



Exterior product installation guide

Natural Stone and Porcelain are premium products and we strongly recommend that installation is carried out by an experienced professional. The following is a guide only and you will need to take the advice of your contractor who will be able to assess the variable factors on site and, if necessary, tailor the installation process to your specific requirements.



Certain Natural Stone products will require sealing prior to installation. This information is given in the Product Guide that will be sent along with your order confirmation. It is also available on our website – www.londonstone.co.uk



London Stone recommend that installation work is undertaken by an experienced professional who will be able to provide advice based on specific site conditions, heavy clay or very sandy soils in particular. A structural engineer may also need to be consulted depending on site conditions.



It is strongly advised that when choosing a contractor to carry out installation works, that at least three quotes are obtained and previous work is viewed if possible.



Natural stone colour variation



All Natural stone slabs will contain variation in colour, shading, veining and other characteristics. Care should be taken prior to installation to ensure that variation is evenly distributed across the area to be paved. If multiple crates/packs are ordered, all crates should be opened and sorted to ensure even distribution of variation. Paving slabs do have a top and bottom; the top face will be the better looking of the two sides or have a texture such as sandblasted or flamed. The bottom will sometimes be grooved due to calibration or contain saw marks. For riven stone with hand cut edges these taper out towards the top.



If you are unsure which is which, please ask a member of our sales team who will be pleased to assist.



Natural stone chipping & damage



Natural stone can contain small chips which is an unavoidable part of the production process and whilst as much care as possible is taken with handling, packaging and quality control some slabs will still contain small chips. Most chips will be virtually undetectable once the stone is installed pointed and will not detract from the appearance of the finished project. Check all stone for any cracks or damage prior to installation



This is unavoidable and is accepted as standard within the Natural stone industry



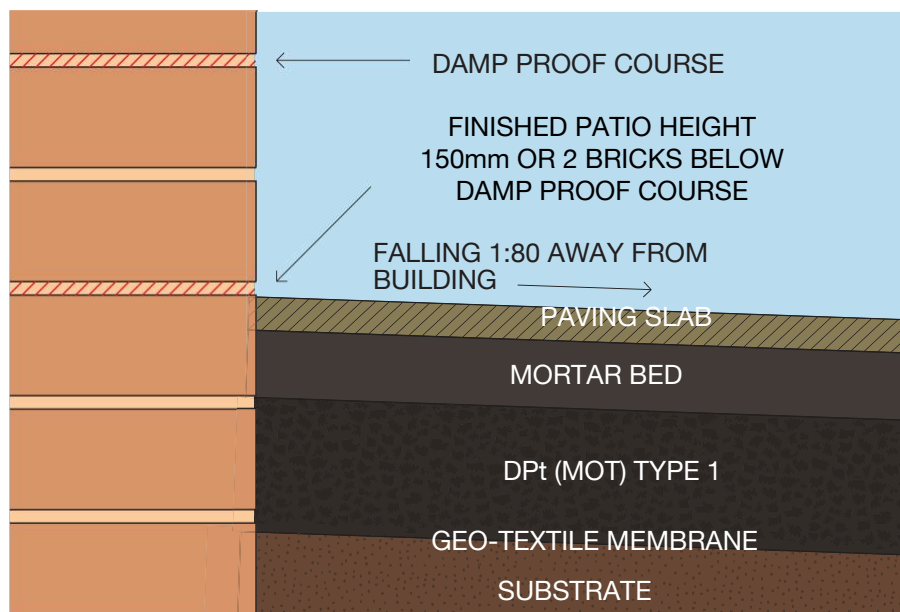
All natural stone (in particular sawn) may arrive containing moisture and may require cleaning before installation. If the stone is being sealed on site it could need cleaning and drying before sealing



Paving Installation



Drainage



Prior to paving, drainage should always be considered. Wherever possible, drain away from the house and ensure that the finished height of the paving is 150mm or two courses below the damp proof course, unless appropriate allowances are made. Paving should be laid with a fall of 1:80. The fall needs to be applied to the excavation and the sub-base to ensure that all layers in the construction are equal.



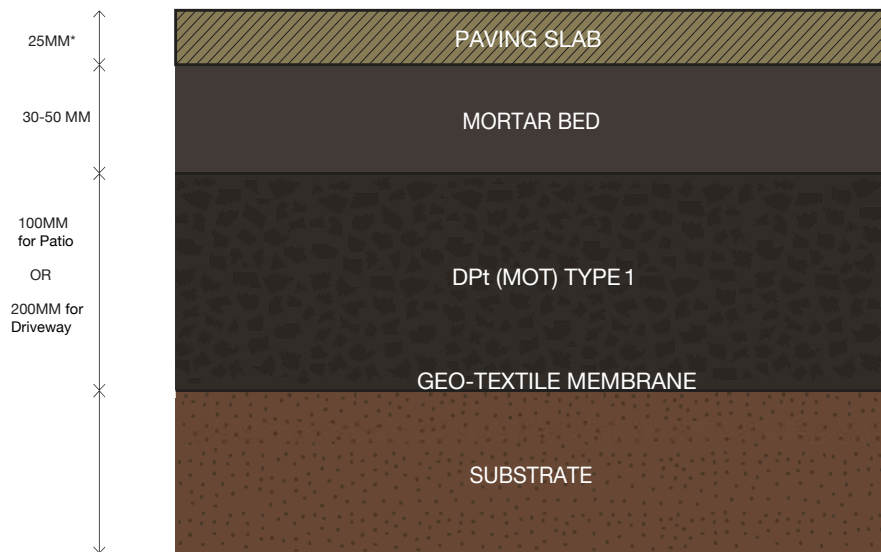
London stone offer several drainage accessories such as stainless steel slot drains to help with drainage requirements. Please speak to a sales advisor for further information



London stone strongly advise seeking expert assistance. Reference to SUDS (Sustainable Urban Drainage Systems) requirements should be made.



Preparation for installing a patio or driveway



*paving slab thickness is dependent on stone selection – adjust mortar bed to suit

Excavate area to required depth.

Install Geo-Textile (non-Woven) membrane

Install recommended thickness of DPt (MOT) TYPE 1 and compact using a petrol compactor plate (maximum of 150mm layer compacted at a time).

Use string lines along two opposite edges of the area to be paved. These strings will need to incorporate the fall of 1:80. There should be a level string joining the two strings and paving should begin from a corner with one of the fall lines and the level line. This could be along the back of a house or building. If the area of paving is wider than 5m, it is worth breaking up the area into segments as long strings will dip in the middle. The string lines will be set at the finished height and the plane which they create will be the exact surface plane of the completed patio. The paver should be level along one plane and sloping on the other plane. Confirm this using a spirit level.



Measurements

Depth of excavation from finished height.	Driveway 275mm
	Patio 175mm
Depth of compacted sub base (Generally DTp (MOT) Type 1 is recommended, however under certain site conditions a concrete base may be required advice should always be taken from a landscaper or structural engineer) .	Driveway 200mm
	Patio 100mm
Mortar mix (Full bed 30-50mm) – Adjust mortar bed to suit thickness of paving slab	<p>Recommended Mix Ratio = 5:1 (mix may need to be weaker if installing a weaker stone)</p> <p>Please note; We advise that only Sharp/Grit Sand should be used for the bedding mix. We would not recommend using any building sand in the mix at all, as this could lead to a weaker mix and possible discolouration of some stone.</p> <p>If a permeable bed is required, the use of a ready-mix solution should be used.</p> <p>Portland limestone should be laid using river washed sand and white cement to prevent discolouration.</p>
Bond Bridge Mix - Must be used with Porcelain, low porosity natural stone and sawn setts. <u>Recommended on all stone.</u>	Mix SBR Bonding agent with cement until a thick liquid is achieved or Mix the ready-mixed Primer with water as instructed.
Pointing	5-15mm joints as recommended in the relevant product guide.
Fall (Drainage)	1:80



Please seek advice if you intend to pave a driveway. Our sales advisors will be happy to advise which materials are suitable for this purpose.



Prior to installation



It may be beneficial to clean the back of the slabs first to remove any excess dust or debris before starting the laying process. This will also ensure good adhesion to the mortar bed.



Note that paving should not be saturated when being installed as it may not adhere to the base as well.



Beginning installation



With certain lower porosity stones, such as granite, some limestone, slate or Porcelain slabs, a bond bridge should be used to increase adhesion between the slab and the bedding course. The bond bridge should be a mixture of SBR bonding agent and ordinary cement. Mix in a bucket until a thick liquid is achieved and paint on to the underside of the paver immediately prior to laying. This mixture is extremely difficult, if not impossible, to remove once it has set so extra care should be taken not to get any of the mixture on the surface of the pavers. Remove any splashes with a wet sponge straight away.



We also recommend this for all types of paving to aid adhesion and it can also have the advantage of reducing the effects of picture framing, moisture staining and efflorescence.



Build a mortar bed



Take some semi-wet mortar and spread out a full bed, slightly larger than the first paver to be laid. Using a trowel, create peaks and troughs in the mortar. Place the paver on top of the mortar. At this point, the paver should be sitting higher than the string lines. Using a rubber mallet, tap the paver down until it aligns with the strings. The paver should be level along one plane and sloping on the other plane. Confirm this using a spirit level.

Use a white mallet for light coloured stone to avoid marking



Try and avoid using a mallet in the rain on freshly sealed stone. It can force water in and potentially damaged the sealant.



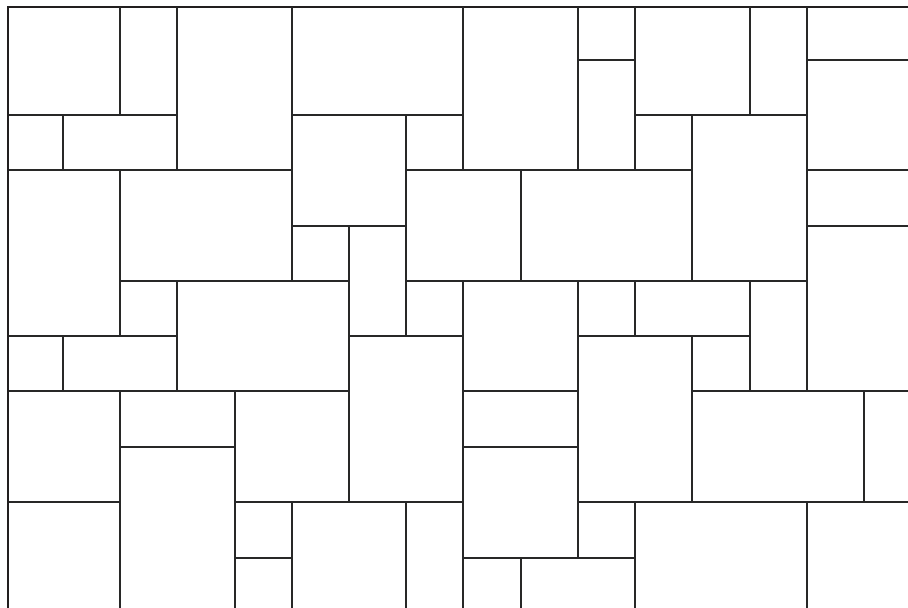
Always use a full bed of mortar. Never lay paving on dots and dabs of cement.



If you are installing Portland Limestone, always use river-washed sand and white cement to prevent discolouration to the stone.



Random size paving



When laying random paving, the rules to ensure the best result are as follows;

Never lay more than four slabs in a row so that their edges create a continuous straight line.

Never lay four slabs with their corners meeting at one point creating a cross'.

Lay roughly equal numbers of each size of paver. i.e. you want to avoid one half of the patio being made up of small pavers, whilst the other half uses only large slabs.

Balance the joints as you go working with the tolerances.



Regular size and single size paving



When laying single size paving, more string should be used. One more string should be laid parallel to the level line; this should be set as the gauge of paving +5mm away from the level line; i.e. when 600x600 pavers, the parallel line should be 605mm away from the level line. The height of the line will be governed by the fall lines already set. After this, the paving should be laid as previously described. Periodically check that the strings are in the correct position. When the row is complete, simply move the string the required distance along the fall lines for the next row of paving.

Repeat the process as required until the whole area is paved. Continue checking levels as you go with a spirit level or straight edge. Leave pointing gaps as recommended in the appropriate Product guide (pointing gaps will vary depending on the paving material used). Remove any mortar spills on the surface of the pavers as you go with a clean, damp sponge.



Take care during the installation process to clean any cement or mortar off the stone as you go. Cement can become lodged in the pores of the stone and, if allowed to go off, can be incredibly difficult to remove even with the use of cleaning products.



Stone step installation guide



Preparation of step base



Good preparation is key to the success of any successful bespoke stone steps installation. Step bases should be constructed using concrete blocks and built on top of strong concrete foundations. Step bases should also be flat and free of any protruding mortar. If possible try and design the step base to dimensions that minimise the number of cuts to be made to the steps. Any cavities should be filled with concrete or compacted DPT (MOT) Type 1.



Cavities must be filled with concrete or compacted DPT (MOT) Type 1 to provide an even surface to lay coping stones on.



Lay out mortar bed



Spread a layer of mortar across the base where the first step tread is to be fixed. The mortar bed should be approximately 20-25mm thick. Use a trowel to create peaks and troughs in the mortar bed. For extra adhesion the back of the coping stones should be painted with an SBR & cement slurry.



Mortar bed should be wet, but not sloppy. Bricklaying consistency is the correct mix.



If you are installing Portland Limestone, always use river-washed sand and white cement to prevent discolouration to the stone.



Installing the first step tread



Lay your first step tread onto the mortar bed and using a rubber mallet and spirit level, tap the step tread down to the desired level. The step should be level from left to right and a small fall should be incorporated from back to front to aid water run-off.



Be sure to leave a fall back to front to prevent water pooling on the step treads



Installing the first riser



The riser should sit directly on top of the step tread with no gap between the top of the step tread and the bottom of the riser. Butter the back of the riser with the same mortar mix as used to lay the step tread with. Firmly press the riser against the step base. Using a small spirit level check that the riser is level vertically and using a tape measure check that riser is square to the step tread that it sits upon.



Check that the riser is vertically level and square to the step tread that it sits upon



Lay the remaining steps and risers



Using the techniques as described above, continue to lay all the step treads and risers until complete. Be sure to continually check the levels with a spirit level. Mortar spills can be a common occurrence during step installation. Have a bucket of clean water and sponge close to hand and clean up any mortar spills immediately as they happen



Clean up any mortar spills immediately



Coping stone installation guide



Preparation of walls



Good preparation is key to the success of any coping stone installation. Walls should be constructed using concrete blocks and built on top of strong concrete foundations. Walls should also be flat and free of any protruding mortar. If possible try and design the walls to dimensions that minimise the number of cuts to be made to the coping stones. Any cavities should be filled with concrete or compacted DPt (MOT) Type 1.



Cavities must be filled with concrete or compacted DPt (MOT) Type 1 to provide an even surface to lay coping stones on.



Lay out mortar bed



Spread a layer of mortar across the base where the first coping stone is to be fixed. The mortar bed should be approximately 10-20mm thick. Use a trowel to create peaks and troughs in the mortar bed. For extra adhesion the back of the coping stones should be painted with an SBR & cement slurry.



Mortar bed should be wet, but not sloppy. Bricklaying consistency is the correct mix.



If you are installing Portland Limestone, always use river-washed sand and white cement to prevent discolouration to the stone.



Installing the first coping stone



Lay your first coping stone onto the mortar bed and using a rubber mallet and spirit level; tap the coping stone down to the desired level. The coping stone should be horizontally level. A small fall should be incorporated back to front to aid water run off (This step is not required with weathered coping stones). Using a tape measure, check that the coping stone is square to the wall.



Be Sure to check the coping stone is square to the wall



Lay the remaining coping stones



Using the techniques as described above, continue to lay all the coping stones until complete. Be sure to continually check the levels with a spirit level. Mortar spills can be a common occurrence during coping stone installation. Have a bucket of clean water and sponge close to hand and clean up any mortar spills immediately as they happen.



Clean up any mortar spills immediately