

# Beam & Block Floors



**BISON PRECAST**

a Forterra brand



## Beam & Block Floors

**Combining traditional building methods with modern materials to provide effective solutions for ground and upper floors in both domestic and commercial structures.**





# System Overview

Beam & Block is a robust solution for cost effective suspended floors. It is suitable for use on ground and upper floors on all kinds of construction, from residential to commercial buildings.

The system is quick, easy and economical to install and offers numerous advantages including improved acoustic performance and fire resistance.

Particularly suitable on intermediate floors for houses, where sound reduction,

fire resistance and thermal mass are amongst its key benefits.

The system consists of inverted 'T' beams with either lightweight aircrete (Thermalite) or dense and medium dense aggregate block infill.



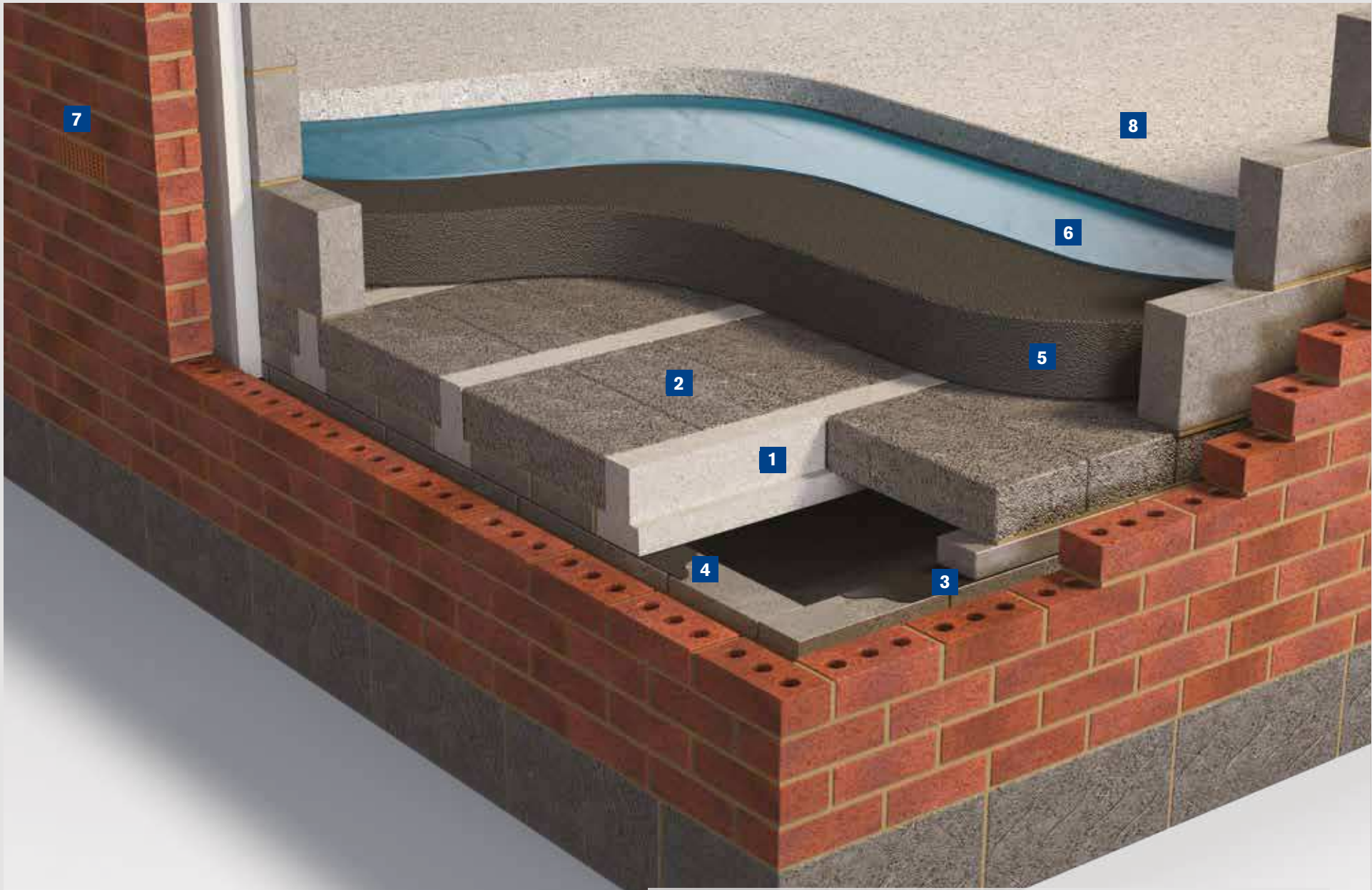
Aggregate Block



Thermalite Block

**BIM Objects for Beam & Block available to download**

[Forterra.co.uk/bim](http://Forterra.co.uk/bim)



## Beam & Block components

- |   |  |
|---|--|
| <b>1</b> 150mm or 225mm prestressed beam  | <b>5</b> Insulation (if required)                                    |
| <b>2</b> 100mm deep building block infill | <b>6</b> Membrane (if required)                                      |
| <b>3</b> Split course block               | <b>7</b> Air vents   |
| <b>4</b> Damp-proof course                | <b>8</b> Finish screed/concrete topping to architect's specification |



# Beam & Block Benefits



## Quality service

Available nationwide either supply only or supply and fix

Complies with all relevant standards and manufactured in accordance with BS EN 15037

## Flexibility

Range of beam types available providing solutions for all levels to all building types

Ideally suited to difficult brownfield sites

## High performance

Prestressed beams span further, reducing foundation costs

Superior levels of fire resistance and sound reduction

Superior load-span capability enabling use in a wide variety of applications

Unaffected by damp, rot or vermin

## Simplicity of construction

Quick to install

Working platform for early access for follow on trades

## Sustainable

Thermal mass helps reduce the carbon footprint over the lifetime of the building

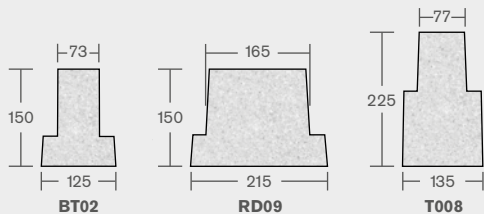


# Structural Performance

## Load-span Tables



### Prestressed beam details



Beam Reference	Width (mm)	Height (mm)	Weight (kN/m)	Weight (kg/m)	Max Length
BT02	125	150	0.326	32.8	5.5
RD09	215	150	0.622	64.2	6.8
T008	135	225	0.576	58.7	7.9

The load-span tables opposite are given as a guide only. Further advice is available on request.

### Camber details

Bison Precast prestressed concrete beams exhibit an upward curve known as camber which is a result of the compressive force near the bottom generated by the prestressing tendons. An allowance of span/300 should be taken into account in floor finishes or bearing levels.

### Construction details

All Bison Precast flooring systems are supported by comprehensive layout drawings, specifications and relevant details applicable to each application.

There are three beam types which are produced in standard profiles of 150 x 125mm, 150 x 215mm and 225 x 135mm (depth x width) to give a range of capacities to suit all loading options. Beams are placed at appropriate centres depending on span and applied load (see loadspan chart).

The beams are positioned in accordance with the layout drawings, perpendicular to the end supports with a nominal bearing of 100mm to each end when supported by brick or block. A 75mm nominal bearing is required when supported by steelwork.

The beams may be staggered at the internal walls and multiple beams may be required to support partition walls.

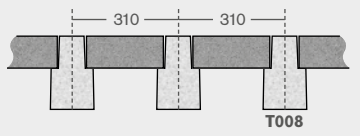
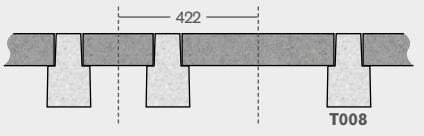
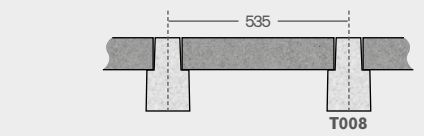
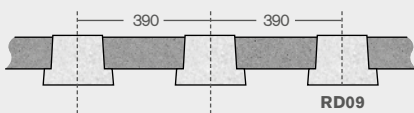
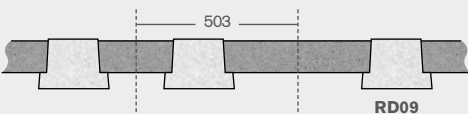
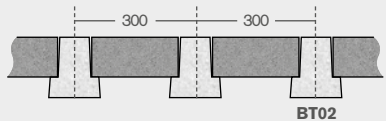
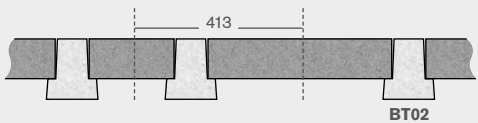
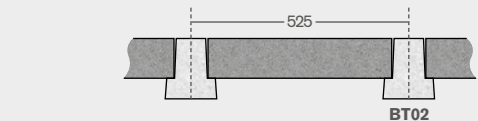
A wide range of infill blocks are available for use with the system including Thermalite, Aircrete and Floorblock.

Bison Precast also provides a choice of medium and dense aggregate blocks.

Where required, blocks should be cut using suitable mechanical means to leave a clean, vertical, square-edged face.

Once all the blocks have been placed in position the floor is grouted using a 4:1 sharp sand/cement mixture, which is brushed in the direction of the beams and then at right angles to ensure all joints are completely filled.

### Load-span tables



Ref	Self weight kN/m <sup>2</sup>	Finishes of 1.8kN/m <sup>2</sup>						150mm Beam
		Imposed load in kN/m <sup>2</sup>						
		1.5	2.0	2.5	3.0	4.0	5.0	
		Maximum Clear Span (m)						
IJ1	1.86	3.95	3.90	3.75	3.60	3.20	3.10	

Ref	Self weight kN/m <sup>2</sup>	Imposed load in kN/m <sup>2</sup>						150mm Beam
		1.5	2.0	2.5	3.0	4.0	5.0	
		Maximum Clear Span (m)						
IJ2	1.96	4.30	4.30	4.20	4.00	3.40	3.50	

Ref	Self weight kN/m <sup>2</sup>	Imposed load in kN/m <sup>2</sup>						150mm Beam
		1.5	2.0	2.5	3.0	4.0	5.0	
		Maximum Clear Span (m)						
IJ3	2.15	4.75	4.75	4.75	4.65	3.70	3.90	

Ref	Self weight kN/m <sup>2</sup>	Finishes of 1.8kN/m <sup>2</sup>						150mm Beam
		Imposed load in kN/m <sup>2</sup>						
		1.5	2.0	2.5	3.0	4.0	5.0	
		Maximum Clear Span (m)						
RDJ4	2.10	5.35	5.10	4.90	4.75	4.40	4.15	

Ref	Self weight kN/m²	Imposed load in kN/m²						150mm Beam
		1.5	2.0	2.5	3.0	4.0	5.0	
		Maximum Clear Span (m)						
RDJ5	2.25	5.85	5.60	5.40	5.20	4.85	4.55	

Ref	Self weight kN/m <sup>2</sup>	Imposed load in kN/m <sup>2</sup>						150mm Beam
		1.5	2.0	2.5	3.0	4.0	5.0	
		Maximum Clear Span (m)						
RDJ6	2.47	6.45	6.25	6.05	5.80	5.45	5.15	

\*The floor self weight includes the weight of the beams and the concrete blocks.

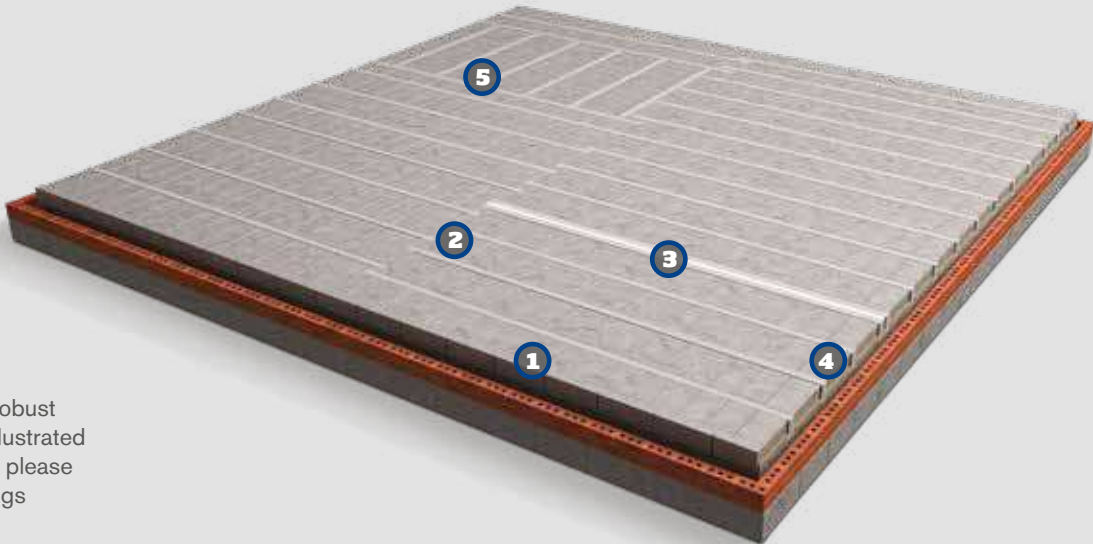
Ref	Self weight kN/m <sup>2</sup>	Finishes of 1.8kN/m <sup>2</sup>						225mm Beam
		Imposed load in kN/m <sup>2</sup>						
		1.5	2.0	2.5	3.0	4.0	5.0	
Maximum Clear Span (m)								
TJ1	2.33	6.45	6.15	5.90	5.70	5.35	5.00	

Ref	Self weight kN/m <sup>2</sup>	Imposed load in kN/m <sup>2</sup>						225mm Beam
		1.5	2.0	2.5	3.0	4.0	5.0	
		Maximum Clear Span (m)						
TJ2	2.56	7.10	6.80	6.55	6.35	5.95	5.60	

Ref	Self weight kN/m <sup>2</sup>	Imposed load in kN/m <sup>2</sup>						225mm Beam
		1.5	2.0	2.5	3.0	4.0	5.0	
		Maximum Clear Span (m)						
TJ3	2.98	7.75	7.75	7.45	7.20	6.80	6.40	

\*The floor self weight includes the weight of the beams and the concrete blocks.

Typical  
layout



Beam & Block offers simple and robust detailing, the main details being illustrated below. For construction purposes please refer to site specific layout drawings provided by Bison Precast.

3 Load supported  
off floor

Section showing multiple beams concreted together to support wall over. Number of beams and centres required are dependent on the weight of the wall.



1 Edge detail  
parallel to span

Section showing edge block laid on a split course block and built into the perimeter wall.



4 Edge detail  
perpendicular to span

Beam ends laid onto a DPC and spaced out using the block infill, with a minimum of 100mm bearing. Blocks are bedded onto split course blocks and built into the wall.



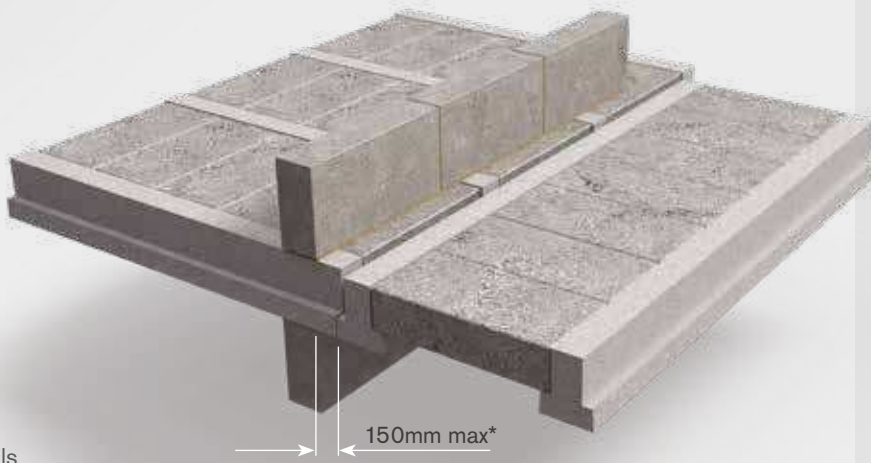
2 Staggered  
bearing

Section showing beams sharing a minimum 100mm bearing on internal wall.



5 Change of span  
direction

Section showing the change in direction of beam span and the maximum cantilever allowing for run-out purposes.



\*Contact Bison Precast for further cantilever details





**Forterra is a leading manufacturer of a diverse range of clay and concrete building products, used extensively within the construction sector, and employs over 1,900 people across 18 manufacturing facilities in the UK.**

**It is the second largest brick and aircrete block manufacturer in the country, and the only producer of the iconic London Brick. Other trusted brands from Forterra include Thermalite, Conbloc, Ecostock, Butterley, Cradley, Red Bank, Bison Precast, Jetfloor and Formpave.**

**[forterra.co.uk](http://forterra.co.uk)**



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