



Marshalls

Creating Better Spaces

INSTALLATION DETAILS FOR SYMPHONY PLUS DRIVEWAY PORCELAIN PAVING

General Information

On delivery, the product should be inspected. If there are **any** issues, please report them immediately and do not commence installation.

Before installation commences a certain amount of sorting of the product may be required to ensure consistency of colour, texture and dimensional tolerance.

We recommend that, when purchasing materials, especially in the case of larger quantities, they all come from the same batch and that the products are thoroughly mixed on site by drawing from a minimum of three packs.

Health and Safety Information

Safe working practices should be employed at all times during the construction process and all necessary Personal Protective Equipment (PPE) should be worn.

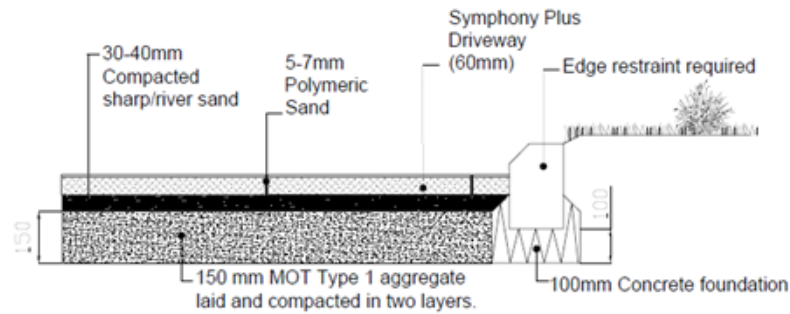
Handling

Pallets should be stored on stable and level ground, with the units being checked for stability before the securing straps are cut. Care should be taken when stacking these units to prevent damage to the porcelain element of the unit.

Due to the size and weight of these units, carry out a risk assessment. Mechanical lifting and handling is strongly advised. Probst Handling Equipment will advise on the correct methods and can be contacted on 01952 292733.

Pavement Design

For most domestic applications, with a weight limit of 3.5 tonnes, a sub-base of minimum 100mm but ideally 150mm should prove to be sufficient. However, the paving design must be based upon the prevalent ground conditions ie: existing ground permeability and type and frequency of anticipated loads.



14a Typical section through a driveway constructed in accordance with Marshalls Register Installation Procedures
 D02 Scale 1:10 @ A3

Excavation

To allow the paving to be installed correctly, a certain amount of excavation is usually required. The depth of this excavation will be the thickness of the required sub-base plus the laying course sand and the blocks. An extremely important factor to consider when working out the depth of excavation is that the finished surface level of the blocks must be a minimum of 150mm below the DPC (damp proof course) to prevent problems with rising damp.

Edge Restraints

In all instances edge restraints must be installed and should be sufficiently robust to resist the lateral displacement from imposed loadings placed upon the pavement and are installed prior to the installation of the sub-base. The restraint must provide a consistent vertical face to a level below the laying course material.

For steep inclines or gradients, (greater than 1:20) the provision of intermediate restraints should be considered. Their spacing should be related to the severity of incline and overall area of paving.

Sub-base - Material Selection

Granular sub-base material should be well graded (40mm to dust) Type 1 quality material. Inferior quality material may be liable to failure under loading and be susceptible to frost or moisture movement.

Recycled materials such as crushed masonry or concrete can be considered, provided it is well graded and compacts to give a close textured finish. Materials containing organic matter should not be used.

Sub-base - Construction

Sub-base material should be placed in layers between 40mm and 75mm in thickness or twice the nominal maximum aggregate size. Each layer should be fully compacted before the next layer is placed. Sub-base tolerance to be +5 -10mm from specified levels. The surface should be clean and suitably close textured to prevent migration of finer material through the construction.

A minimum longitudinal fall of 1.25% (1 in 80) and cross-fall of 2.5% (1 in 40) should be incorporated in the sub-layer construction to provide adequate surface water runoff from the wearing course.

Laying Course - Materials Selection

Laying course material should consist of well-graded 'grit' or sharp sand (not building sand) which must conform to the grading envelope below. The material should have uniform moisture content, being moist without being saturated. Under no account must any cementitious material be present in the laying course material.

Laying Course – Material Grading

Sieve size (mm)	Percentage by mass passing (%)
8	100
6.3	95-100
4	85-99
0.5	30-70
0.063	0-3

Laying Course - Construction

Final compacted target thickness for the laying course should be 30mm and no more than 40mm. A consistent thickness of bedding material should be maintained with gradients and falls being formed in the sub-base construction, not the laying course material. Under no circumstances should the bedding sand be used as a levelling course. Tolerances for laying course material are +10 -5mm.

The laying course material is completely compacted prior to installing the paving units and the surface levelled by screeding. A small trial area of laying course material can be compacted prior to the commencement of installation, to establish its compaction properties. As a guide, the material when squeezed in the hand should show no free water, and bind together when the pressure is released.

Only sufficient laying course material should be placed within the current working period. Any disturbance of the screeded laying course material should result in rescreeding, with screeding rails being removed on completion, taking care to make good any voids.

On completion of the day's work, no more than 1m of laying course material should be exposed, without cover by the paving units.

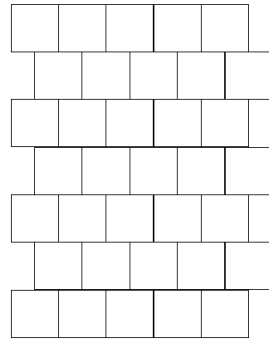
All areas of exposed laying course material should be covered overnight, and during inclement weather to prevent saturation or frost damage.

Wearing Course - Laying

Paving units should be laid on the laying course material so that the final level is within the permitted surface tolerances. String lines should be utilised as often as required, this is necessary to ensure the bond pattern is maintained and straight lines are

achieved in the finished paving. The manufacturing tolerances of the paving units, profile of the site and frequency of string lines used should be taken into consideration during installation. These factors may have a bearing on the straightness of line achievable.

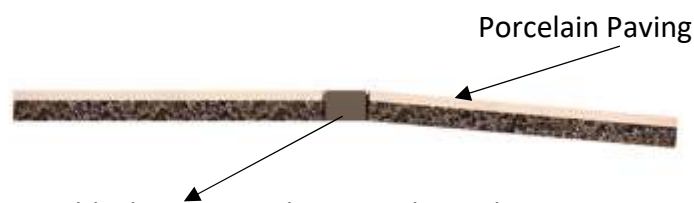
Paving units should be laid with a consistent target joint width of 5-7mm using packers and incorporated nibs where required. Joint widths may be varied slightly in order to achieve straight lines or maintain bond, but should **never** exceed this size range.



Lay whole paving units first, followed by cut units around obstacles or at edges. No units should be cut down to less than one quarter of its original size to prevent looseness or dislodgement at a later date.

Where slopes, gradients or ramps are being constructed, placement of the units should commence at the lowest point ie: the bottom of the slope, working upwards. Where there is a risk of lateral movement of the paving units due to the gradient encountered, the provision of additional intermediate restraint should be considered.

The diagrams below shows how a dividing break, using block paving, setts or slot drains, can be used to adapt to gradients or ramps.



Dividing break using blocks, setts or drainage channels

Cutting

Cutting should be carried out using a stone/ceramic water suppressed cutting table or a water and dust suppressed diamond tipped, ceramic power saw to cut through the porcelain element of the paving, then a normal diamond concrete blade to cut through the base unit.

Cut blocks should be inserted prior to completion of the working period or before the onset of inclement weather.

Units should be cut such that the resultant joint width remains within the 3-5mm tolerance and no less than ¼ of the paving unit in size. After cutting, use a 5-7mm packer to create the perfect joint width.

Wearing Course - Compaction

Initially use a rubber maul to gain level to the adjoining units and if required make the necessary adjustments.

Prior to final compaction of the paving ensure that the surface is free of debris. A rubber or neoprene sole plate must be used with the vibrating plate to avoid impact damage to the surface of the units, with care being undertaken not to scratch the surface of the paving. The vibrating plate should conform to the following specification.

Vibrating plate compactor details

Minimum plate area	0.2m ²
Minimum effective force per unit area of plate	60 kN/m ²
Frequency	75-100 Hz
Minimum mass of unit	80kg

Jointing

After final compaction, all the joints should be fully filled with polymeric sand with the surface being completely cleaned to remove any remaining jointing compound.

All joints should remain full of jointing material at all times, with periodic checking and re-applying being carried out where necessary. Particular attention should be taken in the first 3 months and should be part of a regular maintenance program.

Important Note If due to design restrictions or site limitations the joint width created is over 5mm then the whole area is to be rigidly installed on a full mortar bed with full cementitious joint.

Inclement Weather

Installation should be discontinued (and any open work face covered) if weather conditions are such that the performance of the paving may be jeopardised. In adverse weather conditions, units should not be laid on saturated laying course material. The filling of joints is not possible in damp conditions, and should be topped up at the earliest opportunity. All unfinished areas and stockpiles of materials should be covered in the advent of inclement weather to prevent saturation.

Contact Us

- Group Technical Services on 0370 411 2233, or by email on grouptechnicalservices@marshalls.co.uk
- Maintenance details are available on request covering cleaning, power washing and de-icing salts and joint re-applying.