

# planning and laying guide

## Preparation

### Planning Suggestions

- Draw the area to be paved using graph paper.
- A scale of 1:50 will allow direct use of the drawings on pages 132-137.
- Use dimensions that minimise cuts to paving.
- Paving surface must be at least 150mm below the damp course in any adjacent wall.
- Provide a gradient of 1:40 or steeper, towards adequate drainage.

### Paving Installation

- This is heavy work, requiring specific skills, tools and experience.
- Before starting, refer to suitable professional advice, publications or websites.
- The following advice assumes you have acquired a basic knowledge of what is required, including health and safety precautions.

### Foundations

- These depend on ground conditions and expected use.
- For light pedestrian use on solid, even ground, 40mm compacted sharp sand may be adequate.
- For less stable or wet ground, provide 100mm well compacted hardcore beneath the sand.
- For domestic driveways, increase the hardcore depth to 150mm. For Pavors follow the Pavior Laying Guide; for Flagstones follow the section headed Driveways.

### Groundworks

- Mark out the area and dig out to the required total depth.
- Tap in wooden pegs to show the levels for the finished surface, including the required gradients.
- Infill the appropriate foundations and remove the pegs before laying the paving.
- For Rio Paving, Opera Paving and all Pavors, follow Pavior Laying Guide.
- For all other paving (including Rio and Opera if preferred), follow Paving Flag Laying Guide.

## Paving Flag Laying Guide

### Getting Ready

- Avoid rubbing and damage to Flags by carefully stacking them on timber battens with spacers between them.
- Select paving from different packs throughout the job, to blend colour shades.

### Laying

- Make up a slightly wet mortar mix of 1 part cement to 5 parts building sand.
- A PVA, SBR or equivalent bonding agent can be added to the mortar to assist bonding, particularly with natural stones. Alternatively coat the back of each flag with neat wet cement and bonding additive just before laying.
- You may also consider using an appropriate plasticiser additive in the mix.
- Prepare a full bed of mortar ahead of each Flag, approximately 25mm thick, but allowing for the variation in thickness between Flags.
- Tap the Flag down to the required level, using a rubber mallet.
- If the Flag will not level with several gentle taps, lift it, adjust the level of the mortar bed and relay the Flag.
- Keep checking levels and gradient across a number of slabs. Stringlines can be helpful to define levels and lines within the laying pattern.

- Maintain the correct joint width by gently shuffling with a trowel. Small pieces of timber are useful as temporary spacers.
- If you need to cut Flags, a power tool with a suitable diamond tipped cutting disc will cut accurately through our products.

### After Laying

- Do not walk on the paving for at least 24 hours.
- During wet or frosty weather, cover the paving for protection until mortar has cured.
- Then point as soon as possible.

### Pointing

- For most paving flags Stonemarket Fast Point Jointing system can be used where a minimum 10mm joint and 22mm thick paving units are being utilised. For thicker flags 25mm and over the width can be reduced to 8mm.
- Alternatively, use a damp mortar mix of 1 part cement to 4 parts building sand.
- Press firmly onto the joints to produce a dense, impervious surface that will drain water across the paving.
- If mortar gets onto the faces of the Flags, clean off immediately using a damp sponge frequently rinsed in clean water.
- Jointing sands and other pervious materials are not recommended except where paving is laid with minimal joints. Stonemarket will not accept responsibility for contaminations/staining incurred from use of manufactured jointing compounds.
- Where minimal joints are recommended, these should be 2-5mm and a good quality external grout should be considered.
- Where minimal joints are suggested with single size layouts or in courses, you could consider larger joints for ease of pointing and improved durability of the joint.
- Butt jointing is not recommended for any of our products.

### Driveways

Our Pavior ranges are specifically designed for high performance in areas used by domestic vehicles. However, many of our customers prefer the look of flagstones. Trustone (Fieldland, Glenmoor and Fellstyle) and Vintage Stone Manor have been used successfully. Extra care with the foundations is essential. Lay the Flags directly onto a 100mm thick wet concrete bed (1:5 cement: sharp sand) on top of 150mm well compacted hardcore. Damage can be caused by heavy and four wheel drive vehicles, or by using power steering whilst stationary.

### Specific Advice

- (i) TRUSTONE, VINTAGE STONE, MARKETSTONE  
Always lay larger face upwards.

#### Correct way up



#### Incorrect way up



- (ii) NATURAL STONES

Coating the back of each Flag with neat wet cement and SBR additive just before laying, will assist bonding.

- (iii) ARCTIC GRANITE, GLACIER

This product sometimes absorbs colour from Ordinary Portland Cement. We strongly recommend substituting White Cement in the mortar and adding a SBR or other bonding agent. Lay Arctic Granite with the textured slip resistant face upwards.

- (iv) ARCTIC GRANITE, AVANT-GARDE  
Depending on site conditions, moisture

transparency from the bed below is a natural characteristic of these stones that can result in darkening and patchiness on installed product particularly on less well drained constructions. This can be minimised, contact Stonemarket Technical if further advice required.

- (v) REVOLVE FEATURE

This should be dry laid before final positioning on mortar bed, starting from the centre outward.

- (vi) RIO PAVING, OPERA PAVING

Not suitable for vehicles. Can be laid as per above guide or on a flexible bed, as per Pavior Laying Guide. Do not use a vibrator on top of the paving. Level off with a paver's maul when laying on a flexible bed.

- (vii) RIO SMOOTH

Silicon is used as spacers during transportation. Small dark patches may occasionally result, be assured this is only a temporary weathering condition.

- (viii) TIMBERSTONE

Post/Sleeper combination if being used as a retaining wall may need a retaining skin, and when being used as a retaining bed/planter always have a waterproof skin

- (ix) TORVALE

It is possible that the natural lightening effect may be significantly retarded with an appropriate proprietary treatment. We recommend taking advice from specialists in maintenance products for natural stone. In addition please note our coatings/sealants advice on page 139

- (x) KNOTWOOD, GRAVITY, PALEO, LUCENT

Our vitrified paving ranges have specific laying advice that can be requested as a datasheet by calling Stonemarket Technical Department on 0345 302 0603. Use of a cementitious primer is required when installing vitrified paving.

- (xi) NAMERA, LORENTO

To be laid on full mortar bed. To increase adhesion to the mortar bed and prevent separation, Ultra-Scape Pro-Primer slurry primer, or similar flexible bonding agent compound, should be applied to the back of the flag prior to installing onto the mortar bed. When cutting Lorento use a power saw with a diamond blade.

### Indoor Use

For indoor use, a coating is advised to reduce dusting and make cleaning easier.

### Use Around Swimming Pools

Advice from Stonemarket should be sought about suitability for use of products around swimming pools.

## Pavior Laying Guide

For a comprehensive guide to installing PermeaPave, Rio PermeaPave and Trident Permeapave we would strongly advise referring to the Stonemarket PermeaPave Technical Installation Guide, available by calling 0345 302 0603 or at [www.stonemarket.co.uk](http://www.stonemarket.co.uk).

### Edge Restraint

- Pavors must be surrounded by a firm edge restraint to stop the blocks and sand layer from creeping.

- Kerbs and driveway edgings are usually best, but walls, decorative edgings or the paviors themselves can also be used as restraints.
- Lay the restraint on a concrete bed, haunching kerbs or edgings in concrete and allow to cure and strengthen before any vibration.

#### Screeding

- Screed out a layer of coarse concreting sand to a depth of 35mm on the excavated area and within the edging.
- Compact the sand with a plate vibrator.
- Add more sand and screed off to give a firmly compacted thickness of 50mm. (One tonne of sand covers about 8m<sup>2</sup>.)

#### Laying

- Start from a corner or long edge and proceed along one laying face. Place individual blocks vertically onto the sand bed according to the pattern.
- It is important to mix blocks from at least 3 packs to achieve a good blend of shades.
- Use stringlines and adjust the width of joints to within 2-5mm to ensure the lines in the pattern remain straight.

#### Cutting

- To fill gaps along edges, cut the blocks using a hammer and bolster chisel.
- For a lot of cutting, use a mechanical block splitter or power cutter with an appropriate blade.
- When cutting the blocks it is important to ensure that once cut with water the block has been perfectly cleaned before installing.
- Avoid cutting and laying blocks less than a quarter of their original size.

#### Vibrating

- Using a stiff broom, brush bedding course sand over the paviors to partially fill the joints and ensure stability during initial vibration.
- After ensuring the surface is clean, vibrate the paving to settle the sand in the joints.
- Top up the joints with our Pavior Jointing Sand. Sweep the surface and then pass the vibrator over the whole area several times to level the paviors.
- Brush more Pavior Jointing Sand over the area to ensure all joints are topped up and make one more pass with the vibrator. The paving is then ready for immediate use.

#### Specific Advice

- (A) TRUSTONE PAVIORS, ELEMENTAL PAVIORS, RIO PAVIORS, RIO PERMEAPAVE  
We recommend using a rubber mat when vibrating to protect undulating surfaces.
- (B) TRUSTONE PAVIORS, ELEMENTAL PAVIORS  
Please refer to our installation recommendations for laying on a flexible bed with spacers. For certain driveway installations laying on a mortar bed may be more appropriate.
- (C) TRIDENT PAVIORS  
Please note Trident Paviors mixed size packs have a slightly different finish to that of Trident single size packs manufactured in Scotland, and therefore should not be used together
- (D) TEMPLETON DRIVEWAY SETTS  
MILLSTONE DRIVEWAY SETTS,
- Stonemarket Driveway Jointing must always be

used with Templeton and Millstone Driveway Setts to ensure structural stability.

- Do a soil/clay test to check ground is permeable before use.
- Always use a vertical edge restraint, to restrain the drive.
- Always construct the sub-base in 2 layers of 75mm MOT Type 1. Each layer must be thoroughly compacted.
- In all cases compact the first layer of sand, then screed remaining layer to achieve finish laying course.
- The ideal depth of sharp river sand is 30mm. In all situations no more than 40mm should be used. Failure to follow will result in the installation being compromised
- On all occasions take blocks from a minimum of 3 packs (6 for multi-coloured product) to the laying face.
- When laying, always achieve a tight connection from one sett to the other.
- Compact Templeton and Millstone Driveway Setts using a rubber protection mat, BEFORE any jointing compound is introduced onto the blocks. Failure to do so will result in face marking of the blocks.
- Partially wet blocks with a light spray of water, then brush jointing compound into joints using a stiff brush. Top up any hungry joints.
- Use light water spray and a soft brush to remove excess jointing compound from the surface profile of the blocks as it is extremely difficult to remove once curing commences.

#### IMPORTANT

- Templeton and Millstone Driveway Setts come with a protective transportation seal which will remain slightly slippery underfoot once the jointing material is introduced. This is a temporary phenomena that will dissipate after a short period of time. Care should be taken during this period. Once protective seal has dissipated the block may take on a lighter appearance.
  - The correct amount of jointing compound is supplied with every pack of Templeton and Millstone Driveway Setts.
  - It is NOT recommended to install Millstone or Templeton Driveway Setts on a radius. This is due to the patented contoured base being required to come into full contact with adjoining blocks forming complete uniform joints. Failure to comply will result in separation of jointing material from the joint.
  - For driveways with an incline of 15° or more or specific installation and design requirements, please contact the Stonemarket Technical Advisory Team on 0345 302 0603 for further assistance.
- (D) DRIVEGRID
- In all cases use an edge restraint, and fill with angular gravel 5-16mm.
  - A 10-20mm layer of angular gravel (5-16mm) must be spread on top of the finished cell height.
  - There is no need to compact.
  - 1 tonne of gravel will cover approximately 14-17sqm depending on density.
  - Stonemarket recommends the use of a driveway entrance apron for stability.
  - For domestic vehicles only, not designed for commercial vehicles

## Wall Building Guide

#### Key points before you start

- Get professional advice if you are in any doubt, particularly with walls over 1.5m high and complex or stress carrying structures.
- Plan the wall and draw a design; this helps with calculating quantities and makes building quicker.
- Get the right tools; spade, concrete mixer, trowel, spirit level, club hammer, 60-120mm bolster chisel, stringline and pointing tool.

#### A firm foundation is essential

- Walls need a concrete foundation three times wider than the thickness of the wall. Its depth should be at least 100mm with the base 300mm below ground level.
- For walls over 1m high the foundation base depth should be one third of the height of the wall above ground.

#### Construction

- Single skin walls 100mm thick should not be higher than 500mm and need 215mm square piers every 2m.
- Walls over one metre high should be double skin construction, with the two skins tied together and should have support pillars at least every 3m.
- All walls need provision for expansion and contraction about every 6m.
- Protect the top of the wall with copings and pier caps or suitably sized paving slabs.

#### Bricklaying, Mortar & Joints

- Use normal bricklaying techniques including damp proof courses where appropriate.
- Mortar should be 1 part masonry cement to 4 parts soft bricklayers sand.
- Mix bricks/blocks from different packs to ensure a blend of shades. If using just one pack, select from the top down.
- With raised planters and retaining walls, leave some vertical joints un-mortared for drainage.
- Raised pools require a waterproof liner and a design that will support the weight of water.

#### Excelsior Walling (pages 28, 29)

#### Rio Walling (pages 42, 43)

- Whilst Excelsior Walling and Rio Walling can be built using normal mortar we recommend the use of M-Fix walling adhesive.

#### Avant-garde Walling (pages 14, 15)

- Whilst Avant-garde Walling can be built using normal mortar we recommend the use of M-Fix walling adhesive.
- Walling blocks are manufactured with a tolerance making very flat faces on both sides of a single skin wall difficult to maintain.

#### Vintage Stone Walling (pages 70, 87, 89)

- Before commencing to build, blocks should be sorted to enable blocks of similar height to be laid in the same course.
- As Vintage Stone is a natural stone product, block height can vary. The ends of the blocks are dressed at an angle.

#### Carl Luke Walling (page 128)

- Each block is faced on a minimum of one length and one end.

- After the wall is built and the mortar has set firm, clean the blocks with a hose to reveal the full colour.

#### Cotstone Walling (page 129)

- Carefully mix the various profiles.
- Rake out mortar joints to same depth as the moulded joints to achieve the appearance of continuous random natural stone.

## Health & Safety

#### Mixing Mortar

Dry or damp cement and wet concrete or mortar can cause irritation and burns to the eyes and skin. Suitable eye protection and PVC gloves should be worn. If contact with the eyes or skin occurs, irrigate or wash off with plenty of water. If irritation or burning persists, seek immediate medical attention.

#### Cutting

Using high speed cutters on concrete and stone products produces dust. If inhaled in excessive amounts over a long period this may cause long-term health problems. Suitable safety goggles and a dust mask should be worn.

#### Manual Handling

Most of our products are abrasive and heavy, some are very heavy. Appropriate handling precautions include wearing protective gloves and footwear and obtaining assistance when moving items weighing over 20kg.

#### Safety Data Sheets

Available by calling 0345 302 0603.

www.stonemarket.co.uk/healthandsafety

## Maintenance

- Keep pavior joints well filled with Pavior Jointing Sand.
- Pressure washers and chemical cleaners are not recommended on any of our products particularly reconstituted stone, natural limestone and Arctic Granite Midnight.
- Many common patio cleaners and brick acids are hydrochloric acid based and are not appropriate on most of our products including sandstone.
- To clean, wet thoroughly with lukewarm soapy water and use a stiff hard broom.
- Never use common salt to de-ice reconstituted stone or limestone. Alternative products are available, specially formulated for this purpose.
- Light coloured natural stone and concrete blocks, whilst structurally sound for use on driveways, may emphasize tyre marks and oil spills on the driveway and may require more maintenance to maintain appearance.

#### Coatings/Sealants

If a coating or sealant is used make sure paving is completely dry and free of efflorescence before applying. Responsibility for the performance of any coating rests with the user and the manufacturer of the coating. Always read the instructions carefully and first test a small area for colour and slip resistance, wet and dry. For further advice refer to our sales office.

## General Information

#### Dimensions

All dimensions given are nominal and subject to manufacturing tolerances. The quoted sizes and coverage of our paving ranges, except where using minimal joints, are for the overall areas including appropriate joints, making it easier for you to plan a project and order the right quantities. For precise dimensions, measure several product samples at a stockist.

#### Colours

Variations in colour shade occur in all Stonemarket products. While the colours shown in this brochure are as accurate as reprographic processes allow, it is essential that you see actual materials at your local stockist before choosing. This is particularly important with natural stone products where considerable variation occurs. Our reconstituted stone products contain natural aggregates so we cannot guarantee that products made at different times will have identical shades. When using several packs, mix products from each pack to achieve a blended overall appearance.

#### Dusting

Some dusting may very occasionally occur in some of our highly pigmented reconstituted stone ranges. If transfer is causing an inconvenience an appropriate dustproofer may need to be considered.

#### Efflorescence

All concrete products in their early life can exhibit efflorescence, which may appear as a white deposit and/or apparent colour fading and/or drip staining. The effect will always be more apparent on bolder, darker coloured products. This condition can also on occasion migrate through sandstone from the mortar bed. Efflorescence will generally diminish over time and will not affect long term performance. Stonemarket cannot accept responsibility for any of the above conditions

#### Other Weathering

Weathering and site conditions can occasionally cause other variations in shade to appear. Differential weathering can cause patchy dark discolourations on the surface of individual units. Again this will generally diminish over time and will not affect long term performance. Natural stone may develop shaded marking, deposits or patches as mineral content oxidises. All products can develop algae and organic growths under certain environmental conditions and may require cleaning. Areas adjacent to borders, plant pots and trees may discolour from transfer of plant-life; specialist maintenance advice may need to be sought. It is possible for bird droppings and other staining agents to mark all paving types. Dark staining agents will be more apparent on light coloured paving. Stonemarket cannot accept responsibility for any of the above conditions

#### Terms and Conditions

We are continually making innovations and improving products so we reserve the right to vary designs and specifications without notice. In the unlikely event of products reaching you in less than satisfactory condition, please notify the retailer immediately. Please note that if you lay a product with a defect apparent prior to laying, then we may not accept responsibility for costs incurred.

While every effort has been made to give sound advice, Stonemarket cannot accept responsibility for any loss, damage or injury sustained in following it. We cannot accept any liability if products are used for purposes other than those for which they were intended, or if damage is due to not following our advice. **All instruction given is for guidance purposes; building regulations should be followed at all times**

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## Acknowledgements

Gloster, furniture p2, 7, 13, 23, 31, 32, 33,35, 37, 38, 39, 48, 49, 52, 57, 60, 70, 74, 75, 78, 79, 80, 84

Summit, furniture p11, 34, 44, 51, 54, 55, 92

Andrew Crace, furniture p88

Barlow Tyrie, furniture font cover, p76, 80, 90

Neptune Classics, furniture p52

David Harber, sculpture p14, sundial p87

Whichford Pottery, flowerpots p88

Urbis, planters p24

Ornate Products, urn p88

Modern Garden Company, furniture p22

Jaguar Landrover, cars, p100, 107, 110, 112, 117, 125