

Onsite Installation Guide

beamshield  TM
TOP SHEET INFILL

www.beamshield.co.uk

System Overview

The Beamshield Top Sheet system is made up of the below components. All the elements combined can achieve great performance levels with options in the system to increase the performance further.

1 Damp Proof Course

A Damp Proof Course is rolled out into place on the internal wall before Beams are laid.

2 Concrete T Beams

Springvale have T-Beam manufacturers nationwide who can design a Beamshield system floor with a wide range of different T-Beam profiles.

3 Beamshield EPS Infill Units

The Beamshield Top Sheet Infill system can be made up of different types of EPS units.

4 Closure Blocks

Concrete closure blocks are used to finish off the row.

5 Damp Proof Membrane (if required)

The Damp Proof Membrane detailing is for guidance only and should be specified and installed in accordance with the manufacturers instructions.

6 Beamshield Top Sheet

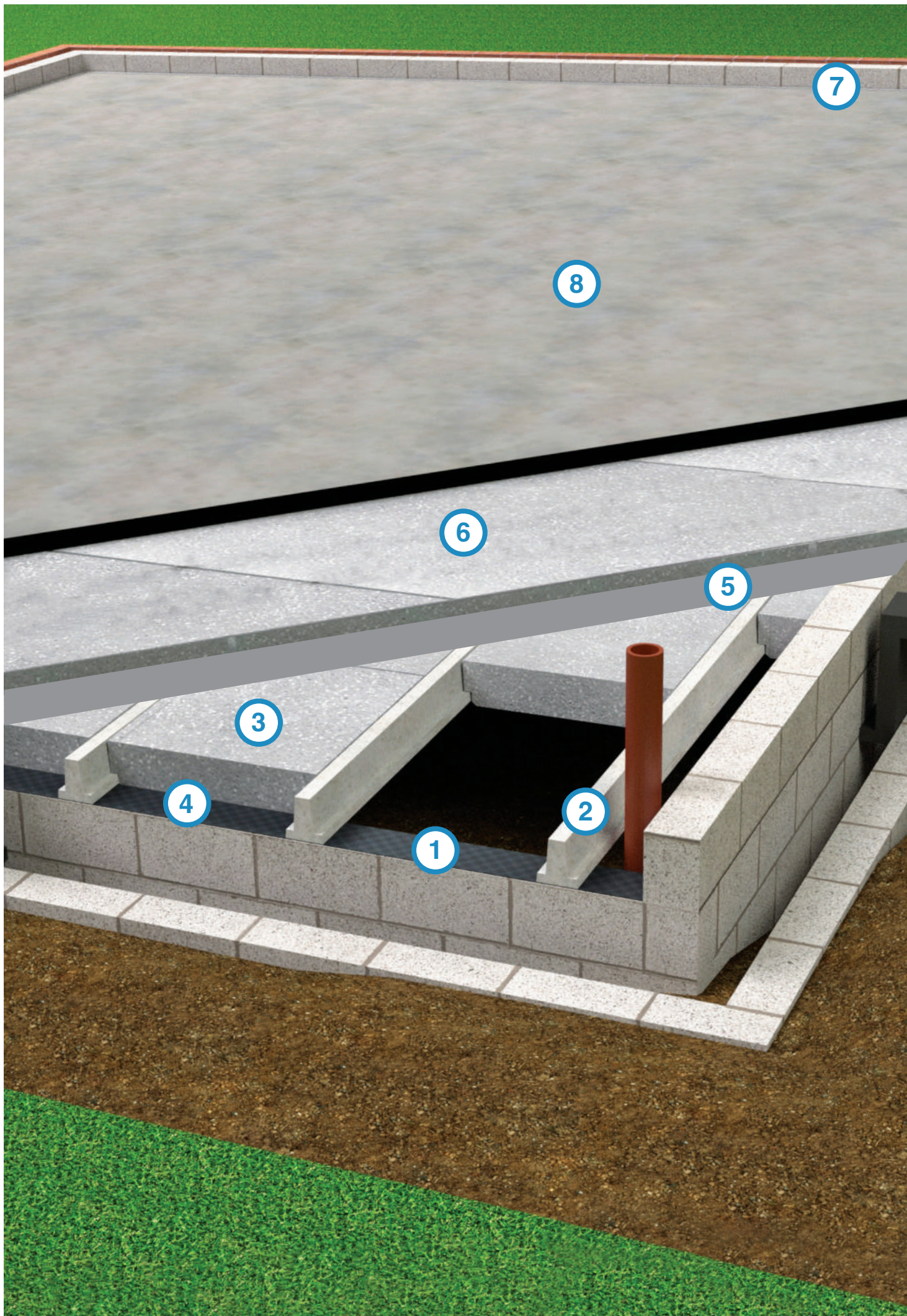
The Beamshield Top Sheet must be used above the Beamshield Infill units.

7 Perimeter Strips

Line the edge of the floor layout with insulation strip, preventing any cold bridging between the inner leaf wall and concrete topping.

8 Reinforced Concrete Topping

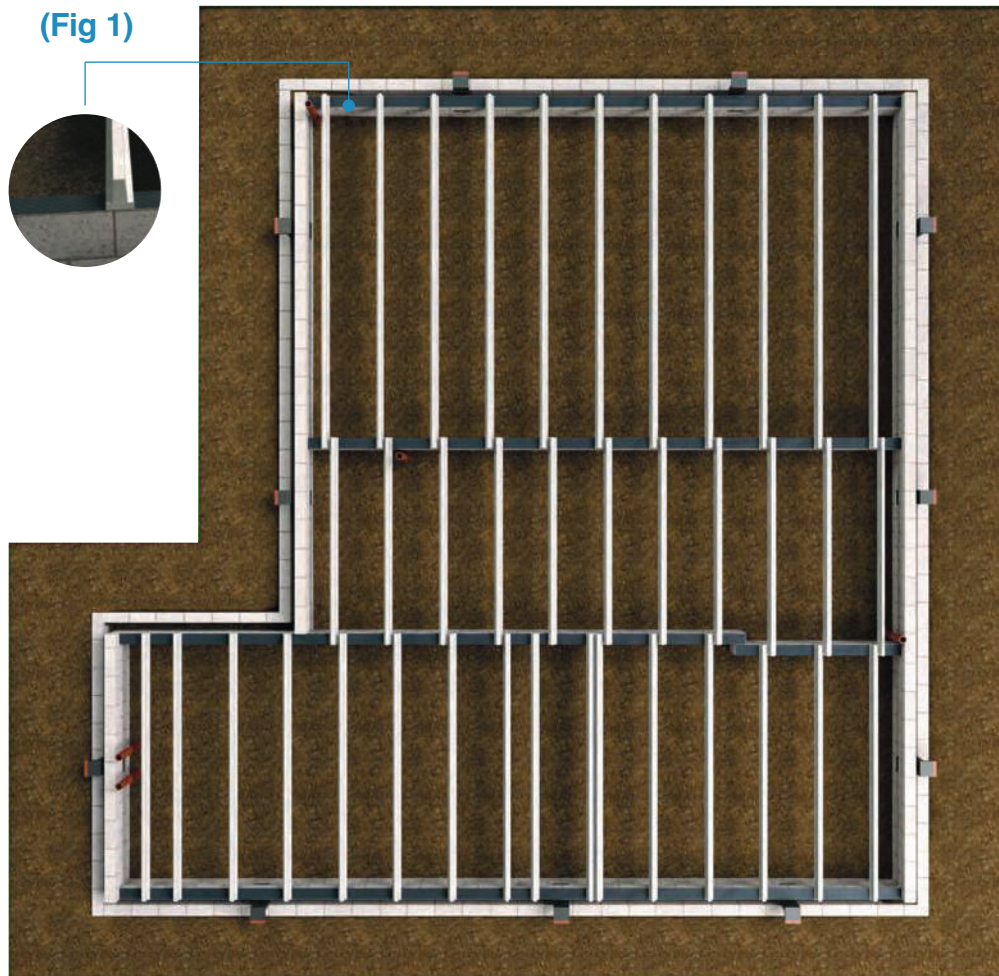
The concrete layer completes the system and can be applied above the Top Sheet or DPM.



Beam Layout

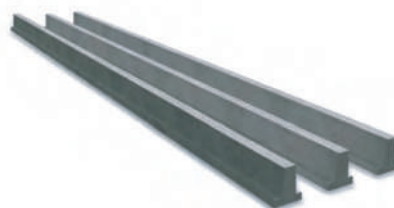
Correct design of the beam layout is essential and the beam layout drawing must be referred to throughout installation. Placement of partition walls and point loads are strictly controlled by the location of the concrete T beams. It is vital that walls are placed in accordance with the T beam layout.

DPC strips are rolled out into place (Fig 1). Beams are then laid, followed by the units, closure blocks, perimeter strips, optional DPM, Top Sheet and then finished with the reinforced concrete topping.



Beam Spacing

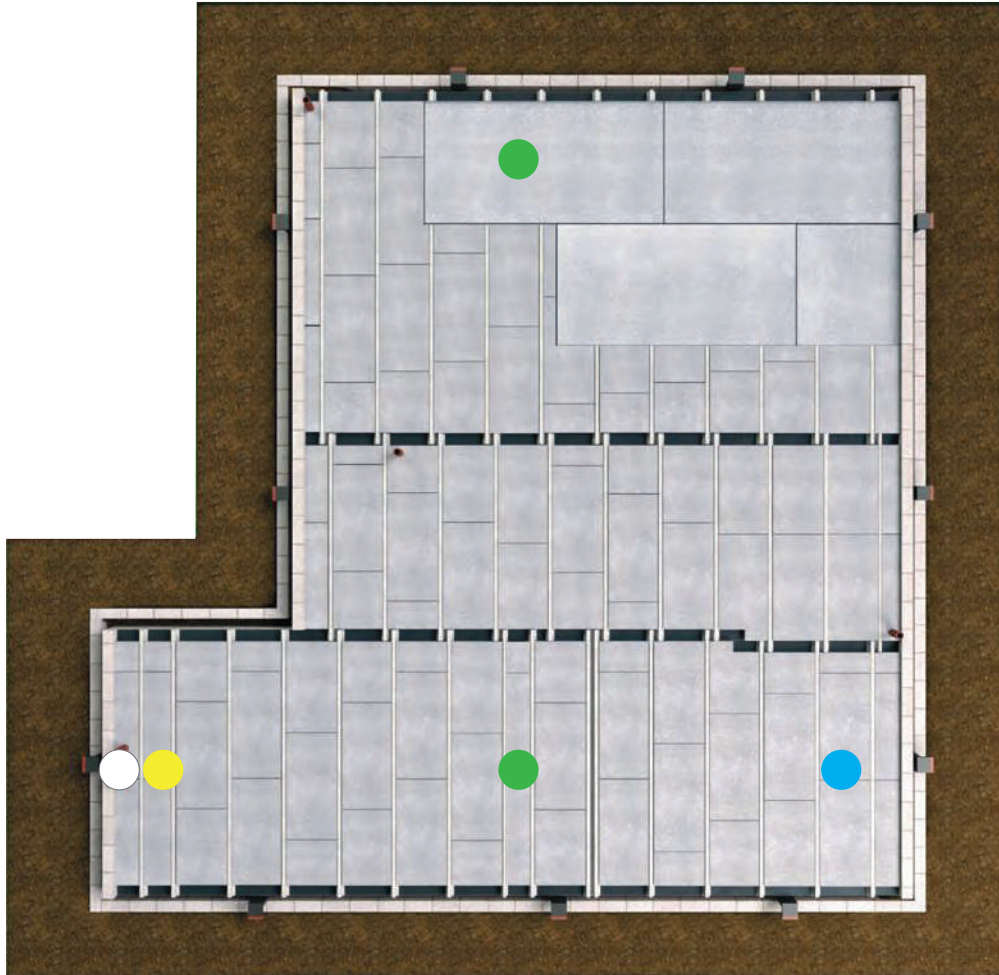
Measured from the inside corner of the beam. Beam spacing's are typically 540mm for the Full unit and 270mm for the Half unit dependant on the floor design.



Identifying the units in the plan

Starter / End Unit  Full Unit  Half Unit  Variable Width Board / Top Sheet 

This particular layout consists of the essential starter and end units, plus rows of full units, a row of variable width board units and a row of half units.

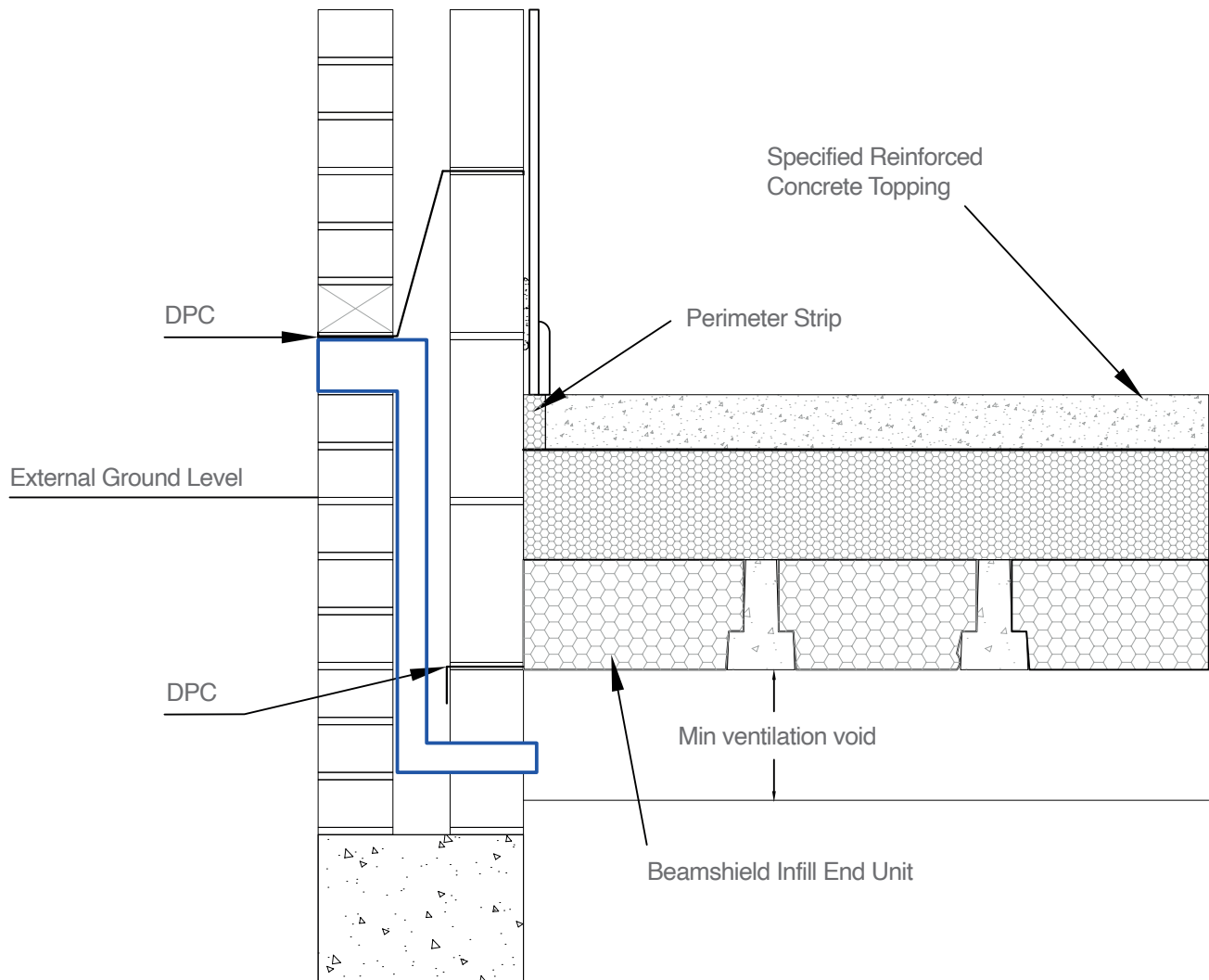


Beamshield Top Sheet must not be installed with the joints within any zone of the structural loadings or influence. These include (but are not limited to) directly over and parallel to the T beams, nor within 375mm of the centreline of a partition spanning perpendicular to the beams.

Telescopic Vents

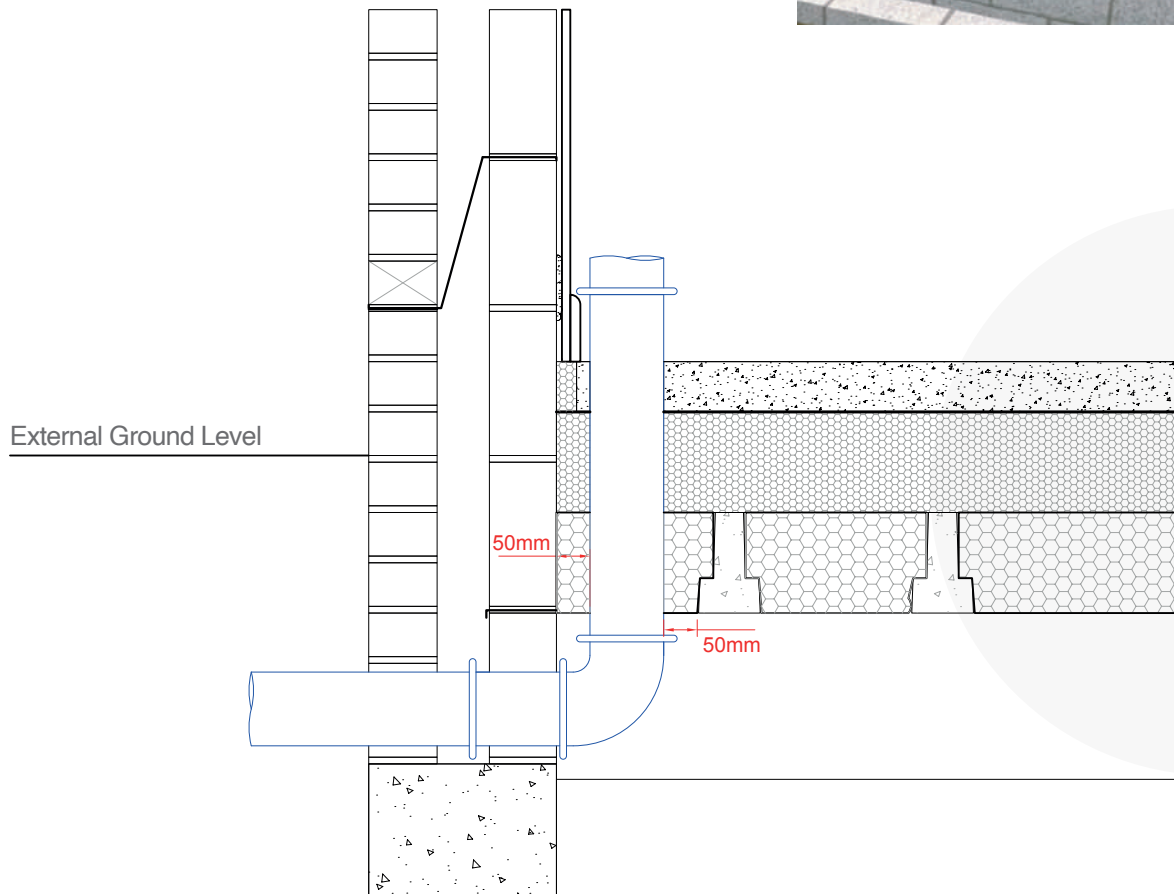
Telescopic vents should be used to extend below the level of the Beamshield Infill units.

Beam Parallel to Inner Leaf



Penetrations

It is important not to create unwanted cold bridges. Pipes should be positioned away from walls and beams, and where possible not less than 50mm to avoid a cold bridge.



Detailing

It is vital that all gaps caused by cutting the Beamshield units and Top Sheet particularly around SVP's and other penetrations are filled. Use suitable polyurethane expanding foam to fill any gaps. Trim any excess foam neatly using a sharp knife or saw.



BEAMSHIELD® Infill Units Installation

Beamshield systems comprise of a number of EPS components available from Springvale in two types of EPS; the commonly used high performance Platinum EPS in grey or the standard substantial performance EPS in white: The components are made up of Full units, Half units and Starter/End units with Variable Width Boards (VWB) and Top Sheets completing the range.

All units are 1200mm long and can be cut on site to the required length. Any cut units should be located at the edge of the floor and extra care taken to avoid damage and foot traffic and the minimum cut length should be not less than 300mm long. The Starter / End units have the same profile and are used for both the start and end of the Beamshield unit installation. The Starter / End units are inserted at the start / end of the run with the straight (1200mm edge) opposite to the beam.

For easy identification each pack is colour coded -

Starter / End Unit  Full Unit  Half Unit  Variable Width Board / Top Sheet 

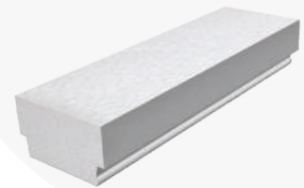
BEAMSHIELD® Infill Units



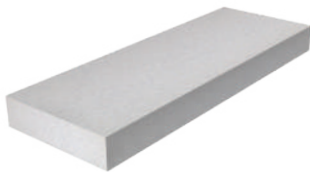
Starter / End Unit



Full Unit



Half Unit



Variable Width
(for use in the Top Sheet system only)

Maximum 350mm wide x 1200mm long



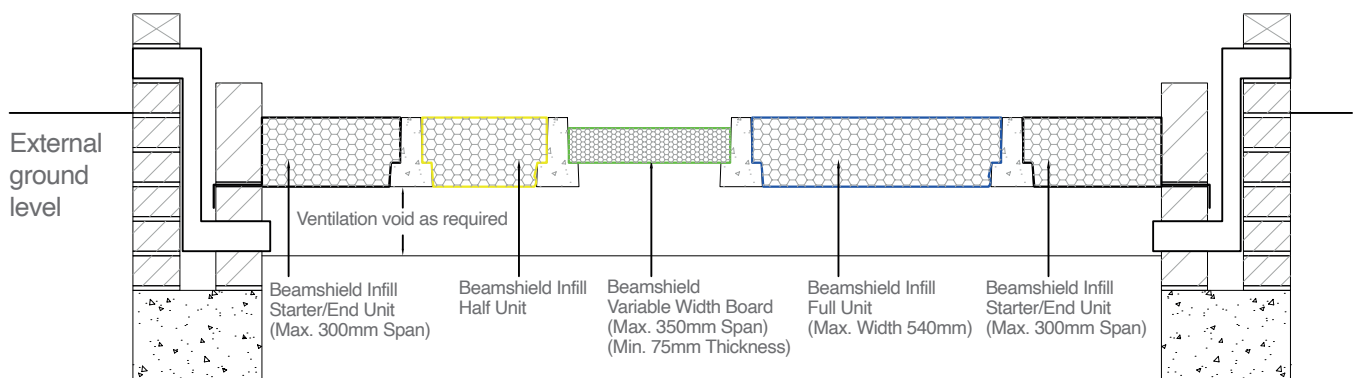
Top Sheet

1200mm wide x 2400mm long

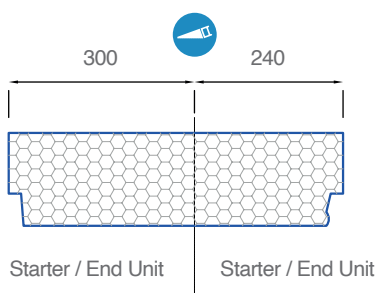
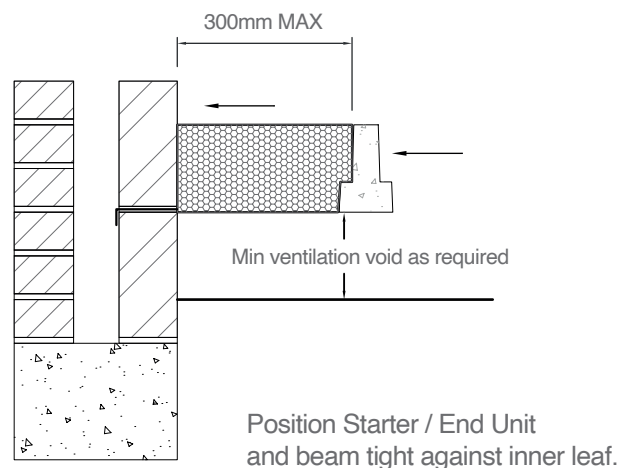
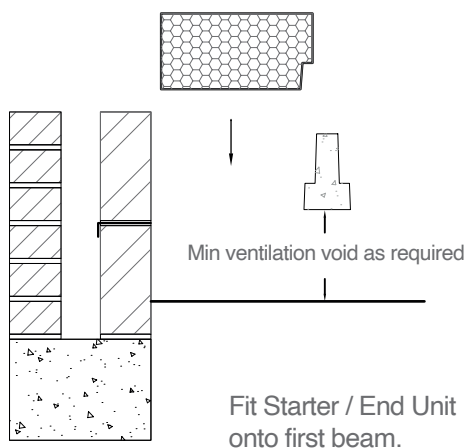
Unlike Beamshield Plus Beamshield Infill units do not feature an extended toe which simplifies the installation process. Beamshield Infill units are installed from above with the T beams in the location intended in the beam layout design. Once a unit is positioned ensure that the beams are tightly butted up to the EPS units.

The three most critical details in a good junction are the lightweight foundation block and foundation wall, the perimeter strip, and the level of the cavity wall insulation relative to the T beam.

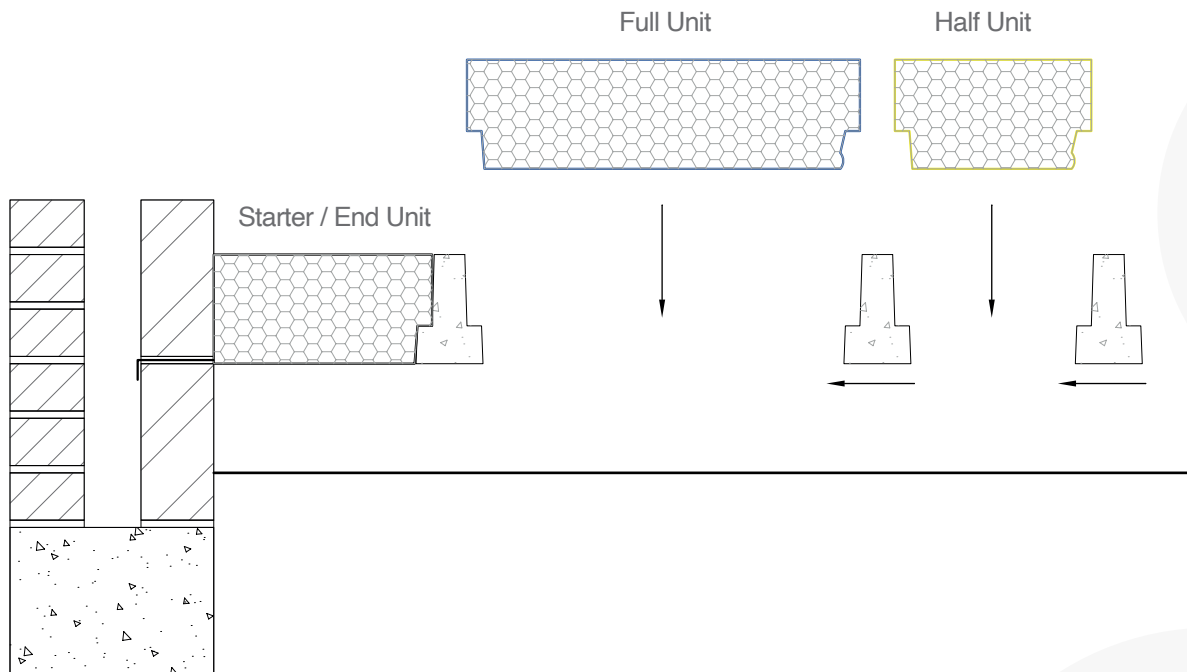
Do not walk directly on any Beamshield Units. Use timber boards to form a temporary working platform.



Starter Units



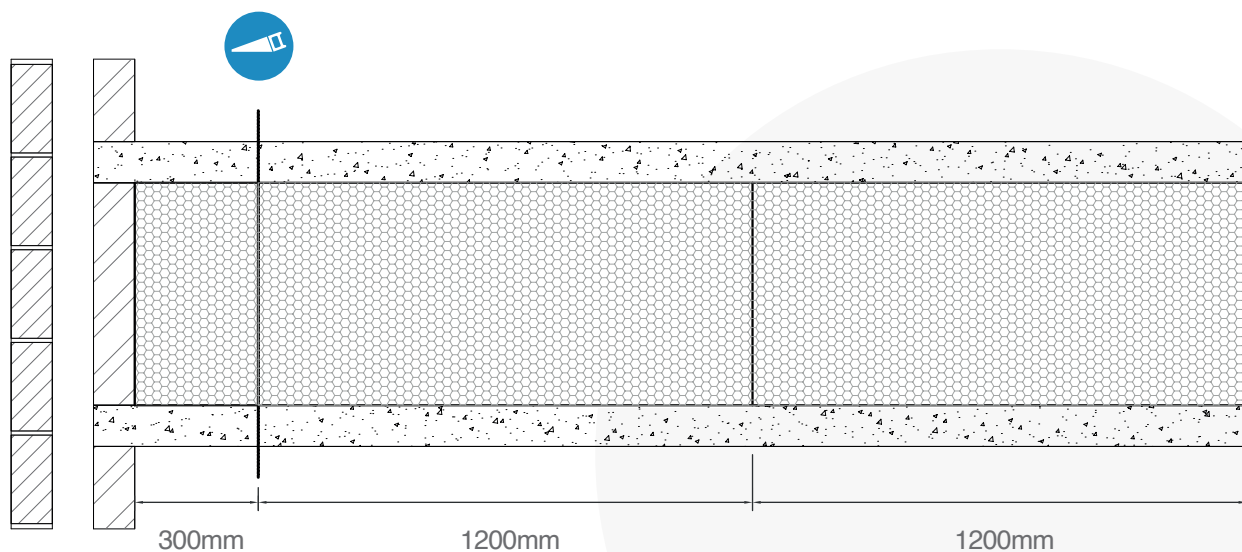
It is possible to create Starter / End units from one full unit by cutting a full unit into two, providing the width of the either unit is a maximum 300mm wide.



Installation in sequence across the floor ensuring each Unit and beam are tight against the preceding beam.

Full and Half Units

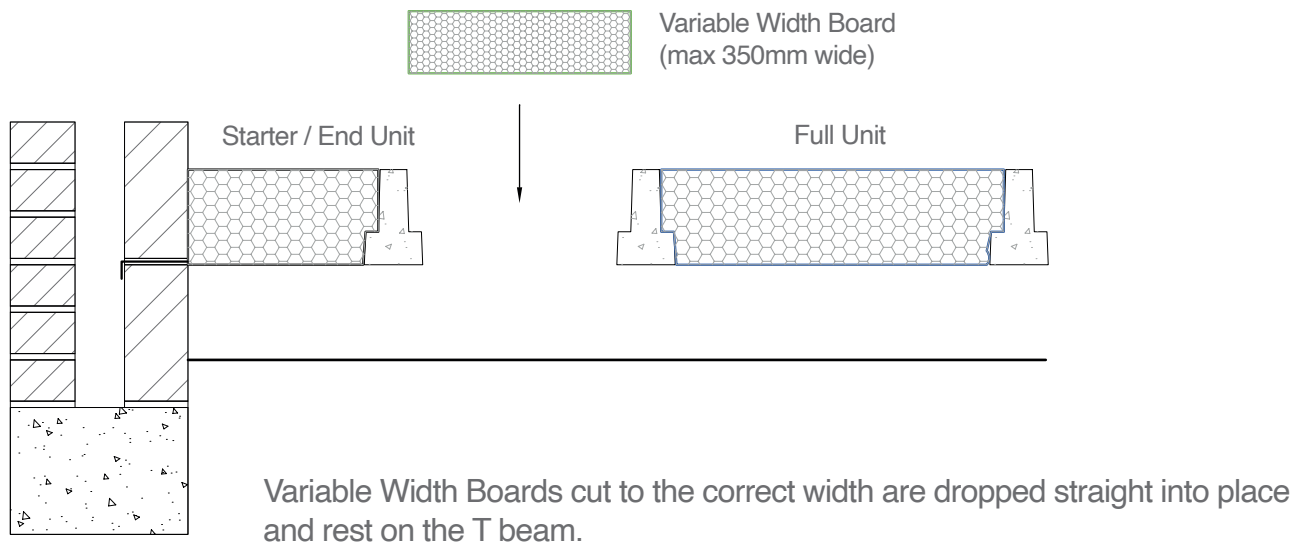
Off cuts from a row of the same Unit type can be used to start the next row of the same Unit type. This can reduce waste on site, but please note the final piece in a row must not be less than 300mm. All Beamshield Units must be placed closely abutting each other and cut pieces must be cut squarely. Care should be taken that these pieces are cut accurately and are not stepped upon before and during the pour.



Cut pieces should be positioned at the floor edges in lengths of not less than 300mm.

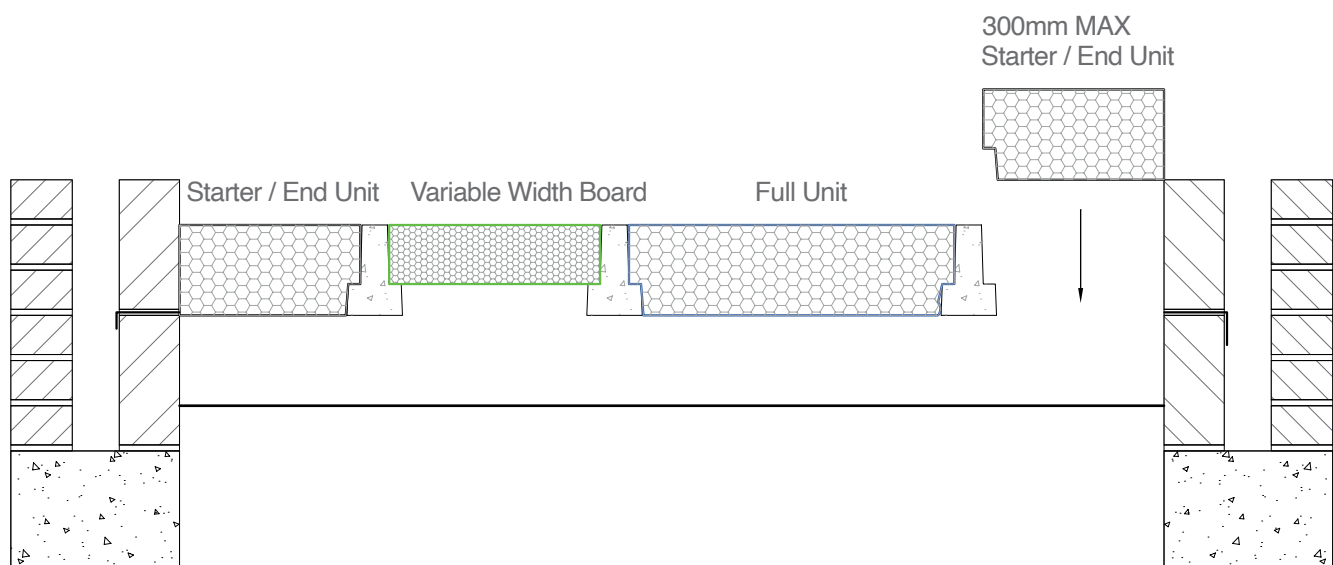
Variable Width Boards

Variable Width Boards (VWB) can be supplied either pre-cut to size or cut from Beamshield Top Sheets proving the Top Sheet is between 75 – 100mm thick. VWBs must be no wider than 350mm. VWBs must be used only where shown on the T beam design layout. If additional VWBs are used then Springvale must be advised so they can check that the U value of the floor is unaffected.



Starter / End units

Starter / End units are supplied as pre-cut units 300mm in width, or can be cut from half or full Beamshield Infill units. Ensure that cutting is done accurately and squarely so the units closely abut the inner leaf.



Starter / End Units, cut to the correct width, are the final units to be inserted to complete the row.



1. Starter / End Units ○

The row starts off with a **(White)** Starter / End Unit (Starter / End units are used at both edges of the floor).



2. Full Units ●

Dependent on the beam layout plan either full units **(Blue)**, half units **(Yellow)** or VWB **(Green)** are then installed.



3. Unit Offcut

The last unit in the row is then cut and used to start the next row. Please note the cut piece must be no less than 300mm and placed at the edge of the floor.



4. Starter / End Units ○

Starter / End units **(White)** are used to finish off the row.

Top Sheet & Completing the floor

After all the Units have been installed the concrete closure blocks are inserted (closure blocks must be of equal strength to the rest of the inner leaf), followed by the perimeter strips, a damp proof membrane (if required may be laid under or over the Top Sheet as manufacturers guidance) and then the Top Sheet, finished off with the structural concrete topping.

Top Sheet can be configured to any Beamshield layout. As per the units, off cuts can be used to start the next row. The Top Sheets must not be installed with the joints within any zone of the structural loadings or influence. These include (but are not limited to) directly over and parallel to the T beams, nor within 375mm of the centreline of a partition spanning perpendicular to the beams.

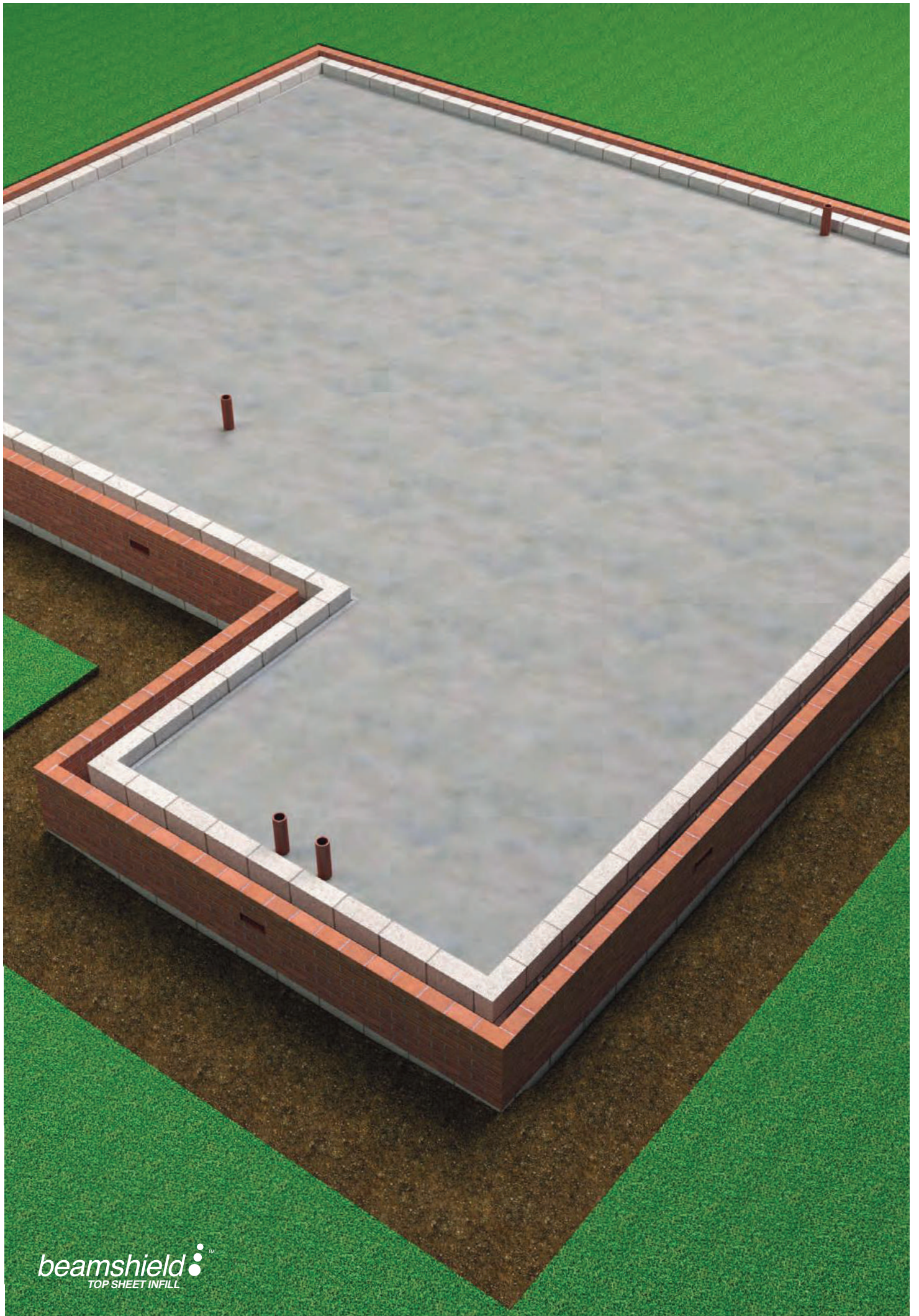


Do not walk on Beamshield units or Topsheet. Use timber boards to form a temporary working platform.

Perimeter strips must be a minimum of 25mm for Springvale Platinum EPS (Grey EPS) or 30mm White EPS. Closure blocks must be of equal strength to the rest of the inner leaf.

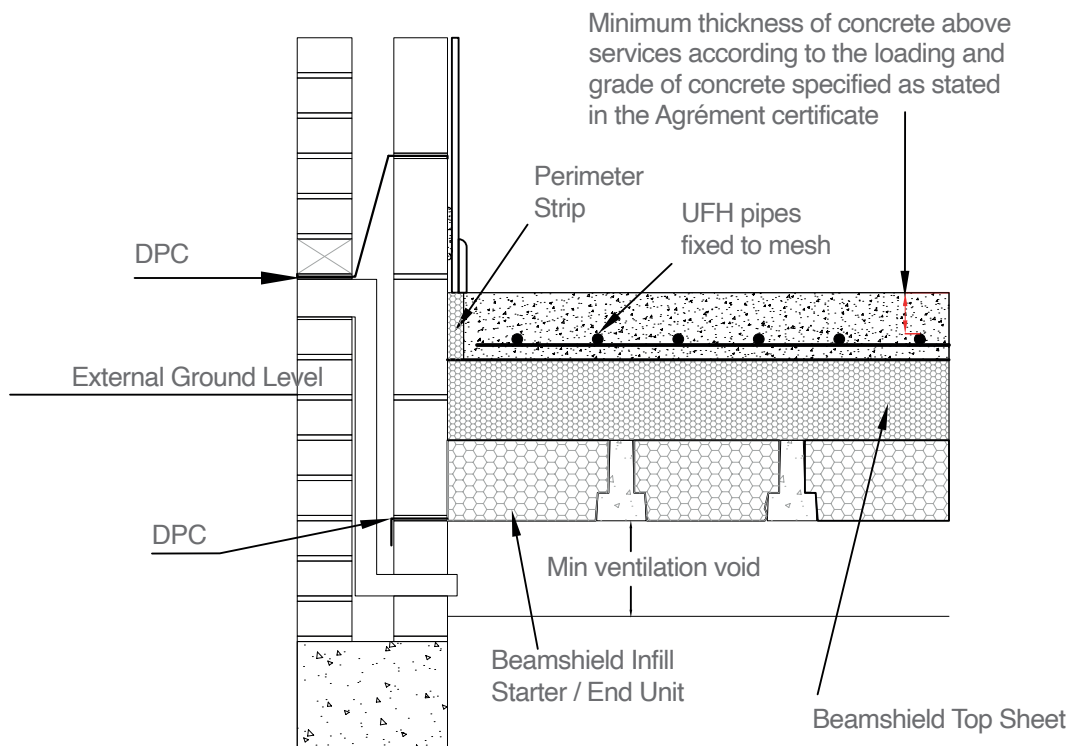
Loadings & Reinforced concrete topping specification

For details of loadings and reinforced concrete topping specification refer to relevant Agrément certificate.



Under Floor Heating (UFH)

Under floor heating pipes can be accommodated in several ways but in all cases the minimum concrete thickness above the services, as stated in the Agrément certificate, must be maintained.



UFH

Where a reinforcing mesh is used UFH pipes can be secured to the mesh. Where there is no mesh then plastic screw fixings can be used to secure the pipes to the Top Sheet.

Where a membrane prevents the use of screw fixings then systems incorporating a clip rail or plastic system plate may be used. Always seek manufacturer's advice before installation.

Where an additional compressible layer is required to secure the UFH pipes an EPS grade material, equivalent to the Top Sheet specified should be used.

Health & Safety

Please note that these guidelines are strictly broad based and the information contained is not meant to be exhaustive. It remains the responsibility of the installer to ensure suitable and sufficient risk assessments are undertaken appertaining to the environment of each individual installation. All operatives and their supervisors must ensure safe and practicable controls are maintained and that those persons undertaking installation are trained, authorised and competent in the use of any equipment, tools etc. as required.

This guidance in no way absolves the installer of compliance to local and or national legislation. It remains the responsibility of the installer to ensure such requirements are adhered to.

Installation Requirements



Always read this installation guide before installing Beamshield for the first time



Prepare the site in accordance to the relevant Agrément certificate and ensure the ground beneath the Beamshield units is free from vegetation



Always ensure that the minimum ventilated void as required is provided beneath the Beamshield system. Where clay heave is expected this should be increased in accordance with NHBC guidelines



Always ensure that vents are installed so that the specified free flow of air to the underfloor void is provided



Always consult the T beam layout drawing before installation



Avoid placing T beams directly against parallel walls, as this will contribute to cold bridging



It is good practice to start each floor with a Starter / End unit and proceed in the direction to the opposite wall



Avoid walking directly on the Beamshield units and Top Sheet, where access is required use boarding or planks. Tamper boards should be used to level concrete where necessary



Limit the concrete pour to a maximum height of 500mm above the Beamshield units and restrict concrete heaps to no greater than 300mm



When fixing a reinforcing mesh use spacers to ensure the minimum cover of concrete topping as required in the relevant Agrément certificate



Where a membrane is required this must be laid flat and either above or below the Top Sheet



Where UFH pipes are installed above the Beamshield system ensure that the minimum designed thickness of reinforced concrete topping above the pipes is maintained



Always install perimeter strip around the exposed edges of the floor



Always fill any gaps with suitable polyurethane foam filler



Where applicable ensure a good floor/wall junction by following an enhanced thermal detail



Do not restrict the free movement of the beams with closure blocks prior to laying the Beamshield units

A first choice material for many construction applications

BEAMSHIELD® is manufactured exclusively by Springvale and is a registered trademark belonging to Springvale EPS Ltd.

With decades of experience in the design and manufacture of expanded polystyrene (EPS), Springvale offers a range of products and serves its customers across the UK from 2 manufacturing plants; Newcastle upon Tyne and Glossop, Derbyshire.

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