

# Technical Installation Manual



## MATERIALS and DEFINITIONS

### Natural Paving

Natural Paving is a flexible plastic honeycomb cell mat used to stabilise pebbles. It has a strong permeable weed resistant geotextile strongly welded to the bottom of the mat. The mat is 30 or 40mm thick and the cells are 36 or 42mm across. Mats are large and easy to lay. Natural Paving is placed on a prepared base then pebbles spread to form beautiful and stable paved areas.

### Choosing the correct grade and colour

There are three grades. Each grade is available in cream and dark grey colours.

- Path grade is used for garden paths, public walkways and cycle-ways. It is also good for hard stand areas for boats, caravans and trailers providing a suitable base course is installed.
- Vehicle grade is for residential and commercial driveways including SUV's, trucks and buses.
- Grass grade is for stabilising and protecting grass areas for driveways and parking areas you want to keep green, protected and looking good.

### Sheet Sizes

Path Grade sheets measure 0.8m x 1.2m (0.96m<sup>2</sup>) and have a height of 30mm

Vehicle Grade sheets measure 1.15m x 2.14m (2.45m<sup>2</sup>) and have a height of 38.5mm

Grass Grade sheets measure 1m x 1.15m (1.15m<sup>2</sup>) and have a height of 40mm

### Pebbles

- Use pebbles or gravel to fill the cells to form your Natural Pavement. Pebbles can be river gravel, quarried pebbles, manufactured pebbles or crushed gravel.
- Use clean pebbles with a grading from 8mm to 14mm.
- Try to get 'well graded' pebbles. (Well graded means there is pebbles right across the size range). They pack better and are more stable.
- Clean, no fines pebbles prevents dust or mess getting into your house.
- Rounded pebbles are kinder to bare feet.
- On slopes from 5 to 10% (1 metre up for 10 metres along), any pebbles are OK. Steeper slopes are better with an irregular pebble. Slopes in excess of 10% should use a crushed gravel so the stones don't roll. This means you can form gravel driveways up inclines. Crushed gravel is an exceptionally stable fill for in Natural Paving.
- Special tip to save money when using very expensive decorative pebbles.

If you fill the cells by spreading a grade 5 sealing chip then sweep the surface HARD with a stiff yard broom, you can empty the cells by about 5 to 10mm. This leaves room for a topping of your decorative pebbles. Because the pebbles are 'locked in' by Natural Paving, they won't mix, and you can enjoy the special pebbles economically.

Grass Grade can be seeded or covered with Readylawn or similar. When using Readylawn style products, fill the cells of the grass grade  $\frac{3}{4}$  full with soil, roll the lawn over the cells and run a lawn roller over to bed. Leave to establish as per the supplier's instructions.

### Pebble quantity calculator

- Path Grade holds 77kg or 45 litres of pebbles per square metre (1 m<sup>3</sup> pebbles will cover 22m<sup>2</sup>, or One tonne pebbles will cover 13m<sup>2</sup>)
- Vehicle Grade holds 94kg or 55 litres of pebbles per square metre (1 m<sup>3</sup> pebbles will cover 18m<sup>2</sup>, or One tonne pebbles will cover 10.7m<sup>2</sup>)

### Edging

Use any edging that suits your job. Edging is required to protect the edge of the pavement. Install the edging 20 to 25mm above the mat surface to retain the pebbles.

### Mud stop

Mud-stop is a geotextile that is placed on the sub-grade to stop mud or clay mixing with the base course. When the sub-grade mixes with the base course it weakens the pavement.

### Sub-Grade

The Sub-Grade is the foundation surface after you have finished your excavation to build your pavement.

### Drainage coil

Drainage coil is a plastic pipe full of holes that can collect ground water. Wrapping the drainage coil in a filter fabric geotextile keeps the holes clear. If conditions require a drainage coil to collect water, dig a trench to carry the coil, install it lower than the sub-grade and at a slight gradient so the water drains. Lay mud-stop under the drainage coil.

### AP7 or Crusher Dust

AP7 is sometimes referred to as Crusher dust. It is a crushed gravel that all passes through a 7mm screen. It is used to contour the surface prior to laying Natural Paving mats.

### Base Course

Base Course is a grade of gravel called AP40. This means that the gravel has been quarried or is from a rock crusher, and put through a grading plant. The gravel will all pass through a 40mm sieve. This material is commonly available from gravel merchants and landscape product suppliers. It needs to be compacted with a plate compactor in layers less than 100mm thick to give a good foundation.

# INSTALLATION GUIDELINES



## 1: EXCAVATION and PREPARATION

Excavate to form sub grade at a depth suitable for your pavement.

### Path Grade:

Remove topsoil. Excavate 100mm

### Vehicle Grade:

Excavate 210mm or more if required. The minimum recommended depth of basecourse is 125mm. For the driveway to carry SUV's and occasional trucks add 50% (65mm) to the depth of the base-course.

If required for handling water, and the sub-grade is impermeable, contour the sub-grade so water will drain to a filter fabric wrapped drainage coil, and excavate trenches and runoff areas for drainage coil, or connect it with the storm water drainage.

If required because of soft, wet or clay foundation conditions, lay mud stop on the sub-grade.



## 2: LAY THE BASE COURSE

### Path Grade:

Use AP7 to a depth of 65mm then compact or roll it to a compacted depth of 50mm. Screed the surface so it follows the contour you want to achieve for your path or paved area.

### Vehicle Grade:

Lay AP40 basecourse and compact it with a plate compactor to a compacted depth of 125mm or more if required.



## 3: INSTALL THE EDGING

Edging is required all around your paved area. It protects the edge of the Natural Paving mat, retains the pebbles on the mat, and makes a suitable edge so mowers don't fling pebbles. You can use any material for edging, or butt the mat against walls or existing paved areas

For pathways, place the edging on the subgrade, but for driveways you lay the base course first.



## 4: BEDDING LAYER

Lay a 35 to 40mm layer of bedding material on the compacted base course (on the sub-grade for Path Grade). Screed the bedding material to contour the surface close to the finished shape, and compact it. Bedding material is AP7 or bedding sand.



## 5: LAY THE NATURAL PAVING MATS

Natural Paving mats are large and easy to lay. They have geotextile welded to the base to anchor it down and prevent weeds growing through it. At two edges of the sheet there is an overlap area in the mat that gives continuity to the weed resistance. There is no clipping together required. The mats can be cut with a hand saw, circular saw, cut off disc. You can easily free form the mats to follow complex shapes.



## 6: SPREAD THE PEBBLES

Pour your pebbles or gravel onto the mats and spread with rakes or the like. The pebbles will settle into the mats over time, so fill the mats 20mm deeper than the mat surface and it will settle to a long term thickness of about 10 to 15mm over the top of the mat. This hides the mat so it is invisible, and protects the mat from the sun.

## 7: MAINTENANCE

Other areas the surface can be maintained with any cleaners made for hard paved areas. Oil drips can be easily removed by scooping up the pebbles. If the pebbles settle, add sufficient pebbles to hide the Natural Paving mats by 10 to 15mm.

## Things To Consider Before Starting Your Natural Pavement Job

To create a long lasting paving area, consider the following factors:

- How much traffic will the path or driveway carry? More, and heavier, traffic means making the base course thicker. Occasional trucks and SUV's can drive on Vehicle Grade with no detriment if the base course is 50% thicker.

- If the sub-grade is soft or clay, and the pavement is for cars: use a mud-stop geotextile on the sub-grade to stop mud mixing with the base-course.

- If the area is boggy, the base course should be thicker and the sub grade should have a mud stop geotextile to stop soft wet sub-grade soil, or clay, mixing with the base course. It may also be an advantage for the finished level of the path to be higher than boggy ground.

- Soft spots in the sub-grade need more excavation.

- Natural Paving is permeable. Water from rain and irrigation will soak straight through. Considering what happens to this water is important if your pavement is carrying vehicles. Water needs to soak away from under the pavement. This can use the natural fall of the land or the inherent permeability of the sub-grade.

However if your excavation is into clay, you need to design the excavation so it will not hold water like a bucket. You have to make an exit for the water. If the area is flat, slope the sub-grade to a shallow trench along one side of the paved area and lay a drainage coil wrapped in filter geotextile in this trench (on top of the mud-stop). Connect the outlet of the drainage coil into a storm-water drain, or a soakage trench away from under the pavement.

- If the area beside your paving is to be mowed, plan your edging to protect the pebbles from the blade.

- If the paved area is for trucks or buses, obtain a pavement design from a proficient pavement design professional, or contact Natural Paving for advice.



# NATURAL PAVING

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