



Porcelain Pavers Installation Guide



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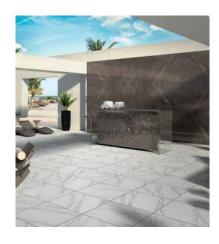
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Cover image is Ardesie.

HARDSCAPES BELGARD.COM

Porcelain Pavers Installation Guide: Introduction

Porcelain Pavers Contractor Installation Information

PRELUDE:

This installation manual is designed to be used by professional hardscape contractors and assumes they are already familiar with the proper construction techniques; design considerations and have the required skills for the installation of interlocking paving stones. It further assumes that the contractor has access to the required tools for such construction.

INTRODUCTION:

Belgard Porcelain Pavers are formed by pressing, followed by vitrification: this process involves the total fusion into a single material made from natural raw materials (sand, quartz, feldspars, kaolin, clays and inorganic pigments) which, fired at temperatures above 2240°F, are transformed into a product with exceptional hardness, ultra-low absorption rate and unmatchable mechanical characteristics. Belgard porcelain pavers are eco-compatible and ecolabel-certified. Each unit is 20mm (0.7874") standard thickness or ³/₄" nominal thickness and is durable enough to withstand use in exterior applications.

Porcelain Pavers ADVANTAGES:

- Freeze thaw resistant—they are 100% frost-free and their properties remain unaltered at temperatures ranging from -60°F to +140°F.
- Color durability—color is fused by vitrification, becomes an integral part of the porcelain surface and is not affected by elements.
- Easy installation—perfect fit and for fast installs
- Low absorption rate—spills, salt and other materials will not seep into pours
- Easy to clean—household cleaners can be used to wipe down spills and dirt; can even be pressure washed with a low pressure washing device* (see pressure washing below).*
- Stylish—matches what homeowners are currently doing inside the home
- Durable—high breakage loads of up to 2,200 lbs. allows for breakage reduction
- Resistant— High compressive strength and ultra-low absorption rate creates a dense surface that resists mold, moss, dirt and other staining.
- Skid-resistant—structured paver top textures create non-slip surfaces for safety; perfect for around pools/spas or in wet climates
- Modular Design—Superior accuracy in dimensional sizing and linear sides, the slabs allow for perfectly executed installations with tight and accurate lines
- Light weight—37 lbs. for the 24"x24" paver permit for easy installation, removal and serviceability and even reusability (Excluding adhered installations)
- Available in colors that have an SRI that qualifies for a LEED certification. The SRI on some units ranges between 60-80%. To receive LEED credit, the SRI must be at least 29%.
- Impermeable--deicing salt and other deicing materials can be used without concern of damage.

* It is important that all pressure washing of your porcelain pavers be done with a low pressure washer with a maximum of 1600 psi and nothing more powerful. When pressure washing your installation, care should be taken to prevent damage to the grout (adhesive and grout installations) and some re-sanding will be necessary when power washing an installation with sand or polymeric sand joints.

SPECIALTY TOOLS FOR PORCELAIN PAVER CONSTRUCTION:

- <u>Wet cut tile saw</u> equipped with a diamond blade manufactured for wet cutting porcelain. The saw should be designed to safely cut a 24 inch length porcelain paver.
- A paver clamp for easy handling, which can be used to both install and remove pavers.
- The use of gloves is highly recommended while handling and installing porcelain slabs.
- Appropriate notched trowels and grout float tools for cementitious adhesive and grout Installation. The appropriate tool selection would be based on the adhesive and grout manufacturer's recommendations.

HANDLING:

 Pallets of porcelain pavers are manufactured and shipped with a Heavy Duty plastic protective pallet cover and the individual porcelain pavers are packaged in protective card board boxes. To prevent damage to your pavers, do not remove the protective card board boxes until you are ready to install them.

CAUTION: Removing pavers from their protective packaging and handling multiple loose stones together creates the possibility for chipping.





• Once the Heavy Duty plastic pallet covers have been removed from the pallet, the un-used boxed pavers should be protected from the elements to insure the integrity of the protective cardboard boxes.

INSTALLATION INFORMATION:

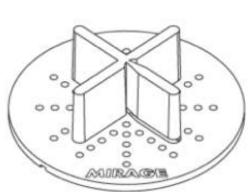
Each of the following option details will include specific information relative to the selected installation. Base thicknesses vary between different geographical and climatic locations and the contractor will be installing typical base thicknesses for paving installations in their location.

IMPORTANT: Installing porcelain pavers requires the bedding course sand to be pre-compacted and then struck off with a screed to the required thickness as shown in the detail drawings. The porcelain pavers are not compacted and therefore the sand layer beneath them requires pre-compaction. Do not compact dry sand, but insure the sand has a 5 to 6% moisture content so that it will compact cohesively and allow for a smooth strike off finish.

INSTALLATION INFORMATION THAT MUST BE FOLLOWED :

- NEVER compact porcelain pavers with a plate compactor.
- ALWAYS pre-compact and strike off your sand leveling course before installing your porcelain pavers in sand set installations.
- Porcelain pavers should only be wet cut with a tile saw equipped with a wet cut porcelain blade.
- NEVER install porcelain pavers without the required 4mm spacing between them. The porcelain pavers should never be installed with a porcelain to porcelain contact. Plastic 4mm spacers (Spacer G shown in photos below) should be used on Sand Set and Permeable installations. The photo on the left illustrates the spacer installed in a perspective to support and space 4 paver corners and the photo on the right illustrates the installed spacer snapped apart (as designed) to form Space T that support 2 paver corners. This versatility will permit your porcelain pavers to be installed in a stack bond pattern, a running bond patterns as well as a flush installation against another structure.
- For a 100 sf. project, approximately 34 spacers are needed; this allows for overages if needed.





Mirage[®] Space_G plus spacers



Spacer T



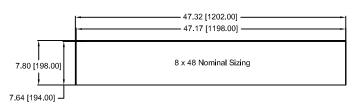
Legal Disclaimer

The nominal measurements include 4mm for product spacers which are sold separately. Although extreme care has been taken to ensure the accuracy of all measurements set forth herein, Manufacturer assumes no liability relating thereto.

STANDARD CALIBER - (M)

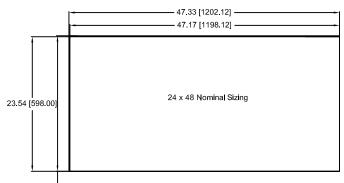
8"x 48" Nominal sizing

Calibrated unit cut sizing without spacing = 194x1198mm or $7.64" \times 47.17"$ With 4mm spacing added to two planes = $198mm \times 1202mm$ or $7.80" \times 47.32$



24"x 48" Nominal sizing

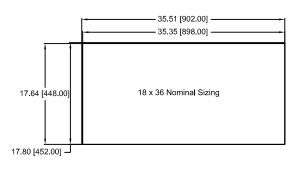
Calibrated unit cut sizing without spacing = 598×1198 mm or 23.54" x 47.17" With 4mm spacing added to two planes = 602mm x 1202mm or 23.70" x 47.32"



23.70 [602.00]

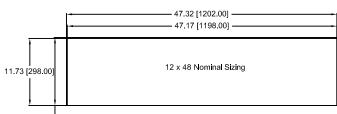
18"x 36" Nominal sizing

Calibrated unit cut sizing without spacing = 448x898mm or 17.64" x 35.35" With 4mm spacing added to two planes = 452mm x 902mm or 17.80" x 35.51"



12"x 48" Nominal sizing

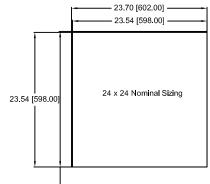
Calibrated unit cut sizing without spacing = 298×1198 mm or $11.73" \times 47.17"$ With 4mm spacing added to two planes = 302 mm x 1202 mm or $11.89" \times 47.32"$



11.89 [302.00]

24"x 24" Nominal sizing

Calibrated unit cut sizing without spacing = 598x598mm or $23.54" \times 23.54"$ With 4mm spacing added to two planes = $602mm \times 602mm$ or $23.70" \times 23.70"$



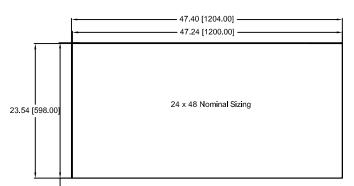
23.70 [602.00] -



CALIBER - (U) - only for modular collections

24"x 48" Nominal sizing

Calibrated unit cut sizing without spacing = 598×1200 mm or 23.54" x 47.24" With 4mm spacing added to two planes = 602 mm x 1204 mm or 23.70" x 47.40"



23.70 [602.00]

24"x 36" Nominal sizing

Calibrated unit cut sizing without spacing = 598x898mm or $23.54" \times 35.35"$ With 4mm spacing added to two planes = $602mm \times 902mm$ or $23.70" \times 35.51"$

23.54 [598.00]	A.	24 x 36 Nominal Sizing

23.70 [602.00]

JOINT INFILLING INFORMATION:

When porecelain pavers are installed as sand set installations, you may fill the 4mm paver joints with:

TRADITIONAL SAND

Dry traditional sand is swept into the open joints until they are completely filled. Excess sand should be swept off of the pavement. Keep in mind that sand joint may in time have to be re-sanded as wind and rain can cause some erosion

CEMENT BLENDED SAND

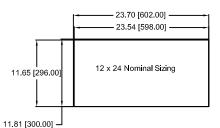
Dry cement blended sand (typical 3 parts sand to 1 part cement) is swept into the open joints until they are completely filled. Excess cement blended sand is swept off of the pavement. It is extremely important that all of the excess sand and dust be swept from the surface (blowers can be used for final dust removal), as any residual dust or sand can stain the surface. After joints are full and the surface is clean the pavement is misted with water to activate the cement and the curing of the mixture.

POLYMERIC SAND

Polymeric sand is a manufactured sand that is blended with polymers which hardens when subjected to moisture. The sand is swept into the open joints until they are completely filled. Like cement blended sand, it is extremely important that all excess sand and dust be swept from the surface (blowers can be used for final dust removal), as any residual dust or sand can stain the surface. After joints are full and the surface is clean, the pavement is misted with water to activate the polymer and curing of the mixture.

12"x 24" Nominal sizing

Calibrated unit cut sizing without spacing = 296x598mm or $11.65" \times 23.54"$ With 4mm spacing added to two planes = $300mm \times 602mm$ or $11.81" \times 23.70$





SNOW REMOVAL:

The surface of the Belgard porcelain paver is very hard and very resistant to scratching; normal shoveling is not a problem. Use a plastic or plastic edged shovel to insure that an edge of the paver is not accidentally caught; like on any pavement, use of metal shovels can cause chips to corners or surface. If using a snow blower, insure the impeller is adjusted to at least ¼ inch above the surface to prevent damage (1/4 inch height is recommended with snow blower use on any pavement).

Belgard approved deicing materials can be used on the porcelain pavers without concern of any damage. Approved deicing chemicals are sodium chloride (NaCl) and to the extent temperature falls below 14° F, Calcium Chloride (CaCl₂).

IMPORTANT NOTES:

i. When selecting sand for a traditional sand or cement blended sand infill, insure the gradation of the sand is fine enough to pass through and fill the 4 mm joints.

ii. When using Polymeric Sand it is important to follow the manufacturer's instructions to insure there is no surface staining.

iii. Cement blended sand and polymeric sand can both contribute to a reduction in joint plant growth and insect infiltration within the joint infill material.

INSTALLATION OPTIONS:

1.	Sand Set over Compacted Road Base Installation	. (Pedestrian Foot Traffic)
2.	Sand Set over Concrete Overlay Installation	. (Pedestrian Foot Traffic)
3.	Cementitious Adhesive Overlay, Concrete Base Installation	(Light Vehicle Traffic)
4.	Permeable Over Open Graded Aggregate Installation	. (Pedestrian Foot Traffic)
5.	Stepping Stone Sand Set on Compacted Road Base Installation	. (Pedestrian Foot Traffic)
6.	3/4" Fixed Pedestal Installation on Concrete Floor	. (Pedestrian Foot Traffic)

Roof Top and Commercial Raised Pedestal Installations require engineered design. For Engineered support in these applications, please contact Mike McVey at <u>Mike.McVey@oldcastle.com</u>.

For additional technical information on the installation of porcelain pavers, please contact Len Browning at Len. Browning@oldcastle.com.





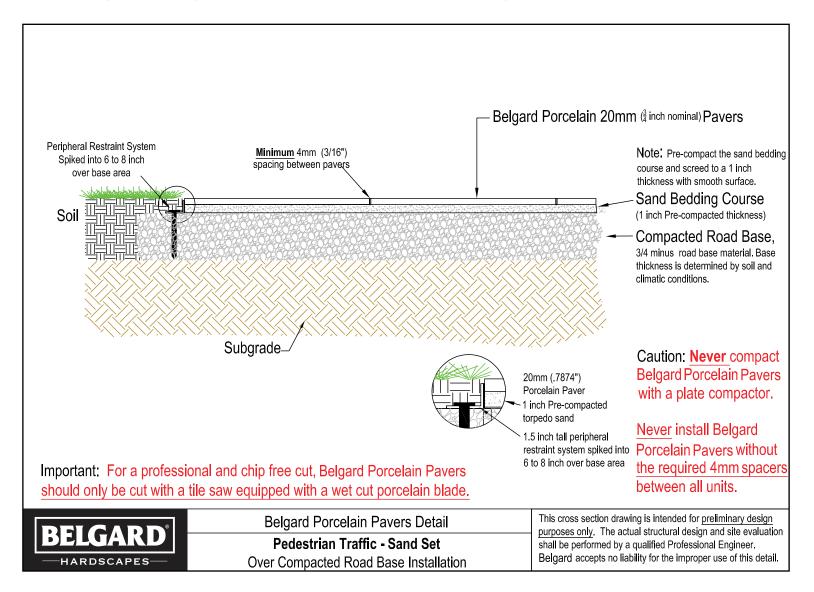
INSTALLATION OPTIONS



1. Sand Set over Compacted Road Base Installation – (Pedestrian Foot Traffic)

INSTALLATION NOTES:

- Follow the detail drawing below.
- Base material is to be over based 6 to 8 inches beyond the edge of the pavement.
- The required edge restraint system is a <u>low profile</u> edge restraint with a <u>vertical height of 1 ½ inches</u> as shown in the drawing.
- Insure that pavement is constructed with a 1 ½ to 2 degree slope that it is pitched away from any building.
- Insure the plastic 4mm spacers are installed at all corners of the installed pavers.

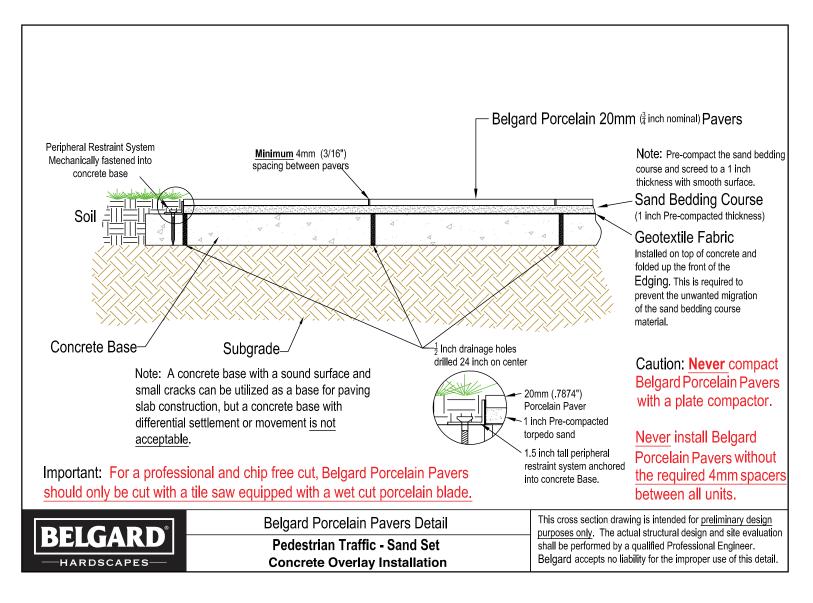




2. Sand Set over Concrete Overlay Installation (Pedestrian Foot Traffic)

INSTALLATION NOTES:

- Follow the detail drawing below.
- The required edge restraint system is a <u>low profile</u> edge restraint with a <u>vertical height of 1 ½ inches</u> as shown in the drawing.
- Mechanically anchor edge restraint into the concrete base.
- Insure geotextile is installed directly on top of the concrete to contain the bedding sand.
- Insure that pavement is constructed with a 1 ½ to 2 degree slope and that it is pitched away from any building.
- Insure the plastic 4mm spacers are installed at all corners of the installed pavers.





3. Cementitious Adhesive Overlay, Concrete Base Installation (Light Vehicle Traffic)

INSTALLATION NOTES:

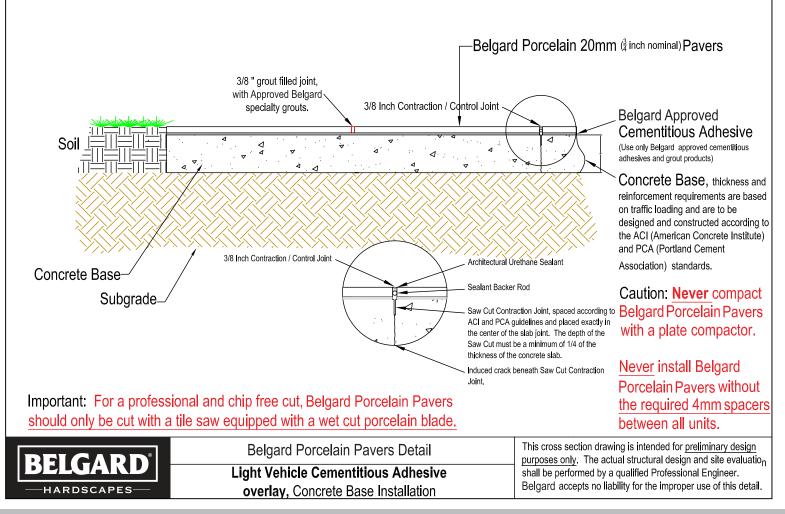
- Follow the detail drawing below.
- Insure that pavement is constructed with a 2 degree pitch and that it is pitched away from any building.
- Referenced approved Cementitious Adhesives. <u>www.mapei.com/public/US/products/Kerabond_T-Keralastic_EN_lr.pdf</u>
 <u>www.mapei.com/public/US/products/Ultraflex_LFT_EN_lr.pdf</u>
- Referenced approved joint grout products. <u>www.mapei.com/public/US/products/ultracolorplus_tds_ea.pdf</u>, <u>www.mapei.com/public/US/products/kerapoxytds_ea.pdf</u>

For Cementitious adhesive and grout installation, refer to the manufacturer's technical instructions and specifically as they relate to outdoor installations.

• For concrete foundation slabs that are not large enough to require contraction / control joints, a minimum 4mm (1/8" to 3/16 ") grout joint is acceptable, but for larger concrete foundation slabs that do require contraction / control joints, the joint width should be a 3/8". It is absolutely imperative that all contraction / control joints be located in the joint line of installed porcelain pavers and not beneath a paver.

CAUTION: If a Porcelain Paver is installed over a control joint, the paver will reflectively crack along the contraction / control joint beneath it.

• The following contractor installation video shows a cementitious adhesive installation of porcelain pavers. <u>www.mirage.it/en/floors-and-coverings/evo_2e/laying-systems/adhesive-installation/</u>

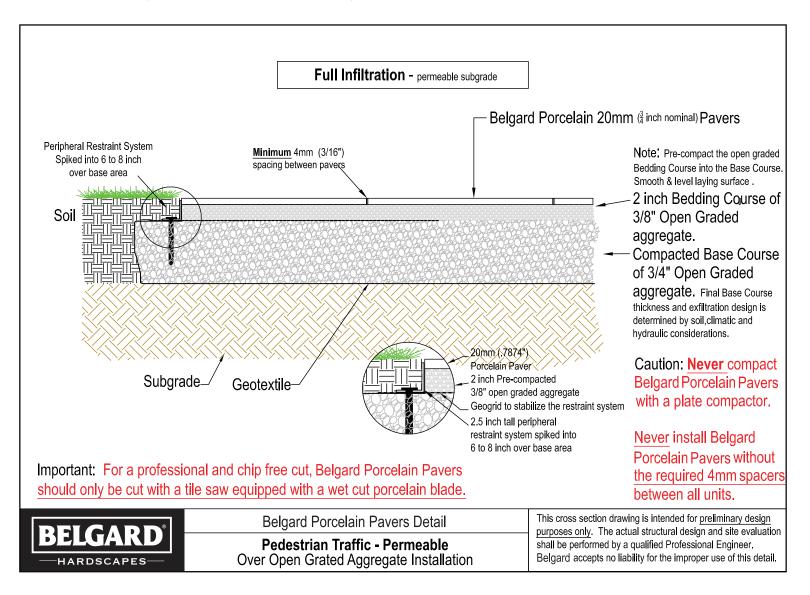




4. Permeable Over Open Graded Aggregate Installation (Pedestrian Foot Traffic)

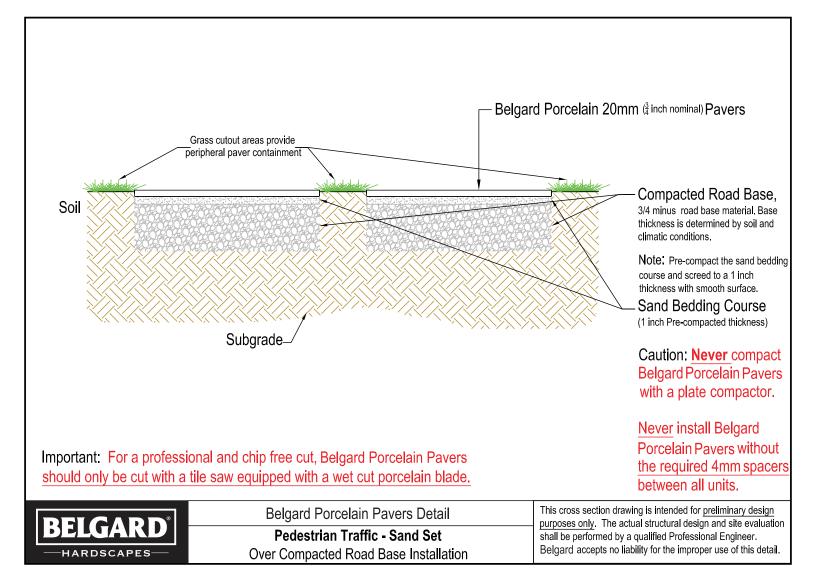
INSTALLATION NOTES:

- Follow the detail drawing below.
- The required edge restraint system for this installation has a <u>vertical height of 2 ½ inches</u> as shown in the drawing. Follow the edge restraint manufacturer's recommendations for the use of their product in permeable applications regarding geogrid usage and placement to maintain the performance of there edging.
- Insure that pavement is constructed with a 2 degree pitch and that it is pitched away from any building.
- Insure the 4mm spacers are installed between all pavers.





5. Stepping Stone Sand Set on Compacted Road Base Installation (Pedestrian Foot Traffic)

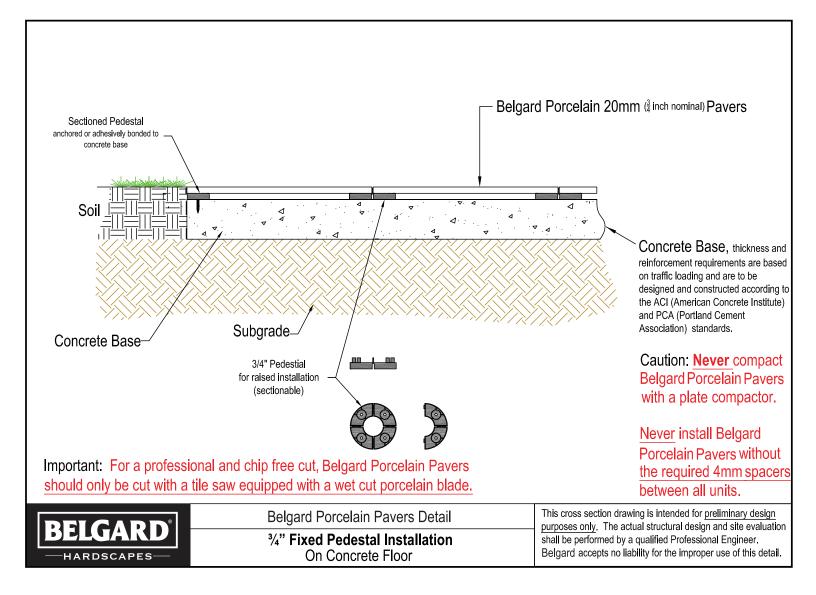




6. ¾" Fixed Pedestal Installation on Concrete Floor (Pedestrian Foot Traffic)

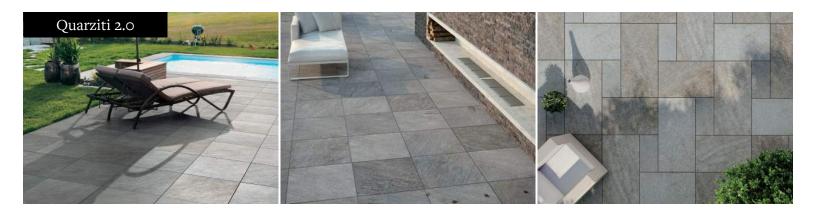
INSTALLATION NOTES:

- Follow the detail drawing below.
- Insure that concrete slab is smooth, even across the surface and is constructed with a 2 degree pitch and that it is pitched away from any building.
- Insure the plastic ³/₄" pedestal support are installed at all corners of the installed pavers.





PRODUCT OPTIONS



Glacier QR 01 NAT

*



Mountains QR 02 NAT

Waterfall **QR 03** NAT

NAT: Natural

Available Colors

Waterfall QR 03 NAT

UNICO

13"x24"x³/₄"



River QR 04 NAT

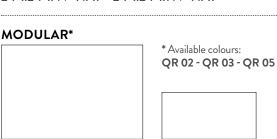
Mantle QR 05 NAT

Laying Systems

Shapes & Sizes



24"x24"x³/4" NAT - 24"x24"x1¹/4" NAT

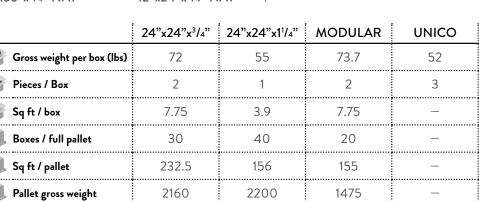


24"x36"x³/₄" NAT

12"x24"x³/₄" NAT

Moderate

variation





1 1

INSTALLATION SAND SET OVER

COMPACTED BASE



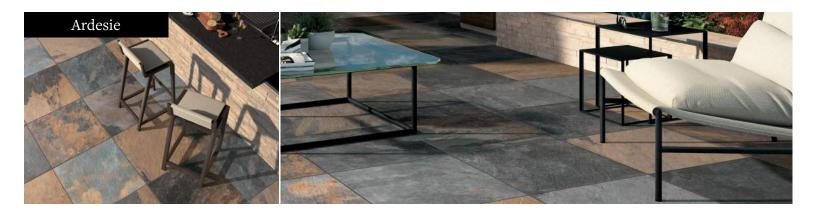
MORTAR BED ADHESIVE INSTALLATION



shadevatistion UNIFORM UNIFORM









Island AD 02 NAT



Shapes & Sizes



24"x24"x³/4" NAT NAT: Natural

	24"x24"x ³ / ₄ "	
Gross weight per box (lbs)	72	
Pieces / Box	2	
Sq ft / box	7.75	
Boxes / full pallet	30	
Image: Sq ft / pallet	232.5	
Pallet gross weight	2160	

Moderate variation



Available Colors

African Stone AD 03 NAT





Vulcan AD 05 NAT



Laying Systems

INSTALLATION SAND SET OVER COMPACTED BASE



INSTALLATION ON PERMEABLE AGGREGATE BASE



MORTAR BED ADHESIVE INSTALLATION





Uniform appearance





Available Colors



Cremo Delicato **EP 01** ST



Shapes & Sizes



Pietra Piasentina **EP 02** ST







Laying Systems

INSTALLATION SAND SET OVER COMPACTED BASE				
	1	/		



INSTALLATION		
ON PERMEABLE		
AGGREGATE BASE		
0 0		



MORTAR BED ADHESIVE INSTALLATION







ST: Structured

	24"x24"x³/₄"	
Gross weight per box (lbs)	72	
Yieces / Box	2	
🖤 Sq ft / box	7.75	
Boxes / full pallet	30	
💭 Sq ft / pallet	232.5	
Pallet gross weight	2160	











Available Colors

Pierre Bleue SO 10 ST

shadevariation

Chambrod SO o5 ST

v2

Shapes & Sizes \geq

24"x24"x3/4" ST

UNICO	_
	/
13"x24"x ³ /4"	
ST: Structured	

	24"x24"x ³ / ₄ "	UNICO
Gross weight per box (lbs)	72	52
Pieces / Box	2	3
Sq ft / box	7.75	-
Boxes / full pallet	30	-
I Sq ft / pallet	232.5	-
Pallet gross weight	2160	-



Pierre Bleue Sablée SO 11 ST



Laying Systems

INSTALLATION SAND SET OVER COMPACTED BASE k 1



INSTALLATION ON PERMEABLE AGGREGATE BASE Ņ

1

ļ 1

MORTAR BED ADHESIVE INSTALLATION









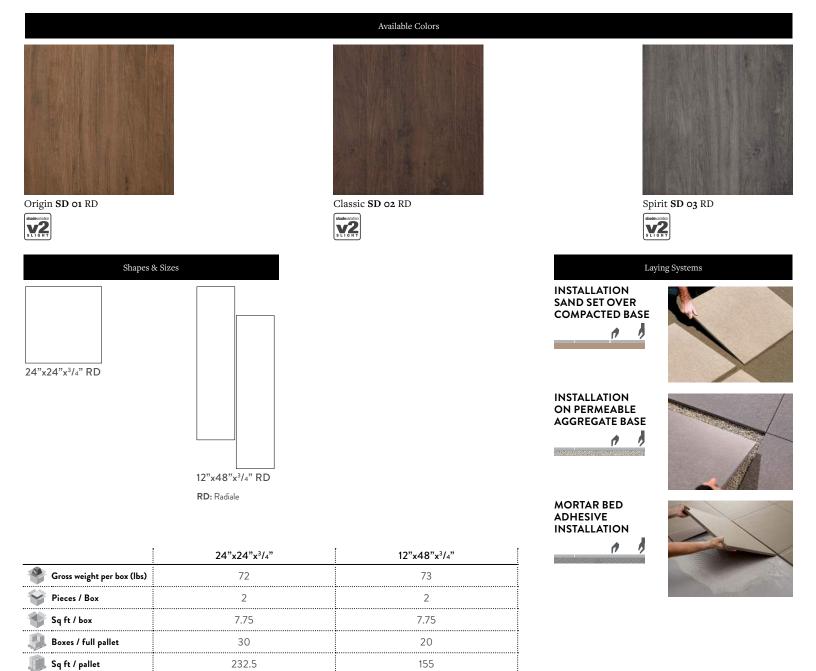




v4







1460

shadevarision shadevarision uniform uniform shadevarision stadevarision

🎩 Pallet gross weight



Slight variation 2160





Vit **RR 01** ST - STA

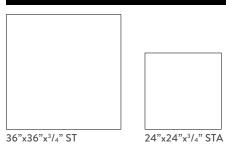


Available Colors





Shapes & Sizes



13"x24"x³/4" ST: Structured STA: Aged Structured

UNICO

24"x24"x³/4" 36"x36"x³/₄" UNICO Gross weight per box (lbs) 72 80.3 52 Pieces / Box 2 1 3 7.75 8.7 Sq ft / box _ Boxes / full pallet 30 18 _ Sq ft / pallet 232.5 156.6 _ 1446 Pallet gross weight 2160



Svart RR 03 ST - STA



Laying Systems

INSTALLATION SAND SET OVER COMPACTED BASE



INSTALLATION ON PERMEABLE AGGREGATE BASE



MORTAR BED ADHESIVE INSTALLATION





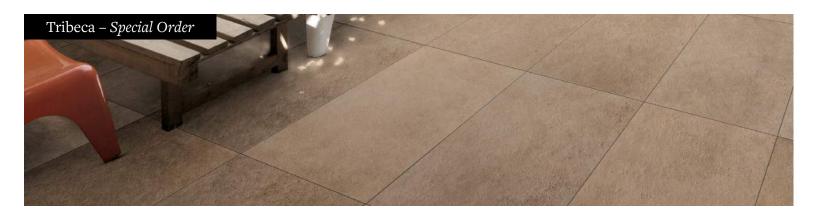












Available Colors					
Harrison TB 02 NAT	Hudson TB 03 NAT	Greenwich TB 04 NAT	Froadway TB os NAT		
Shapes & Si	24"x24"x ³ /4" NAT * NAT: Natural * Available colours: TB 03 - TB 05	18"x36"x ³ /4"	INSTALLATION SAND SET OVER COMPACTED BASE INSTALLATION NNSTALLATION NPERMEABLE AGGREGATE BASE		
Gross weight per box (lbs) 72	81.4			
Pieces / Box	2	2	MORTAR BED ADHESIVE		
Sq ft / box	7.75	8.7	INSTALLATION		
📳 Boxes / full pallet	30	27			
	:	234.9	huchuchuchu Mchuchuchuch		
🎩 Sq ft / pallet	232.5	234.7			











	Available Colors	
Crust TW o1 ST	Cloud TW o2 ST	Darkness TW 03 ST
24"x24"x ³ /4" ST		Laying Systems INSTALLATION SAND SET OVER COMPACTED BASE
ST: Structured	24"x24"x³/₄"	INSTALLATION ON PERMEABLE AGGREGATE BASE
Gross weight per box (lbs)	72	
Pieces / Box	2	MORTAR BED
🖤 Sq ft / box	7.75	ADHESIVE INSTALLATION
🔝 Boxes / full pallet	30	
💭 Sq ft / pallet	232.5	
🚛 Pallet gross weight	2160	and the second



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Shapes & Sizes



24"x24"x3/4" ST

ST: Structured

	24"x24"x ³ / ₄ "
Gross weight per box (lbs)	72
Yieces / Box	2
🖤 Sq ft / box	7.75
Boxes / full pallet	30
順 Sq ft / pallet	232.5
Pallet gross weight	2160



Available Colors

Travertino Classico \mathbf{JW} o4 ST





Fumo di Londra **JW 06** ST

Laying Systems

INSTALLATION SAND SET OVER COMPACTED BASE 1 1



INSTALLATION ON PERMEABLE AGGREGATE BASE Ņ 1



MORTAR BED ADHESIVE INSTALLATION 1











v4





Available Colors



Fado NA 01 RD shadevariation

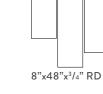




24"x24"x³/₄" RD

Shapes & Sizes

12"x48"x³/4" RD RD: Radiale



	24"x24"x ³ / ₄ "	12"x48"x³/4"	8"x48"x ³ / ₄ "
Gross weight per box (lbs)	72	73	46
Yieces / Box	2	2	2
Sq ft / box	7.75	7.75	5.1
Boxes / full pallet	30	20	30
順 Sq ft / pallet	232.5	155	155
🗊 Pallet gross weight	2160	1460	1380



Laying Systems INSTALLATION SAND SET OVER COMPACTED BASE Ņ 1





MORTAR BED ADHESIVE INSTALLATION 1



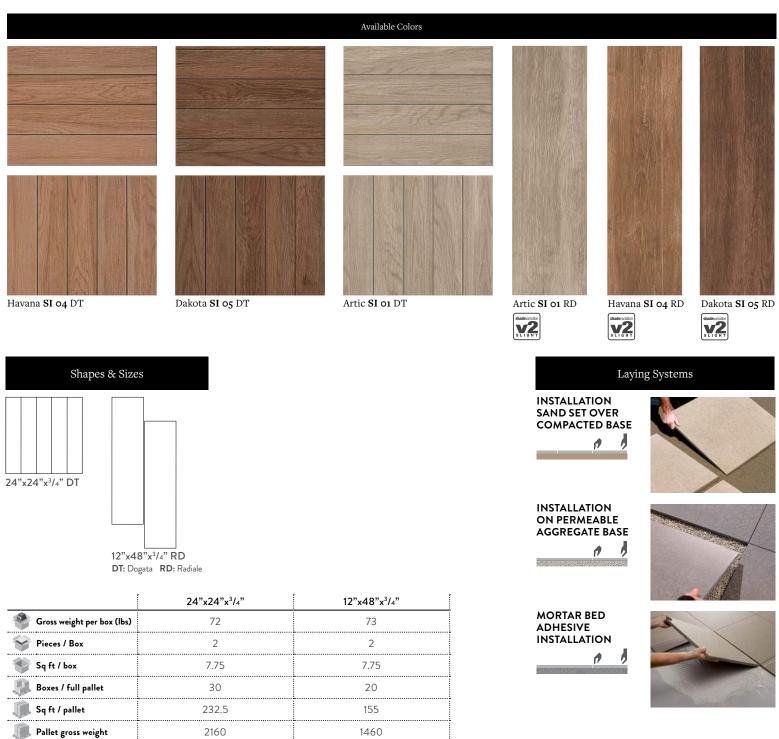
Uniform appearance v1



Moderate variation

<u>v3</u>









Substantial variation















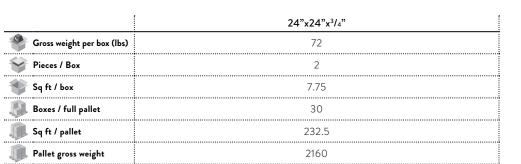
v4

1



Available Colors







Gothic OF 04 ST

Laying Systems

INSTALLATION SAND SET OVER COMPACTED BASE



INSTALLATION ON PERMEABLE AGGREGATE BASE



MORTAR BED ADHESIVE INSTALLATION

I,









v4





Available Colors

Block MP 03 ST

shadevariation





Shapes & Sizes



24"x24"x³/₄" ST

ST: Structured

36"x36"x³/₄" ST

	24"x24"x³/₄"	36"x36"x ³ /4"
Gross weight per box (lbs)	72	80.3
Pieces / Box	2	1
🖤 Sq ft / box	7.75	8.7
Boxes / full pallet	30	18
🧊 Sq ft / pallet	232.5	156.6
Pallet gross weight	2160	1446





Laying Systems

INSTALLATION SAND SET OVER COMPACTED BASE ļ 1



INSTALLATION ON PERMEABLE AGGREGATE BASE , ø

MORTAR BED

1









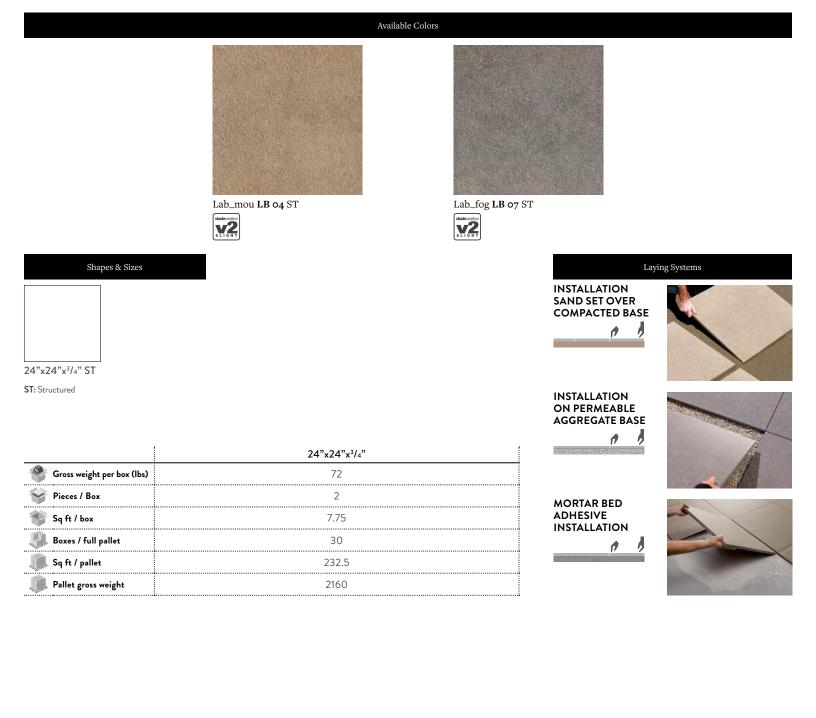




v4













Peace of Mind, Guaranteed

SELECTION | QUALITY | SERVICE | TRUST

To create lasting memories you have to start with a product that lasts, and that is exactly what you get with Belgard Hardscapes. You can rest assured in our uncompromising level of quality and craftsmanship all backed by our transferable lifetime limited warranty.

Belgard is also the only hardscapes company backed by the Good Housekeeping Seal. The limited warranty reflected by the Good Housekeeping Seal means that if a product bearing the Seal is defective within the first two years of purchase, Good Housekeeping will replace the product or refund the purchase price.



For more information, please visit us at **<u>Belgard.com/porcelain</u>**



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