



Technical Specifications

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Formed in 2018, EcoConcrete Ltd is a manufacturer of Beam and Block Flooring with our Factory in Isinya and our Head Office in Parklands, Nairobi.

EcoConcrete Ltd is an affiliated company to Somers Engineering Ltd Somers Engineering Limited was established in 1987, a Multi discipline Engineering Services Company. Somers Engineering Limited provides specialised engineering solutions for structures. This affiliation assures customers of the integrity of our system. Every floor we produce is checked by an engineer against the design of the building for loadings span and functionality.

We have supplied a variety of different projects since its inception from shopping malls, cold rooms, houses, multi storeys, warehouses, sports and community halls, churches, as well as it has been used in civil works projects such as water tanks, septic tanks, culverts, carparks, and flat roofs amongst others. Highlighting the versatility and flexibility in design and use of the product.



Beam & Block is an existing technology that, whilst new to Kenya, has been in development and become an increasingly popular option for builders since the 1970s. This structural option now has a market share in UK of approximately 40%. The structure's basic design has remains unchanged T-shaped precast concrete beams are laid in rows suspended on the inner leaf of the main walls. The gaps between the beams are then infilled with blocks. Utilities and trunking are laid on top and then a 50mm screed is applied to finsih the floor.





The EcoConcrete Beam and Block Flooring System saves time and cost on site. The floor is quick to install without the need for specialist skills. Site preparation is reduced and no hardcore or oversite concreting is required. Also, internal foundations can be reduced. Once installed the system is rot and draught proof. The floor provides an immediate working platform allowing building works to continue without delay. The EcoConcrete Beam and Block Flooring System is ideal for a wide range of uses ranging from housing to flats and offices. Two beam sizes are available; 150mm deep for standard span and load applications and 225mm deep for heavy duty and longer span requirements, for example in commercial construction.

Infill Blocks & Beam

Our standard solid blocks are 380mm x 200mm x 150mm. They are made with a high pressure hydraulic press. In terms of strength, 150mm aggregate blocks provide a 3.5 KN transverse strength that have been tested in accordance with both Kenyan and British Standards.





150mm Load Table:

Density of Hollow Infill blocks = 1160Kg/m³, Topping (50mm)= 1.25KN/m², Celling plaster for suspended floor 12mm thick + tiles 18mm = 0.72KN/m²

Beam - Block Types			11 11	ш		
Super Imposed Load	1.5KN/m ²	4.65	5.80	6.40		
	2.0KN/m ²	4.40	5.50	6.10		
	2.5KN/m ²	4.20	5.30	5.80		
	3.0KN/m ²	4.05	5.05	5.60		
	4.0KN/m ²	3.75	4.70	5.20		
	5.0KN/m ²	3.50	4.40	4.90		
	7.5KN/m ²	3.07	3.75	4.30		
	10.0KN/m ²	2.75	3.40	3.80		
Residential houses = 1.5KN/m ² , Hotels = 2.0KN/m ² , Classrooms = 3.0KN/m ² , Shops = 4.0KN/m ² , Workshops = 5.0KN/m ² ; Industrial walkways = 7.5KN/m ²						

380

225mm Load Table:

Density of Hollow Infill blocks = 1160Kg/m³, Topping (50mm)= 1.25KN/m², Celling plaster for suspended floor 12mm thick + tiles 18mm = 0.72KN/m²

Beam - Block Types			T I
ed Load	1.5KN/m ²	6.50	8.00
	2.0KN/m ²	6.25	7.70
	2.5KN/m ²	6.00	7.40
ose	3.0KN/m ²	5.70	7.10
du	4.0KN/m ²	5.40	6.70
rIr	5.0KN/m ²	5.10	6.30
Supe	7.5KN/m ²	4.50	5.60
	10.0KN/m ²	4.00	5.00

Residential houses = 1.5KN/m², Hotels = 2.0KN/m², Classrooms = 3.0KN/m², Shops = 4.0KN/m², Workshops = 5.0KN/m²; Industrial walkways = 7.5KN/m²



Typical Beam Plan:





SCALE 1:10

200





EDGE WALL/ BEAM AND BLOCK SLAB CONNECTION DETAIL SCALE 1:10

BENEFITS OF BEAM & BLOCK

Minimal Excavation and No Backfill: For our Beam and Block system, the excavation required is only for foundation trenching or stub columns and ground beams. The suspended Beam and Block floor is laid simply supported on top of the foundation walling. There is no requirement for Excavation and removal of foundation soils and subsequent backfilling with select materials, as you would with a conventional slab. The current cost of excavating and backfilling ranges between Ksh 180,000 - Ksh 250,000 for a 100-square-metre plinth area. Use of B&B is also beneficial as it reduces the number of deliveries to site.

No Formwork: Beam and Block system requires no formwork at all, as the system is self-supporting. This saves on the cost of hiring trappers or installation of marine ply as formwork. Formwork costs around Ksh 500 per square metre. For 100 square metres, the saving is approximately Ksh 50,000.

No Propping: Conventional slabs require to be propped to allow support of formwork as the concrete cures. For every square metre, 4 props are recommended for efficient support. Each pole ranges between Ksh 120 to Ksh 150. For 100 square metres, propping required ranges between Ksh 48,000 – Ksh 60,000. Beam and Block system requires no propping at all.

No BRC and Steel Reinforcement: The Beams are made of Class 60 concrete, prestressed with high tensile steel, and manufactured to BS EN 15037, meaning there is no need for additional reinforcement. This makes Beam and Block flooring economical.

Easy Installation: The Beam and Block system is very quick and easy to install. Approximately 100 m2 of the system can be installed manually in a day. For a conventional slab, it takes about 28 days for the slab to be completed from concreting, vibrating, and curing. This can save about 60% of the time. Minimal machinery is required on site (no concrete pump, no poker vibrator, no raking, or leveling is required). This system is extremely versatile in achieving complex designs using unskilled labour. Economical option due to the off-site manufacture, fast assembly, and little requirement for specialist labour or equipment.

High Performance: As the flooring system is draught-proof, rot-proof, and fire-resistant, there are no concerns over the quality of the Beam and Block. Its rigid construction also results in minimal shrinkage, no creaks, and a lack of bounce that is associated with other types of floors.

Safe Working Platform: Straight after the Beams and Blocks are installed it provides an immediate working platform, allowing you to get on with construction. No waiting periods no delays in construction.

All-Weather construction: Beam and Block is an all-weather form of construction and can be installed in all conditions without the need for special skills.

Acoustic Performance: The most common complaint of noise in domestic properties is squeaky floors caused by timber – this is eradicated with concrete. With the ever-evolving world of technology, changes in wireless speaker quality and VR gaming mean that noise can easily be transmitted through floors in homes. Concrete Beam and Block flooring is excellent at reducing floor-to-floor noise and should be considered for upper floors.

Fire Rating: Concrete has a far greater fire rating. Safety is key. Using a precast concrete Beam and Block floor certainly reduces the risk of fire damage. The floor will provide 1 1/2 hours' fire resistance.

Thermal Performance: The thermal performance of concrete is exceptional. Due to the properties of concrete. It is conducive to retaining heat during the day and slowly dispersing that exact same heat during the night.

Material Longevity: Precast concrete structures have a lot to live up to; they endure all manner of environmental conditions while still maintaining structural integrity. Ideally, it lasts 50 to 100 years or more. Curing concrete Beams and Blocks in a controlled environment is key to their longevity.

Reduced Theft / Loss of Materials from Site: The Beam and Block system is uniquely designed for each build, it cannot be used on another site. It is stored in the open. The risk of theft/loss is minimal compared to steel and cement etc. as used in a conventional slab.



For specific advice please contact the EcoConcrete Technical Department on +254 722 882 088



USES OF SUSPENDED BEAM & BLOCK FLOOR SLAB

1. Ground Floor Slab



For the ground floor slab, there is no need for mass excavation, simply remove the topsoil and trench for the foundation walls. The precast concrete inverted T-beams are supported by the perimeter walls and internal load-bearing walls. The beams are 250mm in depth and made up to lengths of around 6m. They are usually designed and manufactured to span specific distances. Beam arrangement and lengths are selected according to span and loading requirements, along with the type of block specified.

2. Roof Slab



Flat roofs are becoming more and more desirable as they can typically be used in most housing projects, including commercial and residential buildings. The quick turnaround coupled with cost-effectiveness means, you can benefit more from your rooftops once it is completed. Beam and block flat roof slab systems are economical compared to other types of roofs. When installed properly, beam and block flat roof slab system helps prevent leakages that occur along the valleys/ridges of a pitched timber/steel roof. For starters, the roof is not completely flat as the name suggests but laid to a slight slope of 1:4 or less, to ensure the rainwater drains well to the lower side. Then waterproofing is done to drain the rainwater well and avoid leakage.

3. Septic Tank Cover Slab



Septic tank slab systems are designed to collect, process, treat and dispose of household waste back to nature safely. This treatment system is to avoid environmental pollution, which may lead to environmental-related diseases. Therefore, there is a need to be extremely careful during the installation phase of the system to avoid any future complications.

Septic tanks cover slabs are usually very strenuous to construct. Preliminaries like shuttering and formworks have proven hectic to put in place and later demolished. When using the beam and block slab system, the process has been made much easier. The slab is suspended resting on the walls of the septic tank, no erecting and demolishing of the shutters and formworks.

4. Highrise & Commercial Buildings





Precast Beam and Block slab on Highrise/commercial buildings is an ideal solution that ensures structural integrity. Precast is often stronger than cast-in-place concrete. Not only are they reinforced with steel rebar, but the controlled curing process also ensures that the concrete will set correctly under ideal conditions for maximized strength. This assures the structural integrity of your multistorey/commercial building. On matters of cost, there are massive savings on labour and materials used.

5. Staircase



A staircase using the beam and block is a fast and cost-effective way of construction. One saves on the steelworks and formworks used in creating a support base. The beams are laid on the ring beam creating a sloppy ramp, and mass concreting of the steps is done.

7. Tent Decks



A tent platform keeps your tent off the damp ground, speeding up the drying process of the canvas – discouraging the growth of mold in locations where the sun has difficulties reaching.

6. Lintels



Instead of the normal "Koroga" to create a beam on top of a door or window, we provide a precast prestressed beam that is already cured, fast, easy, and less strenuous to install.

8. Water Tank Tower Slab



A water tower slab is designed based on the loading's expectations of the slab. The beam arrangement of the beam and block slab is determined by the same making it the ideal solution for your water tower.

9. Industrial Cold Storage



Based on the specifications of cold storage units we engineer the slab using the prestressed beams and Styrofoam in place of the infill block. Styrofoam is a type of polystyrene, it is produced from polystyrene beads, which when expanded and moulded under controlled conditions form a lightweight block.

10. Steel Decking



Steel decking is mostly done for mezzanine floors, it is also known as metal decking, which is a sheet of high-performance galvanized steel used in the construction of composite concrete floor slabs. It can also be used as a structural feature in roof construction. When specified as metal roof decking it is used to support insulating membranes.

SCAN QR FOR MORE INFO



EcoConcrete Building Environmentally +254 700 326 326 | (2) +254 113 05086 build@ecoconcrete.co.ke | www.ecoconcrete.co.ke

Head Office, 5th Floor, Doctors Park, 3rd Parklands Avenue, Nairobi, Kenya Production Yard, 10KMs from Isinya Town on Kiserian Isinya Road, next to Isinya Chicks, before Sathya Sai School, Kisaju, Kajiado County, Kenya