerations

There are three factors that determine pervious pavement system design thickness:

1. Hydraulic properties such as permeability (related to yearly average rainfall) and volume voids (related to rate of water discharge)
2. Structural properties such as compressive strength offering better load bearing properties
3. Selection of appropriate Pervious Concrete properties is dependent on the more dominant between:
   - Hydrological requirements
   - Load bearing requirements

The larger of these values governs design thickness

Sub-grade & sub-base preparation

- Consult a Geotechnical Engineer
- Uniform (Level) subgrade support
- Larger of two values governs design thickness
- **Compact subgrade to 90-95% of theoretical density**
- Increasing compaction decreases permeability
- Stable sub-base required, crushed aggregates recommended

Placement

- Rapid drying requires specialist handling and curing
- Concrete transfer can be used by either off the truck or using concrete conveyor. Pumping not applicable
- Concrete workability retention up to 90 minutes
- Placement should be continuous and rapid
- Can be paver laid
- Reduce overworking the concrete, especially after striking off and finishing
- Use recommended placement method

Compaction & finishing

- Compact with steel roller or vibrating plates or pavers to height of forms
- Hand tamp near edges and other areas not reached
- Complete compaction within 15 minutes of placement
- No floating or trowelling
- Minimize overworking or movement of the surface after compaction. This includes walking on the surface.

TYPICAL SECTION OF A PERVIOUS CONCRETE PAVEMENT

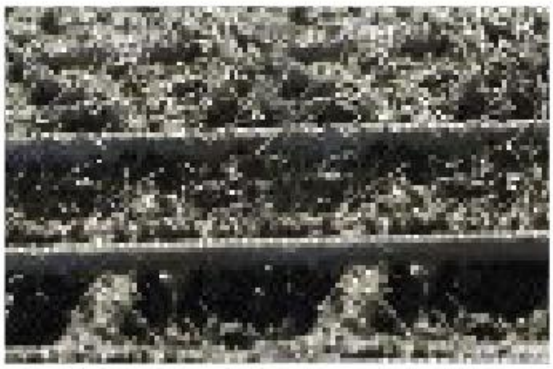
Jointing

- Contact our technical representative for further information
- It is recommended to place joints immediately after compaction. Otherwise, saw cuts are possible after 7 days of curing

Maintenance

- Minimal maintenance required
- Design the site to minimize flow of soil and leaves to the pavement
- Vacuum annually or when clogging test indicates the necessity
- Alternatively try pressure washing

C.ULTRA-FIBRE REINFORCED CONCRETE



About bamburi ultra-fibre reinforced concrete

Bamburi Ultra-Fibre Reinforced Concrete consists of either steel or polypropylene micro and macro-fibres. The fibres turns concrete into a composite material that slows crack propagation and reduces plastic and drying shrinkage cracking.

It also enhances impact resistance (ability to withstand sudden or intense force or shock) and wear resistance (ability to resist material loss by some mechanical action).

Where to use bamburi ultra-fibre reinforced Concrete

Bamburi developed Ultra-Fibre Reinforced Concrete to meet the increasing demand for quality crack-free concrete.
Ultra-Fibre Reinforced Concrete can be used in all types of concrete to achieve enhanced quality.

Main areas of application are:

- Driveways
- Concrete Pavements
- Floors (Industrial, Commercial or domestic)
- Precast Elements
- Cold room floors
- Very thin sections with large surface-to-thickness ratios
- Any other concrete application where enhanced properties are required
- Composite decks
- Shotcrete (microfibers)

Advantages of ultra-fibre reinforced concrete

- Provides homogenous reinforcing, reducing the possibility of spalling of concrete edges.
- Reduces labour required to place the handle plastic shrinkage control mesh (BRC) when used as a substitute for floor slabs
- Improves the wet mix by reducing the potential for concrete segregation
- Reduces the overall bleed and consequential settlement cracking
- Inhibits early shrinkage cracking
- Increases the cohesiveness of concrete
- Macro-synthetics fibres provide crack control without the risk of corrosion
- When used in shotcrete applications, they provide increased adhesion hence less rebound and waste and ability to pass thicker layers of shotcrete in one pass

Limitations of ultra-fibre reinforced concrete

Bamburi Ultra-Fibre Reinforced Concrete does not replace any structural steel reinforcing.

Guidelines for using ultra-fibre reinforced concrete

Steel or Polypropylene fibres are added to the concrete mixing drum during the batching process of the raw materials. Dependent on the predetermined concrete mix design, there are different dosage rates used, subject to targeted concrete performance.

Guidelines for using ultra-fibre reinforced concrete

Slump:

The slump of the concrete will be reduced. This does not however indicate a reduction in workability. The reason for the reduced slump is that the fibres create a desirable thixotropic effect, which will affect a static test such as that for the slump test. Energising concrete with a vibrator will overcome the apparent slump loss.

Bleed:

Settlement of concrete is reduced as a result of a reduction in bleed water. Tests on Micro fibre concrete show a reduction in bleeding. Settling occurs when the concrete changes from a plastic to solid material. During this process, the concrete is particularly prone to cracking.

Importance of ultra-fibre reinforced concrete

- They constantly redirect micro cracks each time a fibre filament is encountered and hence drastically reducing the potential for plastic shrinkage cracking.
- Bleed water is reduced, which reduces the development of capillary pores associated with bleed water. This reduction of pores decreases absorption properties and hence increases sustainability.
- Provides greater impact resistance. Impact damage is common in concrete, particularly at the surface and edges of elements and saw cuts. Micro-fibres reduce the spalling of the concrete by providing secondary reinforcing.
- Enhances abrasion resistance.As micro-fibres control bleed water migration, the possibility of the fine cement and sand particles segregating from the mix is drastically reduced. This promotes an efficient hydration of cement which improves the bonding of the cement matrix and achieves a tougher more durable concrete surface.

Effects of other fibres & their benefits in concrete

Macro-Fibres (Polypropylene)

- Improves flexural toughness – limit the widening of cracks after they have formed
- Can improve Tensile Strength
- Can eliminate the need of welded-wire (BRC Mesh) reinforcement depending on the application
- Effective crack control

Steel fibres

- Steel Fibre-Reinforced Concrete distributes localized stresses
- Reduction in maintenance and repair cost
- Provides tough and durable surfaces
- Resistance to impact
- Improves toughness by preventing crack propagation from micro-cracks to macro-cracks

Minimum standards for ultra-fibre reinforced Concrete

- Bamburi Ultra-Fibre Reinforced Concrete is produced in conformance to both local and international Standards i.e. KS EAS, BS EN etc.
- Cement combinations conforming to BS EN 197
- Aggregates conforming to BS EN 12620
- Special high performance dispersants conforming to BS EN 934
- Synthetic or metallic microfibers conforming to BS 14889

Important recommendations

The standard rules for good concrete practice and placing must be strictly observed with proper curing procedures as required by normal concrete mixes.

POWERAFT CONCRETE

Bamburi Special Products provides a unique offer that involves extremely rapid continuous supply of mass concrete volumes to large projects known as 'Poweraft'.

Benefits of poweraft:

1. Consistent quality control and assurance while using specialized Bamburi low heat of hydration cements

2. Proprietary Holcim software & testing tools to predict and control temperature build-up in mass concrete. Software outputs detailed thermal imagery and temperature gradients

3. Continuous mass concrete pours

4. Dedicated batching plants for large pours – any one plant can be used as a back up

5. More than 25 transit mixer trucks

6. Seamless shift change-overs to ensure non-stop supply

7. Availabilty of boom pumps and fixed pumps

8. Mobile concrete laboratory to conduct on-site tests

9. Highly trained and dedicated staff at all stages

10. 24-hour continuous operations

BAMBURI READYMIX TRUCKS TRANSPORTING CONCRETE.

HEALTH & SAFETY

Teamwork is at the core of the safety culture at Bamburi Cement. It's the platform on which we achieve our shared goal of zero harm to the people and the environment. It's a shared commitment by everyone to maintain high safety standards onsite and offsite.

We pride ourselves in sharing the knowledge and importance of safety with clients on their job sites as well as integrating safety into our daily lives and everything we do – both as individuals and an organisation.

BAMBURI SPECIAL PRODUCTS

IS THE INDUSTRY LEADER IN PRECAST AND READYMIX CONCRETE

Through an investment in innovation and cutting-edge solutions, we ensure:

- Our products are designed to make your construction process easier and faster.
- We are cognizant of the time, investment and solution that save you time and add efficiency to the success of your project.
- We are committed to providing you with high-quality construction materials that will stand the test of time and deliver lasting value.
- Our products are designed and manufactured to meet the highest standards of quality and durability, ensuring that your building passes all tests, including time.
- Our team of experts are dedicated to working with you every step of the way, from product selection to delivery and installation, to ensure that your project is a success.
- And that no matter what project, whether a residential, commercial, or industrial, our products meet your specific needs, while providing you with the resilience, strength, and durability.

Choose Bamburi Special Products for your next construction project and experience the peace of mind that comes with knowing that your investment is in safe hands.

Bamburi special products ltd

For more information about
any of our products and services:

Contact Us:

BSP Nairobi - 0722632289
BSP Mombasa - 0716260891

BSP Nairobi - 0722632289
BSP Mombasa - 0716260891

bsp.info@lafargeholcim.com

bamburispecialproducts.co.ke

bamburicement

Bamburi Cement PLC

Bamburi Cement