

This document is intended to be used as a guide only. It is the responsibility of the installer to follow the relevant trade practices and New Zealand standards when installing Horizon products.



# INSTALLATION AND MAINTENANCE GUIDELINES

**PLEASE READ BEFORE UNPACKING YOUR PRODUCT**

**IF UNSURE, DON'T INSTALL! PHONE 0800 682 745**

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## TRANSPORT + UNLOADING

Orders are usually unloaded on site by Hiab crane truck unless otherwise requested.

Whilst every effort will be made to place the pavers where requested on site, Horizon's obligation is to deliver kerbside only. The delivery driver will assess the site and will not complete the delivery inside the property if he considers the conditions to be unsafe or likely to cause damage to equipment or property.

*If the delivery driver is instructed to enter the site by the customer, neither Horizon nor the delivery driver will be responsible for any damage to property or products while on site.*

## CHECK YOUR PRODUCT

As soon as your Horizon product is delivered, check the pallets for any obvious signs of damage. Notify us if you have any concerns by phoning us on 0800682745.

Once the product is unpacked and prior to installation, if you or your contractor has any concerns about the appearance of the product, halt the installation, take photographic evidence of the issue, and phone Horizon to discuss. It is far more difficult to rectify any issues following installation.

*If evidence of the damage cannot be provided, either in photographic format or by returning the damaged product to us, Horizon will not be held responsible for replacement of the product.*

## STORAGE PRIOR TO INSTALLATION

### PAVERS SHOULD REMAIN WRAPPED AND SEALED UNTIL READY TO BE INSTALLED.

It is ideal for your Horizon product to be installed within two weeks of delivery to site. If the installation date is delayed, it is preferable to postpone your delivery date and leave the pallets stored in Horizon's warehouse, or at the very least to ensure they are stored in a place on site that is not exposed to the weather or any form of moisture or extreme temperatures.

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Although the product is properly cured prior to despatch, there will always be some moisture evident when the product is first unwrapped. This moisture retention is a result of the product curing while wrapped in plastic. This in effect aids the curing process, and adds to the long term strength and durability of your product.

PLEASE NOTE that if the protective wrapping deteriorates - or is partially removed - and the product is left on pallets for an extended period, discolouration may occur. This discolouration is caused by the outer edges of the product being exposed to different elements and temperatures than the product in the middle of the pallet. It is often referred to as 'differential drying', and may not be reversible (and so should be avoided at all costs).

*Horizon will not be held liable for any discolouration or staining caused to product that has been stored incorrectly and/or for an extended period of time.*

## HANDLING + UNPACKING YOUR PRODUCT

As part of the installation process, your product may be required to be double handled and re-stacked prior to laying. If this is the case, the best option is to re-stack them on a pallet in the same format that they arrived, making use of bubble wrap and other packing materials supplied.

When re-stacking your product, every care should be taken to avoid damage to the product surface, corners and edges. If not re-stacking on a pallet, as a minimum, the base product should be placed on an even, stable surface, with a protective material placed between each layer of product. Once re-stacked, the product should be fully re-wrapped to avoid differential drying (see above for more information).

**PAVERS MUST NOT BE RE-STACKED IN A CRISS-CROSS FORMATION.**



**PLEASE NOTE:**

**STACK YOUR PAVERS CORRECTLY, WITH A PROTECTIVE MATERIAL BETWEEN EACH LAYER OF PAVING, TO AVOID DISCOLOURATION AND MARKING.**

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Stacking of product units in a criss-cross formation directly on top of each other causes the corners of the pavers to dry at a different rate to the body of the paver, resulting in colour variation which is often permanent. Even stacking criss-crossed for short periods of time prior to installation can cause markings to appear on the surface.

*Horizon will not be held liable for any structural or colour defects in product that has been unpacked and re-stacked.*

## PRE-SEALING

The pre-sealing of Horizon products is usually left to the discretion of individual paving contractors. Horizon have the ability to preseal pavers in the factory at time of manufacture. The option is for the installation contractor to seal the pavers "in situ" at time of installation.

**PLEASE NOTE:** If you do choose to seal your Horizon product "in situ" it must be thoroughly cleaned prior to application of sealer. See ACID WASHING + CLEANING below for the correct cleaning methodology. Any cement residue or markings on the pavers may be harder to remove once sealed.

*We recommend you speak to an experienced cleaning and sealing contractor PRIOR to commencing installation. Phone Horizon on 0800682745 for recommendations on the right sealing product and contractor to suit your individual project requirements.*

## INSTALLING YOUR PRODUCT

Horizon strongly recommends that our products be installed by an experienced contractor.

*For all installation enquiries, please contact Horizon on 0800682745 PRIOR to commencing installation.*

## A: INSTALLATION ON A RIGID BASE

In most cases, the larger Horizon products are installed on a reinforced concrete base. This is also our recommended method of installation, as a rigid pavement is not susceptible to differential movement (i.e. pavers that are laid on a flexible base coarse can settle as the ground below compresses due the increased weight. This settlement can be different across the site which leads to the pavers settling at different levels).

### 1. ENSURE YOUR CONCRETE SLAB IS FIT FOR PURPOSE

Paved areas that will be subject to vehicular traffic require a different degree of preparation to areas that will be subject to pedestrian traffic only.

*Horizon recommends consulting a structural engineer to determine the site specific thickness and reinforcement requirements for your concrete base slab.*

Carefully assessing the site and installing adequate drainage is essential. Many issues can arise from the pooling of excess water in and around the base slab. It is the responsibility of your contractor or project engineer to ensure that sufficient allowance has been made on site for drainage.

It is imperative that the concrete base slab is properly cured prior to installation.

### 2. WATERPROOF YOUR CONCRETE SLAB

Efflorescence (salt displacement) can occur in paving areas. Salt attack is the result of efflorescence, and refers to the decay of masonry materials by soluble salts that normally reside in the soils below a paving structure. These salts will either accumulate in the pores of the paving units or be evident on the surface.

To avoid salt attack, Horizon recommends including a waterproof membrane as part of the installation of the concrete slab, and prior to the application of mortar and your Horizon product.

### 3. TAKE CARE WHEN INSTALLING LARGER FORMAT PAVERS/COPING

The range of paver sizes available combined with landscape design trends now sees more and more clients choosing larger format pavers and pool coping. The installation of larger units requires more care and attention to ensure your product does not curl at the edges or fail to adhere properly to the base (in the case of a

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rigid installation method). Curling is a phenomenon associated with all larger format paving and coping products.

If you have purchased a 600x600mm or larger product, we strongly advise you contact us to discuss the installation method that is ideal for your specific site conditions, the intended usage of the area, and your choice of product.

It is critical that the mix design for bedding material and the methodology for installation is suitable for larger format product. **Installation with tile adhesive (glue) is the most foolproof method of installation for** larger format pavers and pool coping products. See INSTALLATION WITH TILE ADHESIVE below for more detailed information.

#### 4. TAKE CARE WHEN INSTALLING DARKER COLOURED PAVERS

Whilst manmade pavers will generally not absorb as much heat as natural stone, it is important to note that darker coloured product absorbs more heat than lighter coloured product.

When installing darker coloured product (such as our Porfido, and Pietra ), it is imperative that extra care be taken to include expansion joints where required, to use the right admixture in the mortar mix (ensuring as strong a bond as possible), and to completely avoid installation on particularly hot days.

#### 5. TAKE CARE WHEN WORKING IN WARM CONDITIONS

Excess heat can lead to rapid dehydration of the laying system. This can lead to debonding from the mortar bedding or adhesive and rapid expansion and shrinkage of the product material.

If the day of installation is particularly warm, it is very important to employ a technique to keep the product cool while it is being installed, such as: using a hose to wet the pavers down, or setting up a shade cloth to keep the work area in shade. *PLEASE NOTE that it is preferable to avoid this scenario entirely, and to install once the weather has cooled down.*

Mortar ingredients left for prolonged periods in a wheelbarrow, bucket or cement mixer on a hot day will lose their structural integrity. If the mortar mix is allowed to dry out prior to installation it will not bond properly. Under no circumstances should you re-hydrate your bedding material once mixed. Cement that has been rehydrated will become weaker, and may affect the rigidity of the entire paving structure.

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## 6. DO NOT INSTALL IN WET CONDITIONS

Do not install products in wet (rainy) conditions. This will over-hydrate the laying system, affecting the bond and integrity of the mortar mix.

## 7. EXPANSION JOINTS

Expansion joints are a critical part of the design process for all paved areas and pool surrounds in both residential and commercial applications. They must be planned for PRIOR to installation.

Changes in temperature will cause movement in the paving system. Grout cracking, de-bonding of the product from the base slab and hairline cracks in the product may occur if expansion joints are not included in the paving plan.

A flexible caulking material (i.e. a professional silicone-based product, NOT cementitious grout) should be used to create expansion joints. The location of the joints should be addressed at the design stage of the project. If expansion joints have not been taken into account, consult with your installer before installation commences to avoid any issues with movement of the structure.

It is imperative to run expansion joints **BOTH WAYS** (horizontally and vertically).

**Expansion joints must extend beyond the grout line between the pavers and into the concrete base.** It is not sufficient to install a flexible joint that does not extend down into the concrete slab beneath. PLEASE NOTE that any expansion joint that is more than 10mm deep must have a foam backing or filler rod applied to the joint prior to the flexible caulking material being applied.

*Horizon recommends consulting a structural engineer to determine the site specific location and number of expansion joints required.*

Where installing larger or darker-coloured pavers (see above for more detail), extra expansion joints may be required. This may be as many as once every three metres (both ways) or more, depending on the specific site conditions and your chosen paving layout.

For commercial applications we strongly suggest that you obtain advice from an engineer.

Expansion joints for the pavement ideally should mirror that of the substrate however if the substrate joints are further apart this will not alter the need for expansion joints at three to four metre centres.

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Some paving patterns are not as conducive to the inclusion of expansion joints as others. For example, a stretcher bond (also known as brick bond) or can make it more difficult to plan for and execute expansion joints in regular intervals. For this reason, you are more likely to achieve the most aesthetically pleasing result by plotting your flexible joints on your paving layout, rather than including them as an afterthought during installation. It is possible to select a caulking material that is close in colour to your paving colour and/or grout colour. To determine an appropriate grout and caulking material colour combination for your project, contact your Horizon representative for advice.

Ensure that all joints are free of dust, debris and mortar prior to installation of caulking material.

*"It is up to the paving contractor to determine where [the joints] go based on the site conditions, pavement application, and pavement structure. Site specific structural engineering advice should be considered."*

## 8. PREPARE YOUR PAVERS FOR BONDING

A standard by-product of concrete paving manufacture is a light film of shiny cement that can be present on the underside of the paver. It is an important part of the installation process that this layer be removed by brushing with a wire brush or stiff broom. Failure to do so may result in this layer flaking off after installation and impeding the bonding of the underside of the paver to the mortar mix or glue. This cleaning process will also remove any dust, dirt or debris from the back of the paver that could interfere with the bonding process.

Please note that the concrete slab or screed surface onto which the product will be laid must also be free of dust and debris in order to ensure that bonding is successful.



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## 9A. INSTALLATION WITH TILE ADHESIVE (GLUE)

You must use an exterior tile adhesive product, as not all adhesives are designed to withstand outdoor conditions. When preparing the adhesive, it is imperative that you follow the manufacturer's instructions.

Ensure your concrete base has adequate fall to subsurface drains, and is flat.

Apply your exterior tile adhesive with a 10mm notch trowel to a minimum thickness of 3-4mm and a maximum thickness of 10-12mm (but all in one even layer - the glue itself must not be used as a levelling agent; this is the job of the screed bed), and lay pavers according to your nominated paving pattern. As detailed above, both the back of the product and the sub-base must be clean and free of debris prior to the adhesive being applied.

It is essential that you achieve full coverage (corner to corner) of the back of the paving or coping unit AND the concrete sub-base on which the product is to be laid.

**As with mortar-based laying, you must plan for and implement expansion joints when installing with tile adhesive (see EXPANSION JOINTS above for more information).**

## 9B. INSTALLATION WITH A SAND + CEMENT MORTAR MIX

This method is an alternative to using tile adhesive, and is ideal for larger format pavers and pool coping units .

You should plan for a mortar bed thickness between 20-25mm, and up to a maximum of 40mm. Too much mortar can result in shrinkage of the mortar bed, and therefore de-bonding of the product from the mortar.

Horizon recommends 4 parts sand to 1 part cement.

**These quantities must be measured properly, using a bucket, rather than gauged by shovel loads.**

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It is advisable to paste the concrete slab with an approved priming agent such as Sika Emulsion 93 prior to trowelling on your mortar bed. Please ensure this is a WET-ON-WET APPLICATION. It is also advisable to paste the back of each Horizon product (after the flaky concrete backing has been removed - see PREPARE YOUR PAVERS FOR BONDING above) with the same mixture prior to laying on your mortar bed. Again, please ensure this is a wet-on-wet application.

To determine which professional additive or adhesive is appropriate for your installation, we recommend you phone either Sika or Cemix on.

To ensure proper adhesion, each paving or coping unit must be worked into the base, rather than simply placed in position.

Under no circumstances should you re-hydrate your mortar mix if it dries out on a hot day. Throw it out and start again, or risk de-bonding between the mortar bed and the Horizon product.

## 10. CHECK THAT YOUR PAVERS HAVE BONDED BEFORE GROUTING

Prior to grouting, ensure your product has bonded successfully to the sub-base. If the method employed has not been successful, it is much easier to solve the issue prior to grouting the joints between product units.

Before grouting your pavers, always check to ensure that the correct coverage of adhesive has been achieved by lifting one paver and inspecting the base. The better the coverage, the stronger the system. If the correct coverage has not been achieved, it may be necessary to adjust your installation method before continuing with the installation.

### MOST MISTAKES BECOME APPARENT WITHIN THE FIRST 24 HOURS!

The day following installation, CHECK your work. If the pavers sound hollow (drummy) when tapped, they may not have bonded to your mortar or screed bed. If this is the case, your laying method is faulty, and must be reassessed before installation continues.

IF IN DOUBT, DON'T GROUT! Phone Horizon 0800682745 if you have any concerns.

## 11. GROUTING

The 600 x 600 x 40mm paver has a 1.5mm taper on all four sides. The specified size of the product module relates to the top of the product. **All other pavers have straight sides.**

**When setting out prior to installation, it is advisable to leave a 3mm gap at the base which will result in an 8mm grout joint on the surface.** PLEASE NOTE that not all Horizon products taper (for example, some of our pool coping and step coping units do not taper). Phone your Horizon representative for information specific to your product order.

There are two types of grout used for paving: a site-mixed sand and cement preparation, or a pre-mixed bagged grout.

Selection of grout colour is a personal choice. If using a pre-mixed grout, ensure it is compatible with masonry products in an outdoor application. To avoid unnecessary discolouration of your Horizon product during installation, it is advisable to select a grout colour that is close to the product colour. Excess grout (known as grout smear) can be removed from the product surface with an acid wash following installation (see ACID WASHING + CLEANING below for more information). That said, it is preferable to avoid smearing the surface of the product with grout during installation. A grout gun can assist with accuracy when installing grout.

If mixing grout on site, it is critical the batches are consistent to ensure uniformity (in both materials and water content). Horizon recommends a fine washed sand mixed at a rate of 3 parts sand to 1 part cement. It is also advisable to use a professional grout additive in site-mixed grout to aid the flexibility and adhesion of the grout (most pre-mixed grouts already include such an additive).

*A common error is adding too much water to the grout mix in an attempt to make installation easier. This is not desirable, as it weakens the grout (which will then become more susceptible to cracking and breaking out of the paving joints). The quality of the grouting process will impact on the final appearance of the paving.*

PLEASE NOTE that some grout cracking will occur on all paving installations, and is not a sign of a faulty installation method. To avoid even small cracks, and as an alternative to cementitious grout, you may choose to apply a caulking material to every joint (this is a step above caulking the expansion joints only). Caulking all joints in a body of paving can be a good solution when installing very large format paving or coping products (1000x500mm and above) which are more susceptible to movement and curling, even with the correct placement of expansion joints. It is possible to select a caulking colour that will complement your chosen paving or coping colour.

## B: INSTALLATION ON A FLEXIBLE BASE

Horizon pavers may also be installed on a flexible sand and compacted base course. It is, however, important to check whether or not the base will provide adequate support to account for the intended usage of the area; e.g. a driveway requires greater structural support than a pedestrian pathway. If in doubt, check with your installer or phone Horizon 0800682745 to discuss.

Please advise your Horizon staff if you are ordering product with the intention of laying on sand.

In the case of a flexible installation method, the base must be adequately compacted and have appropriate drainage.

**PLEASE NOTE** that installation on a rigid base (see above) is widely regarded as the best method of installation for quality paving products.

## C: INSTALLATION ON A PEDESTAL BASE

Should your landscaping project necessitate installation via an adjustable pedestal system, please refer to the pedestal manufacturer's specific installation guidelines before placing your order. Please state if the pavers are being laid on pedestals as we add additional structural components and "hone" the rear of the pavers to allow for easy installation.

Please contact Horizon for information on the Breaking Load of your selected paving product to ensure you have allowed for the right number and placement of pedestals beneath the paved area.

Installation via pedestal system does not require grouting.

## ACID WASHING + CLEANING

To remove any grout smear or dirt from the product surface, a light acid wash may be required following the installation of Horizon products. Acid washing is conducted after grouting and prior to sealing.

*Horizon recommends all cleaning and sealing should be carried out by experienced contractors. Incorrect cleaning methods may result in acid burn, or in the pavers being irreparably damaged by the harsh cleaning products involved. When in doubt, seek professional advice.*

The manufacturing process and storage of Horizon products may result in cementitious dust being present on the surface of the paver. When combined with the moisture contained in the wrapped pallet it may leave a light coloured film on the surface. This may also result in a bubble wrap imprint being visible on the pavers. These markings are removed during the acid washing process.

**PLEASE NOTE** that should you notice a difference in colour between your paving and pool coping, or between any two Horizon products of the same colour when installed side-by-side, it is most likely due to a small amount of trace honing or shotblastings residues and not due to a colour batch variation (which, due to our strict quality control standards, is highly unlikely). Some of our products are shot blasted whilst others are honed. Both surface treatments produce a light film of cementitious dust on the surface (as described above). This film must be removed via a professional acid wash following installation, which is best discussed with and carried out by an experienced cleaning contractor.

**REMEMBER - if in doubt, phone Horizon on 0800 682 745 for advice!**

## SEALING YOUR PRODUCT

Choosing not to seal your Horizon product won't affect its life span. However, it is generally accepted that all paving products are better protected from staining when sealed (particularly where tannin stains from leaves or decking, or organic stains such as animal droppings or food spills may become an issue).

Most commercial paving applications will perform better when sealed, due to high volumes of traffic and the higher likelihood of staining.

It is also advisable to seal paving and pool coping that are installed around a pool to protect the product from salt and other pool chemicals.

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In most cases a penetrating sealer is used on Horizon products. This type of sealer doesn't change the appearance of the paver. It is important to use a quality sealer. While the sealer will not prevent the paving from getting dirty, it does provide a level of protection which assists when cleaning.

Always ensure your Horizon products are properly cleaned and completely dry prior to sealing.

There are many types of sealers available. Horizon is happy to recommend a professional sealing contractor who can assist you with your requirements. Phone us on 0800682745 for more information.

Horizon have the ability to preseal the pavers whilst they are in the process of manufacture. This will ensure that the pavers have maximum protection whilst being installed and is a cost effective process.

*All references to sealing are in relation to protecting the surface of the paving from staining. Depending on specific site conditions; paving products, mortar beds and sub base can be adversely affected by the ingress of moisture, which facilitates the mobilisation of salts and minerals which in time can be detrimental to paving. Adequate drainage and waterproofing of hard surfaces should be addressed and included in the landscape design process. Surface sealing does not address this issue.*

## MAINTENANCE + STAIN REMOVAL

Your Horizon products will require minimal maintenance, particularly when professionally sealed.

A broom or high pressure hose is all that is needed for general maintenance to move dirt and dust from the surface. For stubborn stains, chemical-based cleaning products may be required.

PLEASE NOTE that Horizon recommends employing a professional to carry out all stain removal. Chemical cleaners can damage the product if not applied correctly.

In the event of organic stains such as animal droppings or leaf tannins, an alkaline product such as bleach may be used to remove the stain.

In the event of non-organic stains, a light acid wash may be the more appropriate treatment. Again, acid washing is best performed by an experienced cleaning

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contractor (see ACID WASHING + CLEANING above for more information). An acid wash that is not properly neutralised can burn the product.

Neither acid nor bleach will damage the sealant layer if applied correctly.

*If you require any further information on maintenance and/or stain removal, don't hesitate to contact us on 0800682745.*