

JETFLOOR

Insulated Ground Floors

CELEBRATING

100

— YEARS —

BUILDING BRITAIN

EST. 1919



BISON PRECAST

a Forterra brand

Jetfloor Insulated Ground Floors

**The market leading
solution for thermally
insulated structural
ground floors since its
introduction in 1982.**



Jetfloor was the UK's first system to use expanded polystyrene blocks combined with a structural concrete topping to provide high levels of thermal insulation.

Over decades Jetfloor has been successfully used in tens of thousands of new homes. Today our latest development of Jetfloor presents the platform for a range of 'U' values and enhanced Psi values providing a future-proofed robust solution for housebuilders, specifiers and homeowners.

Jetfloor consists of standard 150mm and 225mm deep prestressed concrete beams positioned at varying centres dependent on load conditions.

The beams are infilled with expanded polystyrene (EPS) blocks which are supplied in lightweight easy to handle lengths, enabling rapid coverage of large areas of floor.

The EPS blocks are available in a range of configurations providing a flexible approach to achieving 'U' values.

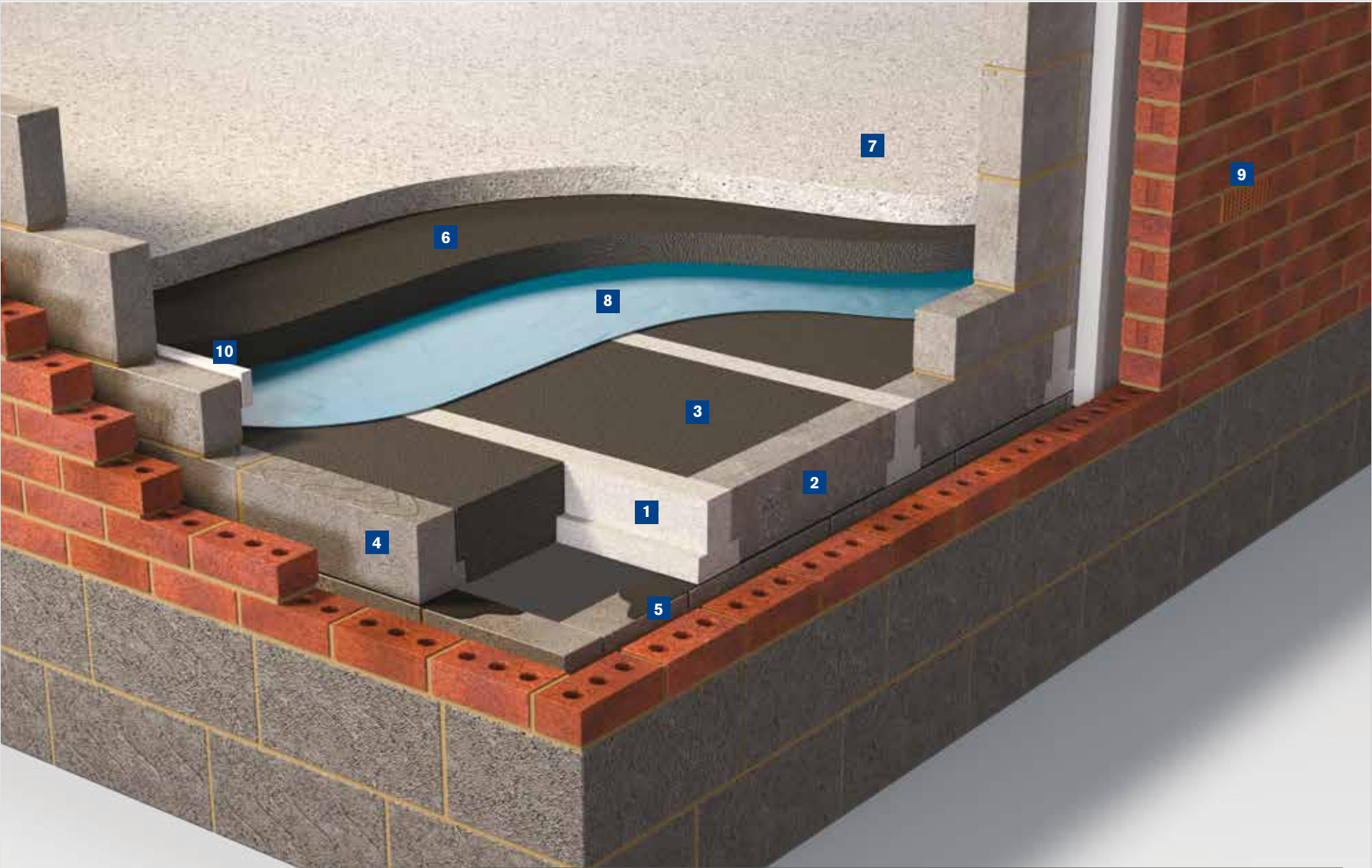
The unique Thermalite Psi-Block® reduces thermal linear bridging and improves the Psi value at floor to wall junctions helping reduce the overall dwelling emission rate (DER).

The floor is completed with a reinforced structural concrete topping laid over a minimum of 80mm EPS sheet insulation.

Other thicknesses of structural grade EPS sheet can be provided as can other types of insulation sheet material such as PIR, to achieve a wide range of 'U' values.

Bison Precast concrete specification:

Reinforced structural concrete topping grade C28/35 with thickness of 70/75mm to suit top sheet insulation thickness.



Jetfloor components

- | | |
|--|---|
| 1 150mm or 225mm prestressed beam | 6 Structural grade overlay sheet min strength 130N/mm ² |
| 2 Thermalite spacer block | 7 Structural concrete topping |
| 3 EPS infill block | 8 Membrane if required |
| 4 Psi-Block® | 9 Air vents |
| 5 Damp-proof course | 10 Perimeter insulation (if required) |

**BIM Objects for Jetfloor
available to download**

Forterra.co.uk/bim



Thermal performance

Flexible 'U' value performance

Improved Psi value due to unique Psi-Block®

Thermal mass

Cost of construction

Reduced excavation and spoil removal

No waste

Increased speed of build

No specialist skills required

Service

Available nationwide

Supply only or supply and install

Comprehensive in-house technical support

Quality

CE marked to BS EN 15037 and certified by the BBA since 1988 to latest relevant codes and standards

Beams are CE marked against BS EN 15037

Manufactured in accordance with BS EN ISO 9001

Sustainability

A+ Green Guide rating

Reduced dwelling emission rates

Accredited to BS EN 14001 and BES 6001 responsible sourcing



Thermal Performance

'U' values W/m² K

The measure of heat-loss through the fabric of a building is expressed as a 'U' value with limiting values set out in the building regulations. However, to fully comply with the building regulations, the overall dwelling emission rate (DER) must be lower than the target emission rate (TER) when calculated in SAP.

To achieve this, lower 'U' values may be required. The new improved Jetfloor provides a range of 'U' value options that will help improve the overall DER. This table demonstrates this range based on specific Perimeter/Area Ratios and insulation material lambda values.

'U' value W/m² K		
P/A	White EPS 0.038 λ	Grey EPS 0.030
0.3	0.160	0.137
0.4	0.168	0.144
0.5	0.174	0.148
0.6	0.178	0.151
0.7	0.182	0.153
0.8	0.184	0.155

Note: 'U' values are based on NJB1 beam centres. Actual house-type values will vary dependent on floor layout.

('Psi') values (W/m K) and 'Y' values (W/m² K)

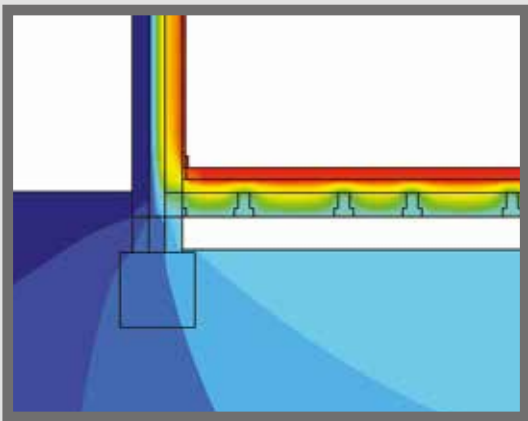
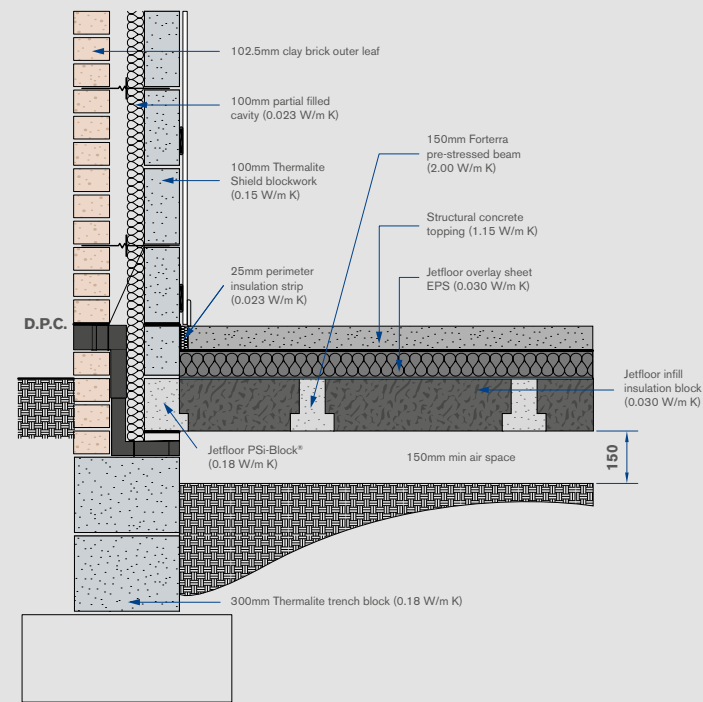
Heat is also lost through thermal bridges or junctions in a building and is expressed as a 'Y' value. Its units of measure are the same as the 'U' value W/m² K. To calculate the 'Y' value the length of the thermal bridge must be multiplied by the Psi value of the junction of the building being considered i.e. the wall to floor junction.

The Psi value is the measure of the thermal transmittance at the thermal bridge and is calculated using thermal modelling, its units of measure is W/m K.

Jetfloor incorporating the new 'Psi-Block®' has resulted in significantly improved Psi values as shown on the table opposite.

Floor detail	Psi value (W/m K)
Jetfloor	0.03 to 0.10 ⁽¹⁾
Accredited construction details	0.16 ⁽²⁾
AP conventions document default	0.32 ⁽²⁾

- (1) Values based on wall U-value of 0.28 W/m² K floor U-value of 0.15 W/m² K.
(2) From SAP table K1.



A Cost Effective Solution



During the development of Jetfloor we engaged the services of independent cost consultants who made detailed cost comparisons between a range of structural ground floor solutions including:

- Suspended in situ concrete
- 150 beam and building block
- 175 beam and building block

Their findings clearly show that, based on similar 'U' value performance, new Jetfloor is the most cost-effective solution.

One of the key areas that helped make the difference was the overall floor thickness, particularly when compared to a 175mm deep beam and block solution.

The reduced floor thickness with Jetfloor will inevitably lead to cost savings through the reduction of dig and spoil removal costs.

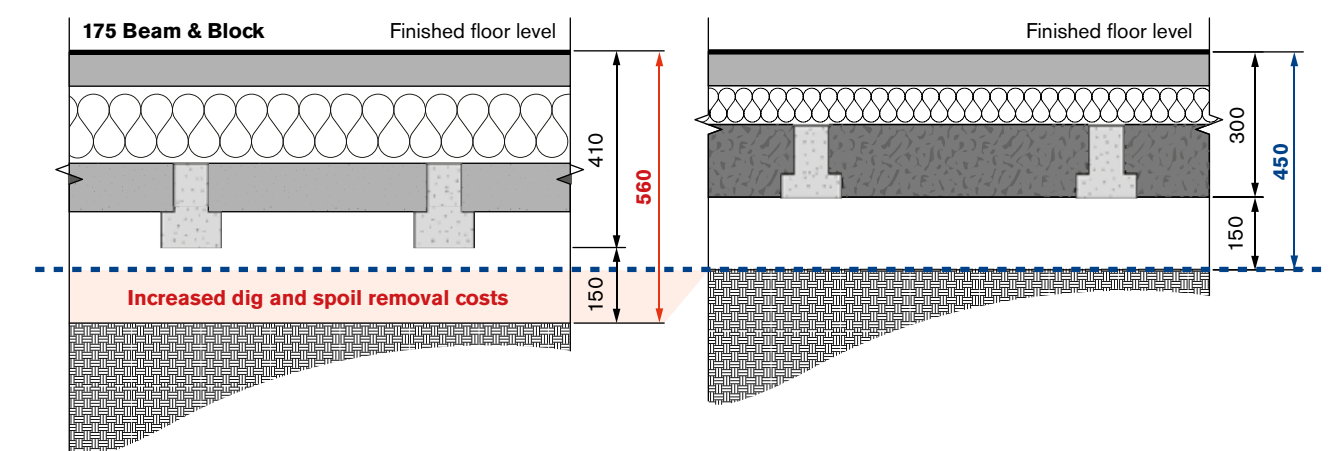
When you add the inherent speed of installation and the robust edge details it is easy to see how new Jetfloor will give housebuilders and specifiers cost-effective certainty of compliance with the latest requirements of part L of the building regulations.

Testimonial

"We have extensive experience of housing schemes and helping to deliver value for our clients. We have applied our knowledge to review the new Jetfloor product. Certainly given typical build requirements and site conditions the Jetfloor system provides a good cost-effective solution with the benefit of reduced off site disposal. It would certainly be an option that we would advise our clients to consider on housing projects."

 **Turner & Townsend**

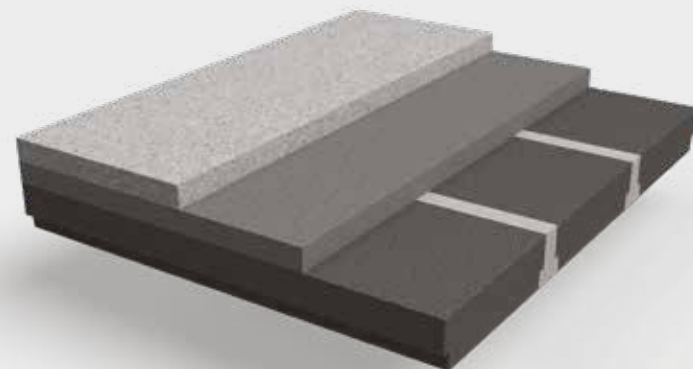
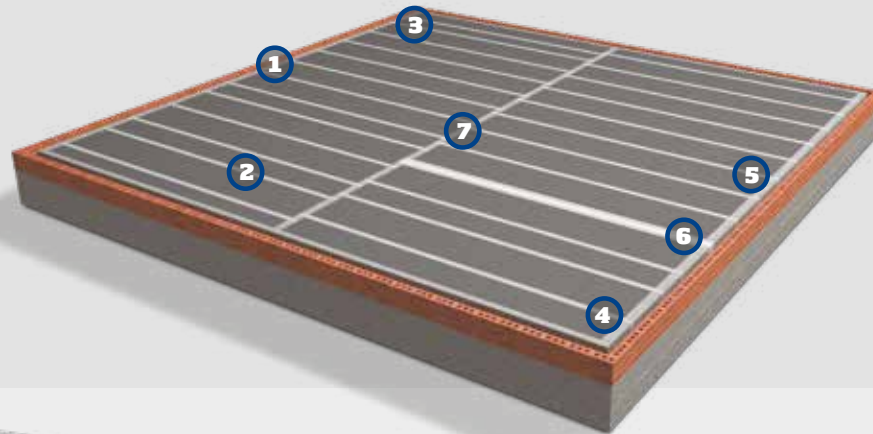
Comparison diagram





Typical layout

Jetfloor has been developed to offer simple and robust detailing. The main details are represented here, but for construction purposes please refer to site specific layout drawings by Bison Precast.

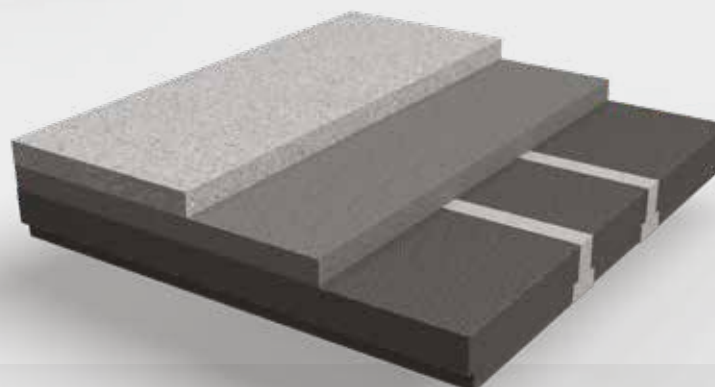


1 Wide EPS blocks

Section through Jetfloor where wide EPS infill blocks are used either side of a prestressed concrete beam. This relates to NJB1, NJR1 and NJT1 in the load span table.

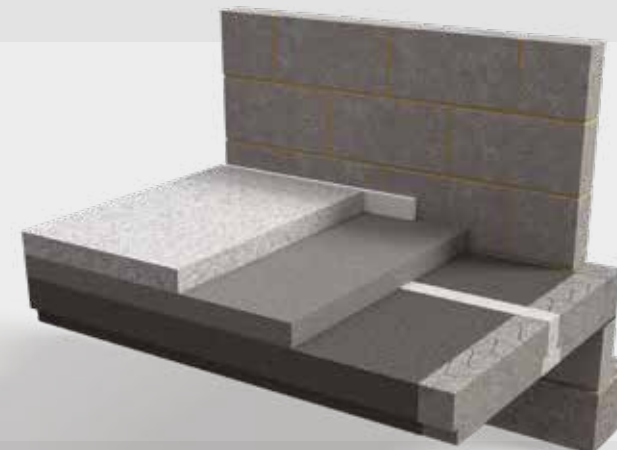
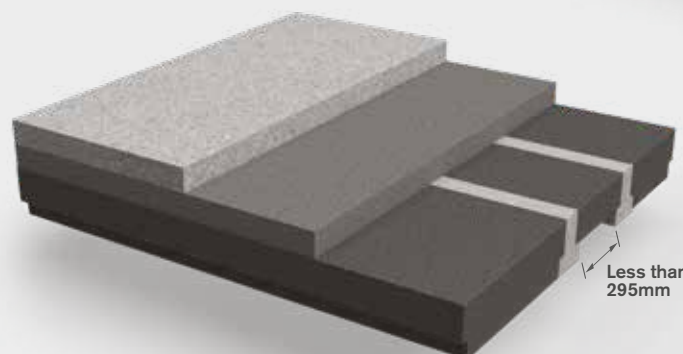
2 Narrow EPS blocks

Section through Jetfloor where wide and narrow EPS infill blocks are used either side of a prestressed concrete beam. This relates to NJB2, NJR2 and NJT2 in the load span table.



3 Run-out 100mm sheet

100mm thick EPS infill sheet is cut to suit the floor run out, and replaces a standard infill block up to a maximum width of 295mm. Shown here between a narrow block and a wide block but can be placed between any size of blocks.

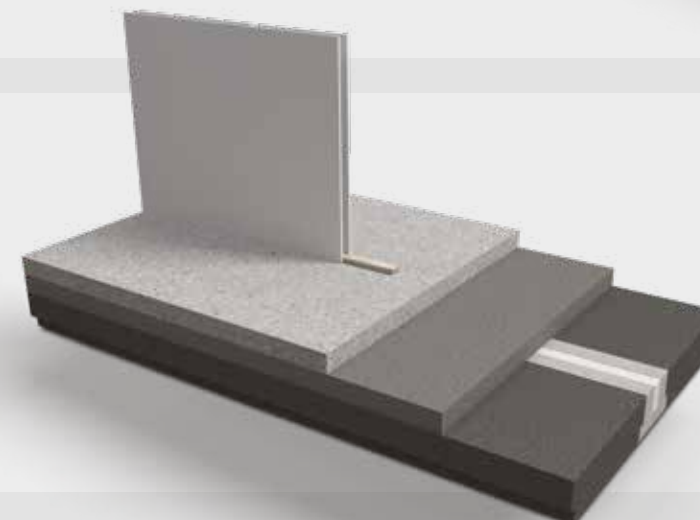


4 Edge detail parallel to span

Showing edge section where the beams are parallel to the perimeter wall. The narrow EPS infill block is supported on the perimeter Thermalite Psi block and a prestressed concrete beam.

5 Edge detail perpendicular to span

Showing edge section where the beams are perpendicular to the perimeter wall. The prestressed concrete beams bear onto the wall and are set out by the use of the Thermalite spacing blocks. Also visible is the perimeter insulation around the edge of the concrete topping.

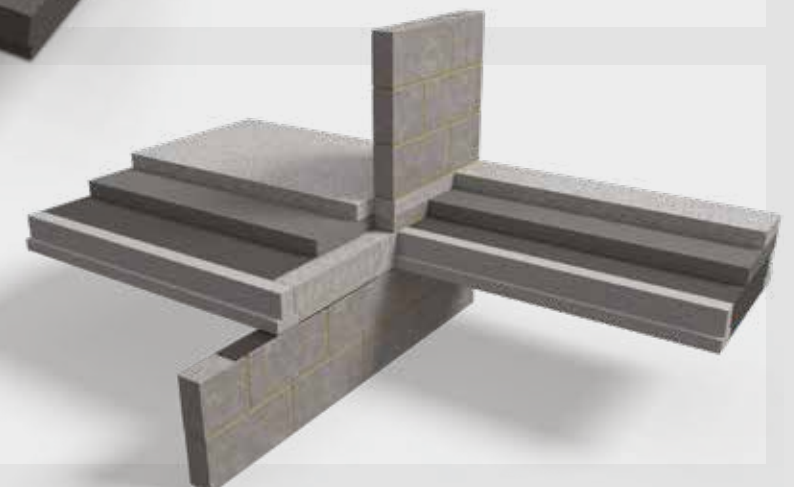


6 Load supported off floor

Section through Jetfloor showing where a non-loading partition wall is located above two beams which are concreted together.

7 Staggered bearing

This shows the detail on the internal wall where the prestressed concrete beams are staggered on a single skin 100/140mm wide wall.

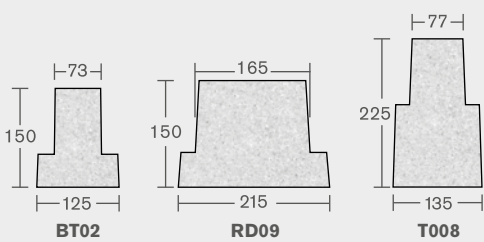


Structural Performance

Load-span Tables



Prestressed beam details



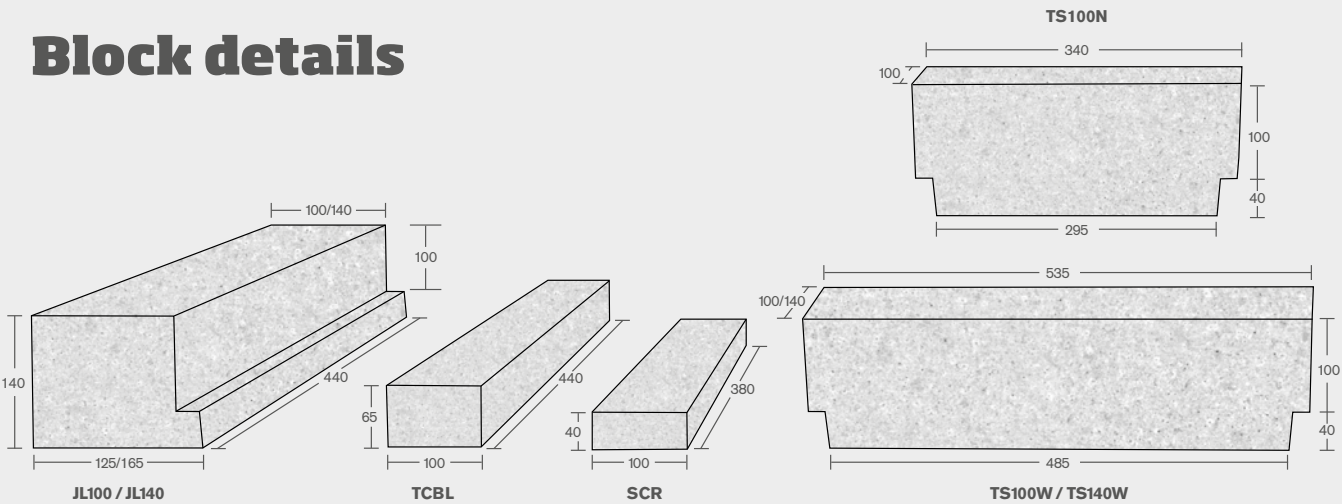
Beam Reference	Width (mm)	Height (mm)	Weight (kN/m)	Weight (kg/m)	Max Length
BT02	125	150	0.326	32.8	5.5
RD09	215	150	0.622	64.2	6.8
T008	135	225	0.576	58.7	7.9

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.

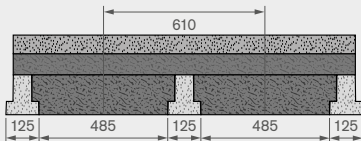
Block details



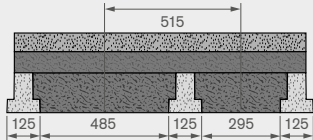
Load-span tables

Based on floor finishes of 70mm thick concrete topping having minimum strength class RC25/30 reinforced with either polypropylene fibres, steel fibres or steel reinforcement mesh on insulating sheet material of minimum compressive strength 130N/mm².

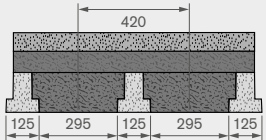
Ref	Self Weight kN/m ²	Imposed load kN/m ²				150mm Beam
		1.50	2.00	2.50	3.00	
NJB1	0.56	4.45	4.20	3.95	3.75	



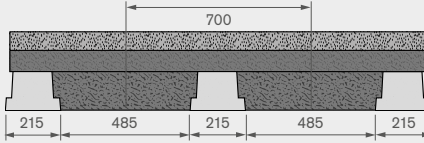
Ref	Self Weight kN/m ²	Imposed load kN/m ²				150mm Beam
		1.50	2.00	2.50	3.00	
NJB2	0.66	4.80	4.50	4.25	4.05	



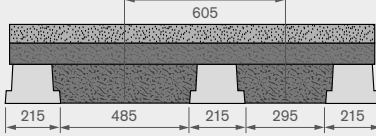
Ref	Self Weight kN/m ²	Imposed load kN/m ²				150mm Beam
		1.50	2.00	2.50	3.00	
NJB3	0.8	5.25	4.90	4.65	4.45	



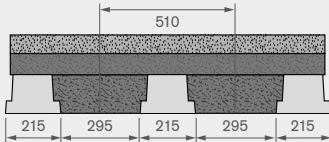
Ref	Self Weight kN/m ²	Imposed load kN/m ²				150mm Beam
		1.50	2.00	2.50	3.00	
NJR1	0.94	5.75	5.45	5.15	4.90	



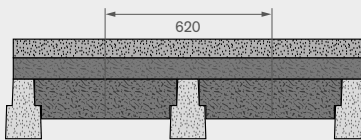
Ref	Self Weight kN/m ²	Imposed load kN/m ²				150mm Beam
		1.50	2.00	2.50	3.00	
NJR2	1.08	6.10	5.75	5.45	5.20	



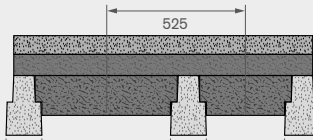
Ref	Self Weight kN/m ²	Imposed load kN/m ²				150mm Beam
		1.50	2.00	2.50	3.00	
NJR3	1.27	6.50	6.15	5.85	5.60	



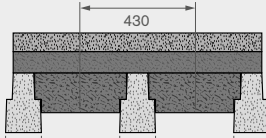
Ref	Self Weight kN/m ²	Imposed load kN/m ²				225mm Beam
		1.50	2.00	2.50	3.00	
NJT1	0.97	6.95	6.60	6.25	5.95	



Ref	Self Weight kN/m ²	Imposed load kN/m ²				225mm Beam
		1.50	2.00	2.50	3.00	
NJT2	1.14	7.45	7.05	6.70	6.40	



Ref	Self Weight kN/m ²	Imposed load kN/m ²				225mm Beam
		1.50	2.00	2.50	3.00	
NJT3	1.38	7.80	7.60	7.25	6.90	

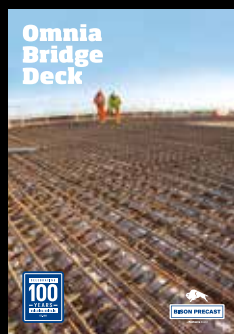




Forterra is a leading manufacturer of a diverse range of clay and concrete building products, used extensively within the construction sector, and employs over 1,900 people across 18 manufacturing facilities in the UK.

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



For the complete Bison Precast brochure range, visit bison.co.uk

Bison Precast

Tetron Point
William Nadin Way
Swadlincote
Derbyshire
DE11 0BB
01283 817 500
concrete@bison.co.uk

bison.co.uk

05/2019

