Laying Pavers Installation Guide

You will need...

- Pavers
- Spade, rake (metal prongs), wheelbarrow, wooden stakes, string line, tape measure, pegs and spirit level
- Mechanical plate compactor (available from plant hire store, consult your supplier for weight requirements).
- Piece of carpet or rubber mat (to protect pavers when compacting) Bedding sand (Recommend: coarse washed river sand)
- Base layer (Generally: road base material, as found in your local sand and soil supply store, or well crushed rock)
- Screeding rails (e.g. 2 pieces of timber, approximately 3m long and 30 - 40mm thick)
- Screeding board (e.g. a flat straight piece of aluminium or timber, approximately 3m long)
- Spirit level (available from hardware stores) Jointing sand (Recommend: fine washed sand)
- Sand and cement for edge restraints
- Rubber mallet and hardwood plank (for small jobs only)
- Hammer and bolster
- Paver cutting equipment (e.g. brick saw available from plant hire store) or bolster

Safety tips

1. Check your equipment.
2. Ensure that you read the operating manuals of all equipment including hired equipment such as plate compactors and cutting equipment.
3. Check the condition of hand tools such as hammers etc, to make sure that they are in a safe working order before use.
4. Always operate equipment according to the manufacturer's instructions and wear the appropriate safety clothing listed by the manufacturer.

1. Planning

Before starting any project around the home it is necessary to make careful plans. A plan of the area to be paved should be drawn accurately, see figure 1 for a sample site layout.

Tip: Don't forget to provide for storm water run-off along with the required utilities that need to run under the paved area, such as storm water pipes, water pipes for a sprinkler system and electrical wiring for external power points needed for ponds, fountains and lighting.

Tip: If further work is required around the site, such as retaining walls, check that access will still be available after the paving has been completed.

2. Determine Materials Needed

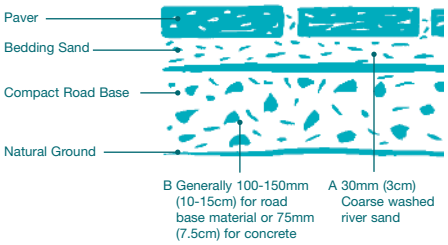
The quantity of pavers needed will depend on the area to be paved, see figure 2 for tips on calculating the paving area. This can be determined from the measurements taken from the site. This area is simply calculated by: Length(m) x width(m) = area(m2) (m = metres) You could also use our on-line calculator.

Tip: Allow up to 10% extra pavers for wastage such as cuts and breakages etc.

3. Preparing the Site

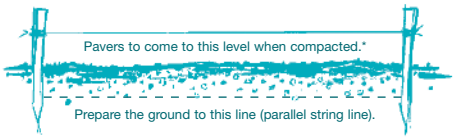
When determining your finished paved surface level remember to consider the following: Paving must slope away from the building; Allow for the depth of the base layer, bedding sand, the paver thickness less 10mm for settlement after compaction (see figure 3). Pavers should be flush with the lawn. Excavate the area to be paved: Check the level and depth of the base by measuring from a string line (see figure 4). Ensure the ground level is even. Replace wet patches, loose or soft areas with a sand cement mix or compacted road base to create a stable base.

Figure 3



Tip: It is essential that rain water flows off the paving and away from buildings. To ensure this paving must not be completely flat, it should slope away from building. If the paving is against the side of a building, the pavers need to be a minimum of 25mm (2.5cm) below the damp proof course to prevent rising damp problems in your home. The damp proof course and air vents should never be covered.

Figure 4



How much ROAD BASE will you need?

For a strong foundation, your paving may need road base. If you are paving a driveway or on an unstable site, it is recommended that you consult a suitably qualified engineer. Generally, road base is layed to a total depth of 100 to 150mm (10-15cm) around the entire area. For driveways, compact for every 50mm (5cm) layer and for pathways compact for every 60mm (6cm) layer.

_____ m^2 x [layer depth (mm) / 1000] =
_____ m^3 ROAD BASE
(Paving Area)

How much BEDDING SAND will you need?

After the road base you will need to lay bedding sand evenly to a depth of 30mm (3cm) over the entire area. For 10m^2 compacted to a depth of 30mm (3cm) you will need 0.3 cubic metres.

_____ m^2 x [30mm / 1000] =
_____ m^3 BEDDING SAND
(Paving Area)

How much PAVER JOINT

FILLING SAND will you need?

When laying pavers on the bedding sand it is recommended that a 2 - 3mm gap is left between pavers. Quantity will depend on type of paver.

How much sand cement mix will you need?

Sand cement edge restraints may be needed to keep the pavers from shifting. They can be easily made with a mixture of sand and cement. For 200 lineal metres of restraint you will need approximately 1 cubic metre of sand and cement mix. Refer to your local supplier (e.g. hardware store) for pre-bagged sand and cement mixes.

Figure 1 Site layout & paving steps

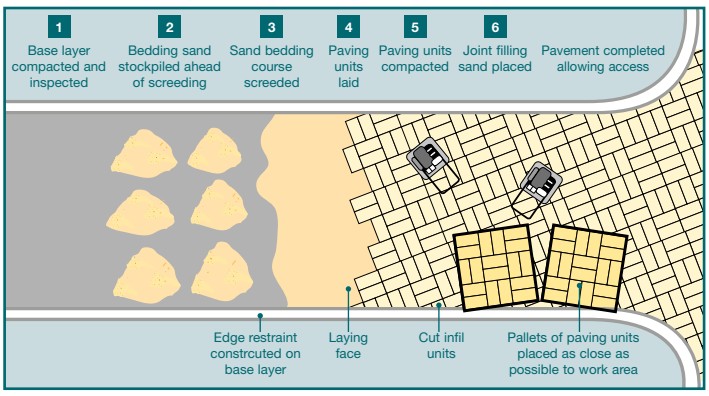
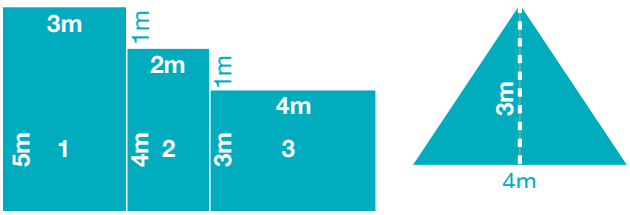


Figure 2 Calculate the area

For odd shapes, break your area into sections.

1) 5m x 3m= 15m^2
2) 4m x 2m= 8m^2
3) 3m x 4m= 12m^2
Total = 35m^2

For triangular areas:
1/2 x base (m) x height (m) = area (m^2)
e.g. 1/2 x 4m x 3m = 6m^2



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4. Base Layer
Spread the base layer (Generally: road base material or well graded crushed rock) evenly over the prepared ground. Rake to an even thickness before compaction. Compaction of road base is usually performed using a mechanical plate compactor (see figure 5). It is recommended that the road base is compacted in 2 - 3 layers, not in one single layer.

Figure 5

Tip: When paving driveways or unstable sites, it is recommended that you consult a suitably qualified engineer.

5. Bedding Layer
Spread and screed a coarse, well graded washed river sand. The easiest way to screed sand flat is to use two guides (screeding rails) and a screeding board.

Place screeding rails in position so that they slope enough to shed water (check with a spirit level), then spread a layer of bedding sand over the rails.

Pull the screeding board over the screeding rails to obtain a uniform depth of approximately 30mm (3cm) (see figure 6).

When the sand is screeded remove the guides and fill in the tracks with bedding sand and smooth off.

Tip: An uneven base will give an uneven paver surface. Check with a spirit level.

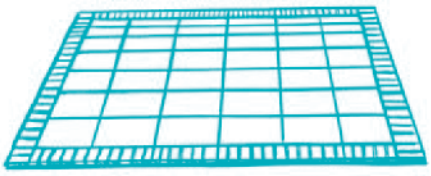
Figure 6

Tip: Crusher dust and mixing sand with cement are not recommended.

6. Laying the Pavers
Setting out - The best way to ensure your paving pattern stays in line is to use set out lines.

Use two string lines at right angles to keep the paving joints straight. When setting up the grid remember to add 2 – 3mm to each paver width to allow for the gap between each unit.

Figure 7

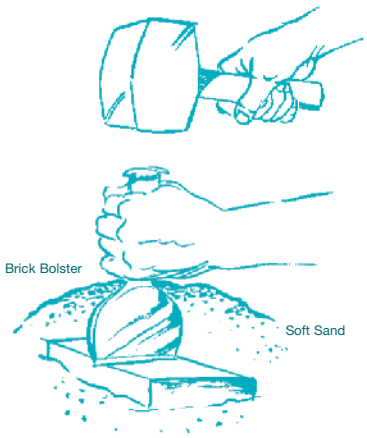


When laying:
Place the pavers gently on the sand bed leaving a gap of 2 - 3mm between each unit, unless the pavers have nibs (this prevents chipping). Disturb the bed of sand as little as possible, you may stand on the centre of the pavers already laid but be careful not to stand on the leading row of pavers as they may tilt and shift the flat sand. Select the pavers down the side of the pallets and randomly from different pallets to ensure an all over blend.

Cutting Pavers:
After laying all full-size pavers, the part-size pieces can be measured and cut. Cutting (splitting) can be done with a hammer and bolster. A scutch hammer will be required to trim away any projections in the split. (See figure 8)

For a neater cut, use a water-cooled diamond blade saw. After cutting, the part-pavers must be washed clean of saw grindings. These grindings may be invisible while wet but if allowed to dry, will appear as pastel-coloured stains, cemented to the paver and be very difficult to remove.

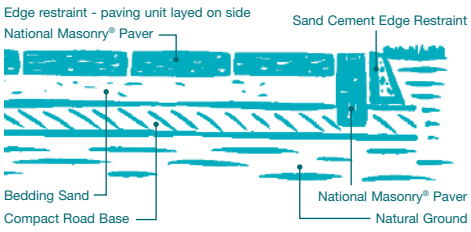
Figure 8



Edge restraints prevent the pavers from moving horizontally and also restrain the sand and road base (see figures 9a and 9b for possible options for edge restraints). For final compaction, the restraints should be approximately 10mm (1cm) below the pavers before compaction. Edge restraints can be made of treated timber, concrete (essential for driveways) or a paving unit on its side.

Figure 9a

Figure 9b



7. Joint Filling
Once the pavers are laid, sweep dry fine graded sand over the paved area ensuring that all joints are full.

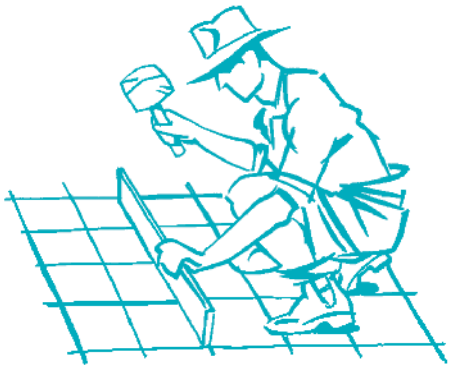
Tip: Do not mix cement with the jointing sand or the pavers may be stained.

8. Compacting the Pavers
To secure the paving in place (50mm or thicker), compact the pavers using a mechanical plate compactor with a piece of carpet or rubber mat under the compactor to prevent the pavers from being scratched or damaged. After each pass of the compactor sweep in more jointing sand and compact again before sweeping off excess sand (see figure 10).

Figure 10

For pavers less than 50mm and small areas, pavers can be compacted by using a hammer and a hardwood plank (see figure 11) or a rubber mallet.

Figure 11



For driveways it is recommended that a minimum of 3 passes are carried out with a mechanical plate compactor. Bedding sand should generally compact approximately 10mm (1cm).

Laying Pavers Installation Guide

Millstone

Esplanade

Urbanpave

Esplanade

Laying Pavers Installation Guide

Caring for your pavers

Find detailed information and download more guides at our website - www.nationalmasonry.com.au

Prevention is better than cure

- Sweep regularly with a stiff bristled broom to keep pavers free from debris.
- For maximum protection we suggest pavers are sealed after installation with a penetrating sealer. Please check with a reputable sealing company for advice.
- Seal pavers with a penetrating sealer before grouting to avoid grout smears.
- Re-seal pavers as required paying extra attention to heavy wear area locations.
- During construction, cover the paved areas to protect against damage.
- Protect your pavers against possible staining from mortar, oxides, cement and rust.
- Do not use acid to clean pavers.
- Do not use high pressure cleaning apparatus to clean pavers.
- In all cases, attempt to clean a stain before it hardens or dries.

If a stain occurs, follow some simple steps:

- Assess type of stain carefully before taking action (incorrect assessment of stain can cause the stain to be more difficult to remove).
- If stain cannot be accurately assessed, conduct a trial process on a small portion of stained area to determine most appropriate action.

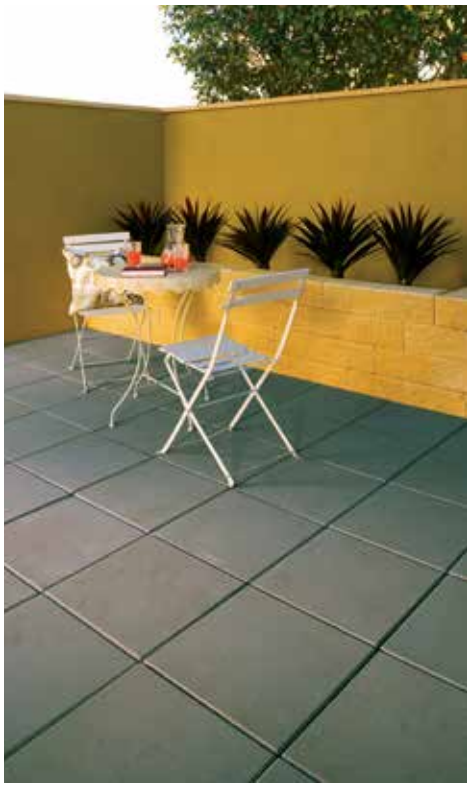
Sealing

National Masonry® recommends that all pavers should be sealed with a quality penetrating sealer following installation. Please check with a qualified tradesperson for advice on this process. National Masonry® does not accept liability for stained or damaged pavers.

** For Millstone pavers, National Masonry® recommend a semi-penetrating sealing to aid gap sand adhesion.

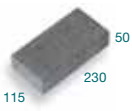
Handy Paving Tips

- Always remember to include a 2 - 3mm gap between each paver when laying
- When paving against a house it is recommended that the top of paving is a minimum of 25mm (2.5cm) below the damp proof course. It is also advisable to place a plastic membrane against the exposed concrete of the house footing
- When paving a slope, it is important to start at the bottom and pave up the slope

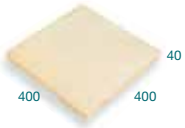


Large format pavers are larger than or equal to 300mm (length) x 300mm (width) and small format pavers are less than 300mm x 300mm. Your choice will depend on the look you wish to achieve.

Select the paver size you prefer.



Small format rectangular paver



Large format square paver

Select a colour that complements your area.

PROBLEM	SUGGESTED CLEANING METHOD
Efflorescence* (White powdery deposit)	Use Environex Anti-EFF or equivalent as per manufactures recommendation.
Leaves, bark, algae, food and wine stains	Use 10 part water to 1 part bleach, then wash^ down.
Chewing gum	Freeze with dry ice and remove with a spatula.
Ivy suckers	Apply a heat gun to the suckers until they go hard. Allow them to cool and dry, then scrub them off with a stiff bristled broom.

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