

This guidance is for the creation of a bound pavement where the paving units are being installed on workable mortar mix.

Brett GeoCeramica is suitable for site categories IV as defined within BS 7533-4. This is defined as:

Brett GeoCeramica 60mm

Lightly trafficked applications, such as car parks receiving no commercial vehicle traffic, footways subject to domestic vehicular crossover and private driveways. The Bluestone range is suitable for these applications.

Brett GeoCeramica 40mm

Pathways, patios and pedestrian hard landscaping. The Fiordi, Marmostone & Impasto ranges are only suitable for these applications.

For areas exposed to trafficking, guidance for the pavement construction can be sought from the BS7533 suite of standards or contact Brett Landscaping. Consideration between the extent of loading and ground strength should be given. Typically, a minimum sub-base thickness of 100mm should be provided

(Note: GeoCeramica can also be installed using unbound methods for both installation and application requirements. Please see separate installation guidance)

Subgrade

The preparation and construction of the subgrade should generally be in accordance with current practice as described in the Highways Agency's specification for Highway works.

The existing subgrade material which has been exposed at formation level should be suitably prepared. This will include ensuring a firm surface is offered and the strengthening of any weak areas.

At this stage, it should be decided when to form the final profile of the paved surface to allow for drainage once completed. This should be done by either profiling the subgrade to allow constant thickness of the above layers or by profiling the sub-base material (see 'Sub-base' and required falls).

Sub-base

The preparation and construction of the sub-base should generally be in accordance with current practice as described in the Highways Agency's specification for Highway works.

The surface levels of the sub-base should be within the following maximum permissible deviations on the surface levels: +5mm to -10mm.

If the sub-base is to be profiled (as opposed to the subgrade), a minimum longitudinal fall of 1% and minimum cross fall of 1.25% are recommended to be introduced into the pavement. These falls stated at absolute minimums. It may be prudent to increase these falls to allow sufficient speed of drainage.

These falls must be maintained through to the finished pavement levels to ensure water run-off.

Care should be taken to ensure a smooth blending of levels and profile. This will help minimise, if not eliminate, excessive cutting of the Brett GeoCeramica product on the surface layer.

The surface of the sub-base should be tight and dense enough to offer a sound surface to place the bedding course material on.

The extent of the site preparation should include enough room to provide adequate foundations and backing for any edge restraint preparation and such restraints should be installed before the bedding course and GeoCeramica paving units are laid.

Bedding Course

Bedding course material should consist of a workable mix of mortar conforming to BS EN 998-2:2003, Table 1, designation M12.

M12 uses 1:3 cement-sand mortar (proportions by volume) using fine aggregate conforming to BS EN 12620:2002 GF85 0/4 (MP).

The bedding course material should be laid to give a thickness between 15mm and 25mm after compaction.

Where mortar has begun to set or is over 2 hours old it should be replaced with fresh mortar.

GeoCeramica Placement

Take care to open the Brett GeoCeramica packaging in a safe manner ensuring that flags cannot fall over prior to cutting the bands by supporting one end of the pack.

Prior to any placement of the product, risk assessment and method statements should be considered and produced in relation to the site's characteristics. As a part of the risk assessment, it should be noted the units are circa 30kg's for 40mm & 48kg's for 60mm therefore either a two person manual lift or the use of mechanical handling equipment is recommended.

For more details on suitable mechanical handling options, including vacuum lifting and flag pickers, please visit www.probst-handling.co.uk

Care should be taken when handling the product that the edges are not damaged at any stage of the installation process. We would recommend the protection of the edges when temporarily stored or stacked and ensuring any handling equipment is not able to cause damage whilst lifting and placing. Brett GeoCeramica units should be placed on the prepared bedding course in a nominated pattern. For vehicular loading applications a staggered bond orientated to resist the effects of vehicular traffic direction is recommended wherever possible.

An order of laying which maintains an open laying face should be followed. The alignment of paving should be checked periodically for all patterns by using string lines and adjustments made where necessary.

Paving units should be laid to line and level on a full bedding layer compacted down using a paviour's maul. The units should not rock after bedding. Any rocking flags should be lifted and re-laid as necessary.

Any minor adjustments necessary to maintain the laying pattern should then be made.

- Note that product nibs are for product edge protection during manufacturing and transit, and should not be used for joint width regulation.
- A 6 to 10mm joint range is feasible, however we would recommend a consistent target joint width within this range.
- Either a string line and/or tile spacers running off the ceramic top surface of the GeoCeramica may be used to check the alignment of the paving units.

The product can be closed up to a smaller gap, no less than 4mm, where polymerised sands are used as an alternative to the traditional mortar joint construction. Please refer to the respective proprietary supplier for performance recommendations and allowable joint widths on their products.

On slopes paving units should be laid commencing from bottom working upwards whenever possible.

Cutting and Trimming

Where Brett GeoCeramica units need to be cut or trimmed, sizes smaller than a quarter of the original plan size should be avoided where possible.

The accuracy of cutting the units should be such that the joint between the cut unit and full unit should be consistent with the overall joint width design.

Brett GeoCeramica units should be cut using a water-cooled power saw to ensure heat does not delaminate the ceramic and concrete layers within the product and to comply with all H&S good practise.

For best practise, to avoid chipping of the ceramic element of GeoCeramica and prolong blade life, it is recommended that a two blade approach is used for cutting GeoCeramica.

Please ensure that the Concrete Blade width does not exceed that of the Ceramic Blade.

The use of a Ceramic Blade such as the Pulvex P1 Series of the Black Diamond PC300 Range have been recommended by the respective company.

For more details please visit either manufacturer's website :- www.pulvex.co.uk or www.blackdiamondinternational.co.uk

Further tips from blade manufacturers include:

1. Put the flag on a bed of sand or stone when cutting, as this will absorb vibration.
2. Cut a 50mm notch straight through the ceramic at either end of the cut (this relieves some of the tension in the flag).
3. Do not force the blade through the ceramic, allow the blade to cut at its own pace.

Please ensure that any cutting activity has been full risk assessed. For more details on carrying out risk assessments please refer to:
www.hse.gov.uk/risk/controlling-risks.htm

Joint Construction

Paving units should have their joints filled to the full depth of the GeoCeramica Paving unit and to within 2mm of their top surface. Traditional mortar should conform to BS EN 998-2:2003, Table NA.1, designation M6 should be used.

M6 uses 1:4 cement-sand mortar (proportions by volume) using fine aggregate conforming to BS EN 12620:2002 GF85 0/1 (MP).

Mortar can be applied using 3 different methods, which is normally selected based on the size of the project. These methods are:-

- Using trowels
 - Firmly pressed into the joints with a trowel or suitable rod.
 - Spread on the side of the laid paving unit, offer the next paving unit to this and strike off any surplus mortar.
 - Ensure the face of the joint is suitably struck off to ensure durability, eg bucket handle profile etc.
- Gun application
 - Please seek advice from mortar supplier.
- Slurry application
 - Please seek advice from mortar supplier.

We would recommend carefully selecting the most suitable method for the project.

Any mortar on the surface should be cleaned off immediately to avoid staining.