The Supreme 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 creating an excellent base for the addition of thermal insulation. The floor provides an immediate working platform allowing building works to continue without delay. The Supreme 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; 120mm wide for standard span and load applications and 170mm wide for heavy duty and longer span requirements, for example in commercial construction. Both beams are the same height and can be used together ensuring the most economical construction options.
SUSPENDED BEAM & BLOCK FLOOR

Ensure that the ground beneath the floor is cleared of topsoil and vegetation. No oversite concreting is required.

Ventilation
Provision should be made for a void beneath the floor, the depth of which should be at least 150mm but may vary depending on site conditions. To meet Local Authority and NHBC requirements, the void should be ventilated. Ventilation openings should be placed to enable the free flow of air to the complete under floor area. Ventilators should be placed frequently enough to the perimeter of the building to give suitable ventilation. Supreme supply plastic telescopic void ventilators with a range of coloured plastic air bricks.

Installation
It is essential that the floor beams be handled and stacked the correct way up, they should be lifted as close to the ends as possible and no damaged beams should be used in the installation. It is important that all mortar in the preceding work is adequately cured, having enough strength to give support to the floor being installed. Ensure that all mortar and debris is removed from the bearing points and they are level and true. Generally a DPC should be placed over all bearings before laying a ground floor. Beams should have a nominal bearing of 100mm on the masonry.

Please adhere to starting beams on our working drawings and set beams out bay by bay. Take note of critical partition walls etc. Ensure all beams are parallel and that there is a nominal 18mm bearing for the block.

Install closure blocks after laying infill blocks.

The floor should be completed as soon as possible by brushing in a wet grout mix of 1:3 cement and sharp washed sand, a stiffer mix of the same proportions should be used to fill any double or multiple beams, these joints should be "hard packed". The floor should be cleaned and wetted prior to grouting to enable grout to penetrate and to provide a firm construction. Prestressed floor beams have an upward camber. The camber should be considered especially on larger spans and / or when non-screed finishes are specified. A levelling screed could be incorporated.
Beams on angles supplied to site at standard lengths. To be cut to suit by others.

Plan shown here using standard face size 440 x 215 infill block. (with cuts when required as shown) All measurements in mm

1. Beams supported on inner leaf of cavity wall. Closure block bedded.

2. Two beams grouted together to support block partition.

3. Beam adjacent to support wall and grouted solid.

4. Coursing Slip with block out from beam into adjacent support wall bedded on coursing slip.

5. Closure Block on internal support.

6. Shared bearing on internal support wall less than 200mm thick.

Note! Closure blocks should not be used to space the beams; they should be installed using mortar when all blocking out is complete.

Domestic Garage Use
When a beam and block floor is used in a domestic garage or similar application where high concentrated loads are evident, a reinforced screed must be applied directly to the top of the beams and blocks. The screed should have a compressive strength of 21N/mm² with light steel mesh reinforcement, such as an A98 steel mesh.

Beam Properties & Structural Calculations
Where the design layout drawings have been produced by Supreme then full structural calculations can be provided upon request.

Beams on angles supplied to site at standard lengths. To be cut to suit by others.

Plan shown here using standard face size 440 x 215 infill block. (with cuts when required as shown) All measurements in mm
# Structural Elements

## Floor Self-Weights

<table>
<thead>
<tr>
<th>Centres</th>
<th>Blocks @ 650kg/m²</th>
<th>Blocks @ 1350kg/m²</th>
<th>Blocks @ 2000kg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 520</td>
<td>1.19kN/m²</td>
<td>1.768kN/m²</td>
<td>2.311kN/m³</td>
</tr>
<tr>
<td>S 407</td>
<td>1.35kN/m²</td>
<td>1.893kN/m²</td>
<td>2.411kN/m³</td>
</tr>
<tr>
<td>S 295</td>
<td>1.61kN/m²</td>
<td>2.107kN/m²</td>
<td>2.580kN/m³</td>
</tr>
<tr>
<td>D 640</td>
<td>1.69kN/m²</td>
<td>2.160kN/m²</td>
<td>2.608kN/m³</td>
</tr>
<tr>
<td>D 527</td>
<td>1.92kN/m²</td>
<td>2.340kN/m²</td>
<td>2.740kN/m³</td>
</tr>
<tr>
<td>D 415</td>
<td>2.26kN/m²</td>
<td>2.613kN/m²</td>
<td>2.951kN/m³</td>
</tr>
<tr>
<td>T 760</td>
<td>2.04kN/m²</td>
<td>2.428kN/m²</td>
<td>2.801kN/m³</td>
</tr>
<tr>
<td>T 647</td>
<td>2.28kN/m²</td>
<td>2.621kN/m²</td>
<td>2.951kN/m³</td>
</tr>
<tr>
<td>T 535</td>
<td>2.62kN/m²</td>
<td>2.892kN/m²</td>
<td>3.135kN/m³</td>
</tr>
</tbody>
</table>

## Infill Block

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>440 x 215</td>
<td>1000kg/m²</td>
</tr>
</tbody>
</table>

## Effective Centres

<table>
<thead>
<tr>
<th>LIVE LOAD</th>
<th>EFFECTIVE BEAM CENTRES</th>
<th>1.5kN/m²</th>
<th>2.5kN/m²</th>
<th>4.0kN/m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>65mm SCREED</td>
<td>Float</td>
<td>1.5kN/m²</td>
<td>2.5kN/m²</td>
<td>4.0kN/m²</td>
</tr>
<tr>
<td>75mm SCREED</td>
<td>Solid</td>
<td>1.5kN/m²</td>
<td>2.5kN/m²</td>
<td>4.0kN/m²</td>
</tr>
</tbody>
</table>

## Live Load

- **1.5kN/m² Domestic**
- **1.5kN/m² Medium Weight Aggregate**
- **2.5kN/m² Dense Concrete**

### Case 1: No Partitions

<table>
<thead>
<tr>
<th>Blocks</th>
<th>Centres</th>
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<th>Blocks</th>
<th>Centres</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.0kg/m²</td>
<td>21N/mm²</td>
<td>2.892kN/m³</td>
<td>2.613kN/m³</td>
<td>2.951kN/m³</td>
<td>2.613kN/m³</td>
</tr>
</tbody>
</table>

### Case 2: Studwork Partitions @ 1.0kN/m²

<table>
<thead>
<tr>
<th>Blocks</th>
<th>Centres</th>
<th>Blocks</th>
<th>Centres</th>
<th>Blocks</th>
<th>Centres</th>
</tr>
</thead>
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<td>2.613kN/m³</td>
<td>2.951kN/m³</td>
<td>2.613kN/m³</td>
</tr>
</tbody>
</table>

### Case 3: 3.0kg/m Run Lightweight Block Partition at 90 Degree to Span, Mid Beam Span

<table>
<thead>
<tr>
<th>Blocks</th>
<th>Centres</th>
<th>Blocks</th>
<th>Centres</th>
<th>Blocks</th>
<th>Centres</th>
</tr>
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<td>2.613kN/m³</td>
<td>2.951kN/m³</td>
<td>2.613kN/m³</td>
</tr>
</tbody>
</table>

### Case 4: 3.0kg/m Run Lightweight Block Partition Parallel to Span, Full Span

<table>
<thead>
<tr>
<th>Blocks</th>
<th>Centres</th>
<th>Blocks</th>
<th>Centres</th>
<th>Blocks</th>
<th>Centres</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.0kg/m²</td>
<td>21N/mm²</td>
<td>2.892kN/m³</td>
<td>2.613kN/m³</td>
<td>2.951kN/m³</td>
<td>2.613kN/m³</td>
</tr>
</tbody>
</table>

### Case 5: Domestic Garage Imposed Load 2.5kN/m² or 10.0kN Concentrated Load

<table>
<thead>
<tr>
<th>Blocks</th>
<th>Centres</th>
<th>Blocks</th>
<th>Centres</th>
<th>Blocks</th>
<th>Centres</th>
</tr>
</thead>
<tbody>
<tr>
<td>650kg/m³</td>
<td>1350kg/m³</td>
<td>2000kg/m³</td>
<td>2000kg/m³</td>
<td>2000kg/m³</td>
<td>2000kg/m³</td>
</tr>
<tr>
<td>3.0kg/m²</td>
<td>21N/mm²</td>
<td>2.892kN/m³</td>
<td>2.613kN/m³</td>
<td>2.951kN/m³</td>
<td>2.613kN/m³</td>
</tr>
</tbody>
</table>

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The table to the left gives maximum clear spans for garage load case applying a 75mm thick reinforced screed with differing density infill blocks shown. The reinforced screed must be directly bonded to the beams and infill blocks. Where clear spans for floating floors are shown, no allowance for the weight of any screed has been incorporated. The clear spans shown for the domestic garage loading conditions rely on a light mesh reinforced screed which should have a minimum compressive strength of 21N/mm².
**Beam Manufacture**
Beams are manufactured by the slip form method providing a textured finish to facilitate improved bonding performance. The characteristic T-profile of the Supreme floor beam also lends itself to a strong bond being established between the beam and the in-fill grout. They are designed and manufactured in accordance with EN 15037-1:2008.

Produced to a concrete strength class of C50/60. The raw materials used comply with EN Standards.

**Ground Floor (Application)**
Supreme beams are 155mm deep, and manufactured in two widths with the same side profile. They are 120mm and 170mm wide. *Note!* Wide beams are available at lengths over 4000mm only. They can be used with any suitable infill block by any manufacturer, subject to design requirements and specification.

The infill block may be selected to suit budget, strength or thermal and sound recommendations as required. Aerated blocks sometimes have a larger face size than standard blocks. Care must be taken when the infill block is bedded into a load bearing wall as the floor blocks must be of the same crushing strength, or stronger, than the requirement of the wall.

**Upper Floor (Application)**
Supreme T Beams are also suitable for upper floors in domestic dwellings where for example a dense floor is required to create a “quiet home” or the first floor partitions are to be of block work, which can be supported by the floor.

**Compartment Floors between Dwellings**
Specific performance specifications are required in accordance with the building regulations in respect of infill blocks and directly applied screeds.

**Thermal Considerations**
Building Regulations Approved Document Part L (The conservation of fuel and power). The document gives advice on limiting heat loss through the fabric of the building and gives methods of assessment to show compliance.

The choice of materials used in the construction of the ground floor will obviously have an effect on the U value of the floor.

The beam and infill block are only two elements in the make up of the floor however the chosen infill blocks will have bearing on the U value and/or level of additional insulation required. For example, when using dense concrete infill blocks, a layer of insulation over the structural floor but below the finish of either screed or timber would suffice. The thickness of insulation would vary depending on U value required to be achieved. However, the thickness of insulation could be reduced if the infill blocks in the floor were of aerated concrete.

Upon request, Supreme Concrete can produce bespoke designs for projects where polystyrene infill panel floors are preferred to conventional infill blocks for their thermal properties. Your floor can be designed in conjunction with panels from leading suppliers in the market.

**Safety**
Until the floor is grouted, shuttering board or scaffold planks should be used as a spreader over the beams and blocks to take any barrow or other wheeled loads at all times. Any loads placed on the floor should not exceed the load for which the floor was designed; these loads should be short term and kept to the minimum.

For more specific advice please contact the Supreme Technical Department on 01795 433580.
The clear spans shown for the domestic garage loading condition rely on a reinforced screed directly applied to the top of the beams and blocks. The screed should have a compressive strength of 21N/mm$^2$ with light steel mesh reinforcement.

In our design process the wider beam can be fully interchangeable with the standard beam in the same floor.

The wider beam provides a superior design for larger span floors replacing the need for double or triple beams.

Wider beams mean faster installation due to:
- Fewer units to lift
- Simpler layouts
- Less grouting

All clear spans are greater than shown in original brochure.

This table to be used for replacement values only - shown bold

Only one formula to remember

Wider Beams = Cheaper Floors!
ASSOCIATED FLOORING PRODUCTS

PLASTIC VOID VENTS
Designed for ventilating the void below suspended ground floors. Manufactured from high density polypropylene, the unit is non-corrosive and telescopic. Vertical and horizontal extension sleeves are available, please call for details.

Designed to meet requirements of the NHBC, Local Authorities and Gas Company regulations, and being a sealed unit there is no danger of the ventilator becoming blocked when cavity wall insulation is carried out.

AIR BRICKS
Air bricks to be used in conjunction with the telescopic void vent. Available in four colours: Terracotta, Buff, Blue-black and Brown.

TECHNICAL NOTE!
Airbricks when used with void vent will provide a minimum of 6600mm free air flow.

COURSING SLIPS
Manufactured in accordance with EN 771-3:2011. Concrete slips L x W x H (in mm): 390 x 100 x 40. These slips save a split brick course at side bearing or between end bearing.

CEILING CLIPS
Used with battens to facilitate fixing of ceiling, clips can be fixed after the flooring blocks have been laid but prior to grouting. The loops are then bent under the batten and nailed upwards against solid support of T-Beam.

Safe working load for securely fixed clips = 22kg per clip. Patent No. 205 1941.

JUMBO BUTT PLATE
Bespoke wall plates to give bearing for more than one beam up to the full length of the bearing wall.

CLOSURE BLOCKS
Manufactured in accordance with EN 771-3:2011. Designed and manufactured in two sizes to fit between the beams on the bearing ends. This saves cutting bricks or blocks when building the wall through the ends of the beams using standard centres.

BRICK SLIPS
Manufactured in accordance with EN 771-3:2011. L x W x H (in mm): 171 x 100 x 39 & 172 x 140 x 40 slips for finishing the floor onto load-bearing walls, parallel edges and between the end of beams. In all cases floor blocks of suitable strength should be bedded on top.

DECLARATION OF PERFORMANCE
www.supremeconcrete.co.uk
www.supreme-ce.co.uk