

FRONTIER²⁰

PORCELAIN PAVERS INSTALLATION GUIDE

 **LANDMARK**
CERAMICS

Dear Customer,

Thank you for choosing **Frontier20**.

In this manual, you will become familiar with the benefits and versatility that porcelain pavers can provide if you are seeking a low maintenance and extremely durable product.

This installation manual will provide the installer with a guide on how to properly install the Frontier20 porcelain pavers and as well as educate the consumer on how to maintain the appearance and functionality of the porcelain pavers. The installation practices listed in this guide are recommendations based on typical masonry, and or hardscape installation practices. Consulting your local codes department for their requirements is highly recommended as installation methods may vary from region to region due to differing native soils, frost line depth and freeze thaw cycles. If you have any questions, please feel free to call us and we at Landmark Ceramics will be happy to assist you.

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FRONTIER20

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1. PORCELAIN PAVERS ADVANTAGES

20 THICKNESS
PORCELAIN PAVERS



EASY TO INSTALL



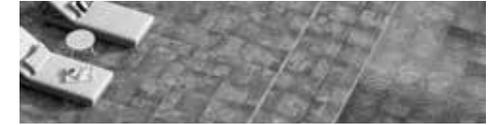
EASY TO KEEP CLEAN

Mild environmentally friendly detergents can be used when cleaning your porcelain pavers. Pressure washers up to 1500 PSI may be used with out fear of etching or striping.



SCRATCH RESISTANT

Landmark Frontier20 porcelain pavers are extremely hard with an equally hard surface making them virtually scratch proof.



FADE RESISTANT

Landmarks Frontier20 baked on graphics are created using ingredients that are completely unaffected by the sun ensuring enjoyment of your porcelain paving investment for many years to come.



ANTISLIP

The structure and texture of the porcelain paver reduce the risk of slipperiness.



RESISTANT TO MOSS AND MOLDING

Landmark Frontier20 is so dense that mold and mildew are not able to establish them selves in a permanent way making removal very easy and simple.



FROST RESISTANT

Landmark Frontier20 porcelain pavers are so dense that frost and or freezing temperatures do not affect them.

NaCl

RESISTANT TO SALTS

Landmark Frontier20 porcelain pavers are completely unaffected by use of salts.



EASY TO REPLACE AND REMOVE

When not mortared down or installed with adhesive Landmark's Frontier20 can be easily removed and repositioned in a new area.



DRIVE OVER*

When properly installed over concrete, Landmark Frontier20 porcelain pavers are suitable for light residential vehicular traffic.

(* When installed over reinforced concrete (4" minimum) using a thinset mortar suitable for porcelain paver.



RESISTANT TO ACID AND CHEMICALS

Landmark Frontier20 is made with inert ingredients that do not react or accept acids and or chemicals allowing you to make environmentally friendly cleaning decisions!



ECO-FRIENDLY

Landmark Frontier20 porcelain pavers are produced in our environmentally friend complex following the strictest state and federal regulations. Because of Landmarks environment friendly commitment, we can incorporate up to 20% recycled content in our usa made porcelain pavers.



STAIN RESISTANT

Landmark's Frontier20 porcelain pavers are virtually non porous. Due to the baked on glazing process nothing can be absorbed including stains.



RESISTANT TO THERMAL SHOCK

Landmark's porcelain pavers are baked at temperatures up to 2300 degrees F which in turn causes a very strong molecular bond making for a very dense material. Due to its density it become very inert allowing for extreme and sudden temperature changes in the range of -60 F +140 F.



NO SEALING NEEDED

No sealers are needed because Landmark Frontier20 is so dense virtually nothing can stick to it!



SAVING OVER TIME

Low maintenance cost.

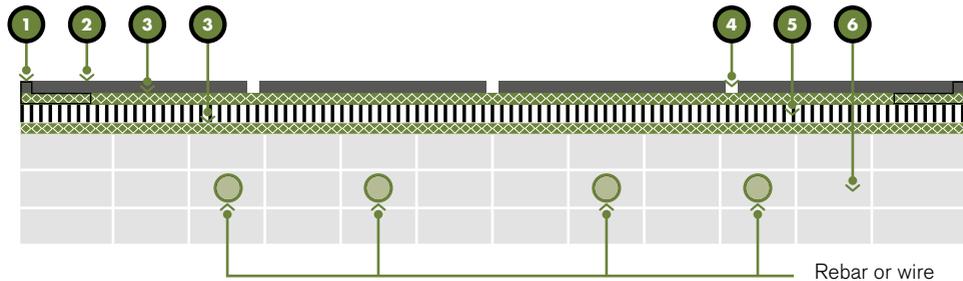
2.A THIN SET MORTAR APPLICATION OVER REINFORCED CONCRETE

PRACTICAL INSTALLATION

Follow the drawing below.

- Insure that pavement is constructed with approximately 2 degree slope and that it is sloped away from any building.
- Please consult your paver supply distributor for thin set mortar suitable for porcelain paver as well as for inside or external usage.
- 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 $\frac{3}{16}$ " (4 mm) grout joint is acceptable, but for larger concrete foundation slabs that do require contraction/control joints, the control joint width should be a $\frac{3}{8}$ " (1 cm).
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. Utilization of an uncoupling membrane can help minimize the potential issue.



1. Edge restraint trim piece.
2. Frontier20 porcelain $\frac{3}{4}$ " nominal (20 mm) pavers.
3. Thinset.
4. $\frac{3}{16}$ " minimum grout joint.
5. Uncoupling membrane.
6. Existing or new concrete (reinforced), 4" minimum.



IMPORTANT:
For a professional and chip free cut, Frontier20 porcelain pavers should only be cut with a paver saw equipped with a wet cut porcelain blade.

NOTES:
Never compact porcelain pavers with a plate compactor.
Never install porcelain pavers without spacers (min 4mm - $\frac{5}{32}$ ").

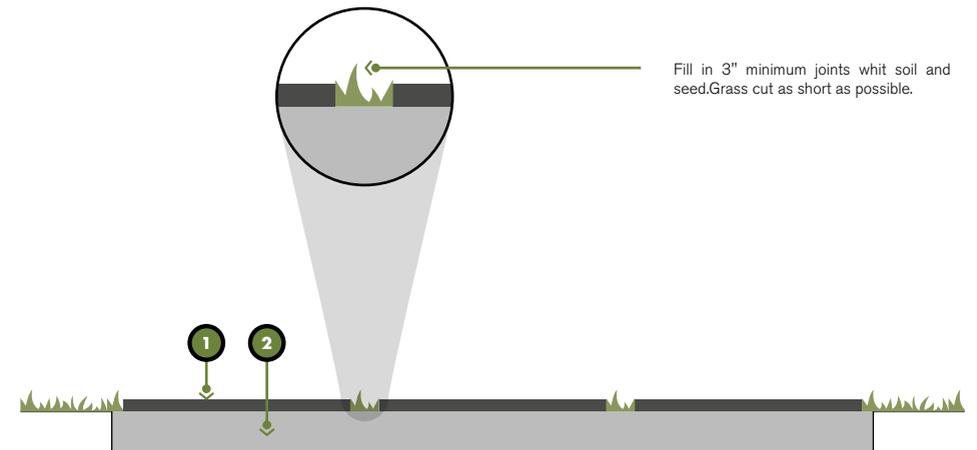
Please note that the above section drawing is meant to be an example only. Project and site evaluation, structural design must be performed by a qualified professional engineer.

2.B DRY LAY OVER GRASS (PEDESTRIAN FOOT TRAFFIC)

PRACTICAL INSTALLATION

Follow the drawing below.

- Cut grass in desired area as short as possible. remove any debris.
- Using a landscape rake scratch up top 1 inch of soil and level.
- Insure sub grade is graded to a 1" in 10' slope and that it is pitched away from any building.



Fill in 3" minimum joints with soil and seed. Grass cut as short as possible.

1. Frontier20 porcelain $\frac{3}{4}$ " nominal (20 mm) pavers.
2. Bare soil is best. Scratch and layel with a rake.

IMPORTANT:
For a professional and chip free cut, Frontier20 porcelain pavers should only be cut with a paver saw equipped with a wet cut porcelain blade.

NOTES:
Never compact porcelain pavers with a plate compactor.
Never install porcelain pavers without spacers (min 4mm - $\frac{5}{32}$ ").

Please note that the above section drawing is meant to be an example only. Project and site evaluation, structural design must be performed by a qualified professional engineer.

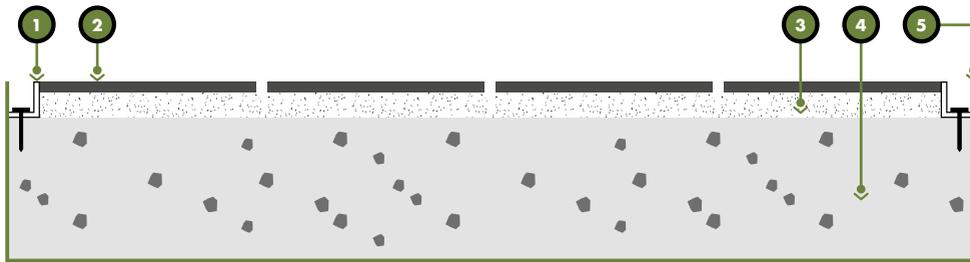


2.C TYPICAL FLEXIBLE BASE INSTALLATION
(PEDESTRIAN FOOT TRAFFIC)

PRACTICAL INSTALLATION

Follow the drawing below.

- Base material is to be over dug 6" to 8" beyond the edge of the pavement.
- The required edge restraint system is a low profile edge restraint with a vertical height of 1.5" (4 cm) as shown in the drawing.
- Insure that pavement is constructed with a 1" in 10' slope that it is pitched away from any building.
- Insure the plastic 3/16" (4 mm) spacers are installed at all corners of the installed pavers, in order to prevent pavers from touching each other (and potentially chipping) and to allow better water drainage.



- 1. Paver edging.
- 2. Frontier20 porcelain 3/4" nominal (20 mm) pavers.
- 3. 3/16" uncompacted bedding sand.
- 4. 4-6" crusher run/road base.
- 5. Filter fabric.



IMPORTANT:
For a professional and chip free cut, Frontier20 porcelain pavers should only be cut with a paver saw equipped with a wet cut porcelain blade.

NOTES:
Never compact porcelain pavers with a plate compactor.
Never install porcelain pavers without spacers (min 4mm - 5/32").

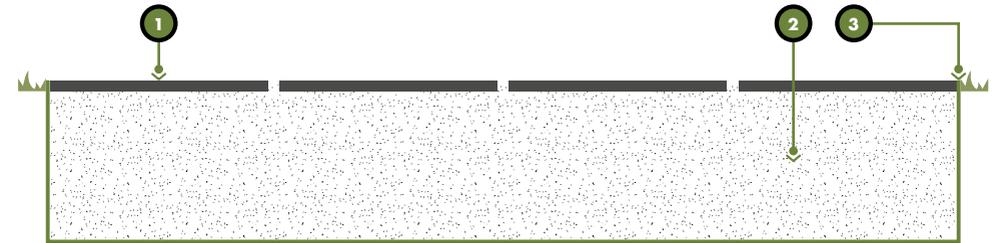
Please note that the above section drawing is meant to be an example only.
Project and site evaluation, structural design must be performed by a qualified professional engineer.

2.D OVER SAND BASE INSTALLATION
(PEDESTRIAN FOOT TRAFFIC)

PRACTICAL INSTALLATION

Follow the drawing below.

- Filter fabric is recommended as it allows water to pass but not the particles of sand.
- 2-4" of a compactable sand is recommended. You can go with more however it will not offer any distinct advantage. Going with less than 2" may offer a less desirable effect as it will tend to hold more water and become "mushy" when super saturated.
- The use of an edge restraint is ideal but not necessary. It becomes more necessary if your desired paving area is above the surrounding native soil, as it will help aid in the minimization of sand migration or erosion.
- Insure the plastic 3/16" (4 mm) spacers are installed at all corners of the installed pavers, in order to prevent pavers from touching each other (and potentially chipping) and to allow better water drainage.



- 1. Frontier20 porcelain 3/4" nominal (20 mm) pavers.
- 2. Approx. 4" of bedding sand.
- 3. Filter fabric.



IMPORTANT:
For a professional and chip free cut, Frontier20 porcelain pavers should only be cut with a paver saw equipped with a wet cut porcelain blade.

NOTES:
Never compact porcelain pavers with a plate compactor.
Never install porcelain pavers without spacers (min 4mm - 5/32").

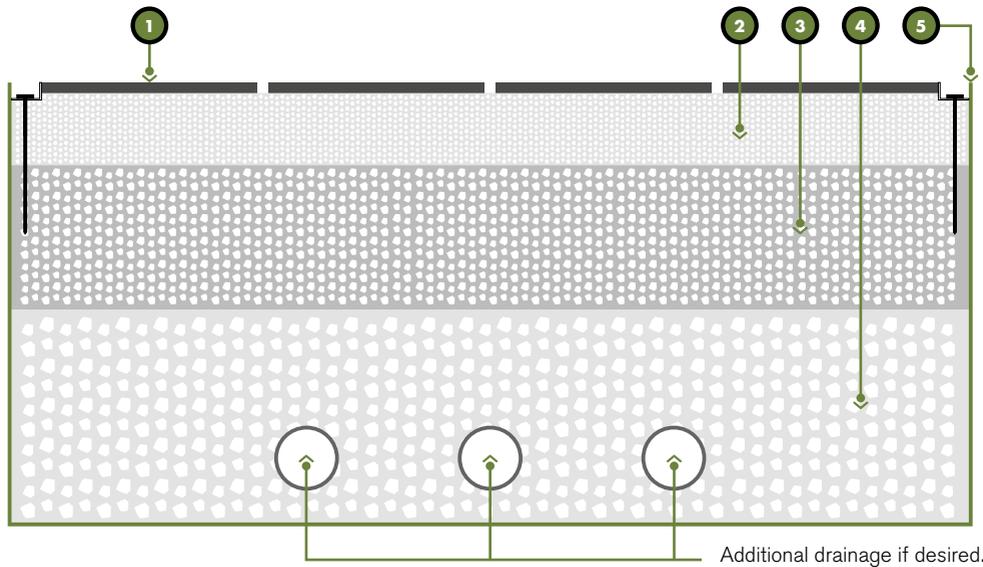
Please note that the above section drawing is meant to be an example only.
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2.E PERMEABLE APPLICATION
(PEDESTRIAN FOOT TRAFFIC)

PRACTICAL INSTALLATION

Follow the drawing below.

- The required edge restraint system for this installation has a vertical height of 2" (5 cm) as shown in the drawing.
- Insure that pavement is constructed with a 1" in 10' and that it is pitched away from any building.
- Insure the 3/16" (4 mm) spacers are installed between all pavers, in order to prevent pavers from touching each other (and potentially chipping) and to allow better water drainage.



1. Frontier20 porcelain 3/4" nominal (20 mm) pavers.
2. Coarseness of gravel 2" - 8 s' and 9 s' (1/2" + less).
3. Coarseness of gravel 4" - #57 (3/4").
4. Coarseness of gravel 6" - 3 s' - 4 s' if desired.
5. Filter fabric.



IMPORTANT:
For a professional and chip free cut, Frontier20 porcelain pavers should only be cut with a paver saw equipped with a wet cut porcelain blade.

NOTES:
Never compact porcelain pavers with a plate compactor.
Never install porcelain pavers without spacers (min 4mm - 5/32").

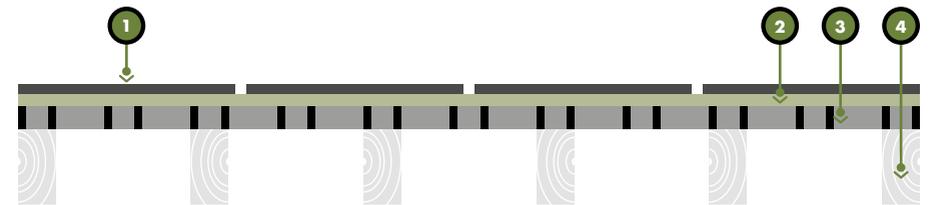
Please note that the above section drawing is meant to be an example only. Project and site evaluation, structural design must be performed by a qualified professional engineer.

2.F INSTALLATION OVER DECKING
(PEDESTRIAN FOOT TRAFFIC)

PRACTICAL INSTALLATION

Follow the drawing below.

- Deck joists must be "sound" and in good condition as well as constructed in accordance with local codes.
- Deck joists must be spaced 16" on center.
- Top of joists must be flat to one another.
- Grates will span 2 joists and be fastened using weather proof screws.
- Stagger grates 1/3rd, 1/4th or 1/2 as shown.
- Outdoor fabrics varies in thickness. Multiple layers may be needed to reduce acoustics.
- The use of porcelain paver spacers are recommended. 1/8th inch joints are the minimum recommendation.
- Silicon or a neutral colored adhesive may be applied to spacers to help reduce porcelain paver movement.
- Porcelain paver joints may be filled or left open, depending on desired drainage.
- Insure the 3/16" (4 mm) spacers are installed between all pavers, in order to prevent pavers from touching each other (and potentially chipping) and to allow better water drainage.



1. Frontier20 porcelain 3/4" nominal (20 mm) pavers.
2. Outdoor fabrics or sound insulating mattress.
3. Honeycomb plastic grate.
4. Deck joists.

IMPORTANT:
For a professional and chip free cut, Frontier20 porcelain pavers should only be cut with a paver saw equipped with a wet cut porcelain blade.

NOTES:
Never compact porcelain pavers with a plate compactor.
Never install porcelain pavers without spacers (min 4mm - 5/32").

Please note that the above section drawing is meant to be an example only. Project and site evaluation, structural design must be performed by a qualified professional engineer.

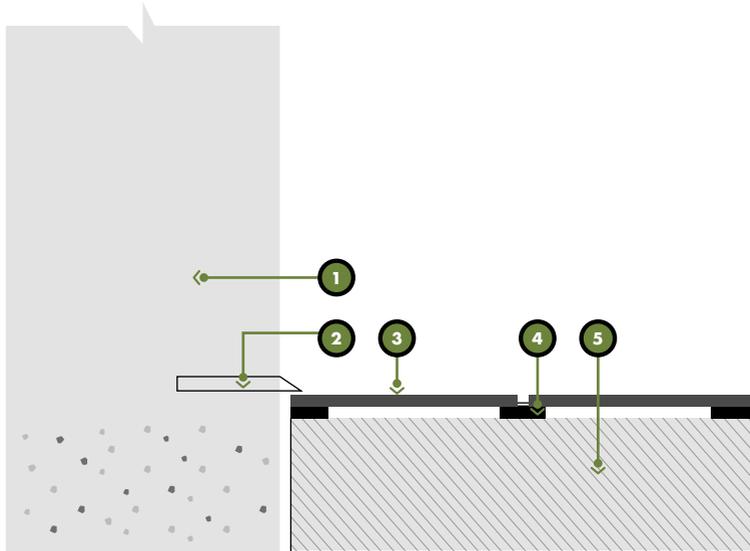


**2.G LOW HEIGHT SUPPORTS (UP TO 3/4" - 20 MM)
PEDESTAL INSTALLATION OVER EXISTING SUBSTRATE ***
(PEDESTRIAN FOOT TRAFFIC)

PRACTICAL INSTALLATION

Follow the drawing below.

- Ensure concrete slab is in stable condition and has a 1" in 10' slope to divert water away from structure.
- Ensure spacer tabs are intact in the corners where the porcelain pavers might come to contact.



- 1. House or structure.
- 2. Threshold for door.
- 3. Frontier20 porcelain 3/4" nominal (20 mm) pavers.
- 4. Pedestal.
- 5. Existing slab or substraighit.

* For installation on adjustable height pedestals (from 1 1/4" to 16") visit <https://hardscape.landmarkceramics.com> or email tech-support@lcusa.com.



IMPORTANT:
For a professional and chip free cut, Frontier20 porcelain pavers should only be cut with a paver saw equipped with a wet cut porcelain blade.

NOTES:
Never compact porcelan pavers with a plate compactor.
Never install porcelain pavers without spacers (min 4mm - 5/32").

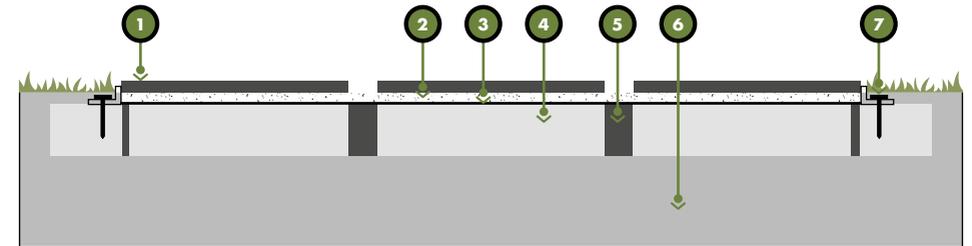
Please note that the above section drawing is meant to be an example only.
Project and site evaluation, structural design must be performed by a qualified professional engineer.

2.H SAND SET OVER CONCRETE
(PEDESTRIAN FOOT TRAFFIC)

PRACTICAL INSTALLATION

Follow the drawing below.

- The edge restraint system is 1 1/2" - 2" height profile.
- Ensure edge restraint into the concrete base made.
- Lay fabric directly on top of the concrete to contain sand and fold it up the front of the edging.
- Insure that pavement is constructed with a 1" in 10' and that it is pitched away from any building.
- Insure the 3/16" (4 mm) spacers are installed between all pavers, in order to prevent pavers from touching each other (and potentially chipping) and to allow better water drainage.



- 1. Frontier20 porcelain 3/4" nominal (20 mm) pavers.
- 2. Sand bedding course 1".
- 3. Fabric.
- 4. Existing or new concrete 4" minimum.
- 5. 1/2" 1" inch drainage holes drilled 24 inch on center.
- 6. Subgrade.
- 7. Peripheral restraint system.

IMPORTANT:
For a professional and chip free cut, Frontier20 porcelain pavers should only be cut with a paver saw equipped with a wet cut porcelain blade.

NOTES:
Never compact porcelan pavers with a plate compactor.
Never install porcelain pavers without spacers (min 4mm - 5/32").

Please note that the above section drawing is meant to be an example only.
Project and site evaluation, structural design must be performed by a qualified professional engineer.

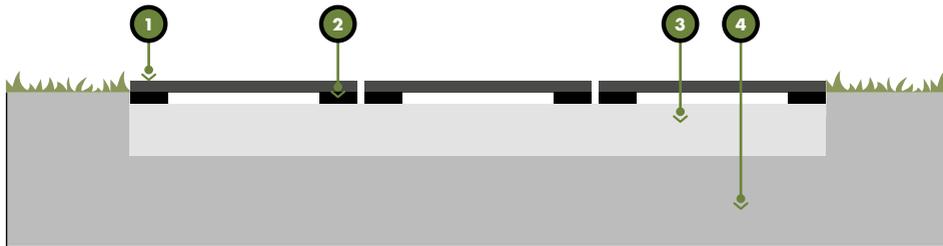


2.I INSTALLATION OVER ¾" PEDESTAL ON CONCRETE
(PEDESTRIAN FOOT TRAFFIC)

PRACTICAL INSTALLATION

Follow the drawing below.

- Make sure the concrete slab is properly built and smooth and has 1 ½ - 2 degree pitch and that it is pitched away from any building.
- Plastic ¾" pedestal support must be placed and installed all corners of the pavers.



- 1. Frontier20 porcelain ¾" nominal (20 mm) pavers.
- 2. ¾" pedestal.

- 3. Concrete base.
- 4. Subgrade.



IMPORTANT:

For a professional and chip free cut, Frontier20 porcelain pavers should only be cut with a paver saw equipped with a wet cut porcelain blade.

NOTES:

Never compact porcelain pavers with a plate compactor.
Never install porcelain pavers without spacers (min 4mm - 5/32").

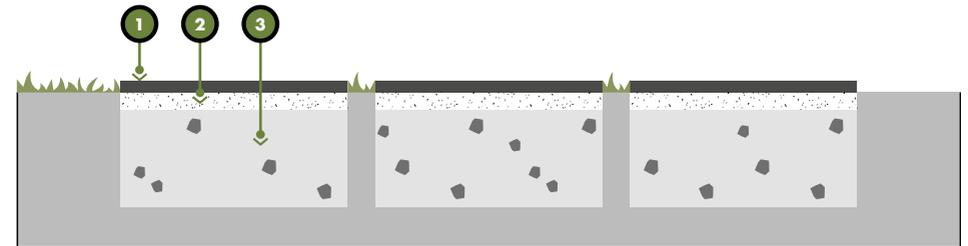
Please note that the above section drawing is meant to be an example only. Project and site evaluation, structural design must be performed by a qualified professional engineer.

2.J DRY LAY OVER GRASS ON COMPACTED ROAD BASE INSTALLATION
(PEDESTRIAN FOOT TRAFFIC)

PRACTICAL INSTALLATION

Follow the drawing below.

- Compacted base road is composed of ¾" compacted gravel.
- Sand bed course poured onto compacted gravel and screed to have smooth surface.



- 1. Frontier20 porcelain ¾" nominal (20 mm) pavers.
- 2. 1" Sand bedding course screed with smooth surface.

- 3. Compacted road.



IMPORTANT:

For a professional and chip free cut, Frontier20 porcelain pavers should only be cut with a paver saw equipped with a wet cut porcelain blade.

NOTES:

Never compact porcelain pavers with a plate compactor.
Never install porcelain pavers without spacers (min 4mm - 5/32").

Please note that the above section drawing is meant to be an example only. Project and site evaluation, structural design must be performed by a qualified professional engineer.

01. PORCELAIN PAVERS ADDITIONAL RECOMMENDATIONS FOR THE INSTALLATION, ORDINARY CLEANING AND MAINTENANCE.

Landmark Ceramics recommends carrying out the procedures for the ordinary cleaning of Frontier20 floor surfaces using water and commercially available neutral detergents: the inclination of the surface and the space between adjacent slabs for dry-system installation favor the natural flow of water. However, it is important to take into consideration that any type of floor surface is subject to the surface tension effect of liquids: it is the same property of water that gives the tendency to transform into spherical droplets and which cause the curved top surface of a glass full of water. The surface tension can obstacle the complete drainage of water and cause a temporary stagnation of liquid on the slab edges. In order to avoid this problem, Landmark Ceramics recommends ensuring adequate inclination of the surface during installation so as to encourage the flow of water between adjacent slabs.

Please remember in any case that, in view of the distinctive advantages of porcelain stoneware, Frontier20 absorbs practically no water, which makes it highly frost-proof. This may lead to localized water pooling, mainly on the edges of the pavers, independently of the manner and quality of the laying. Laying is also recommended with a minimum gap of 4 mm (5/32"). Should liquid deposit on the surface, it is recommended to push it towards grout lines using a brush or remove it with a wet and dry vacuum cleaner.

Specific details and instructions are given for each of the following installation options. Different climates and geographical locations will affect the thickness of the base.

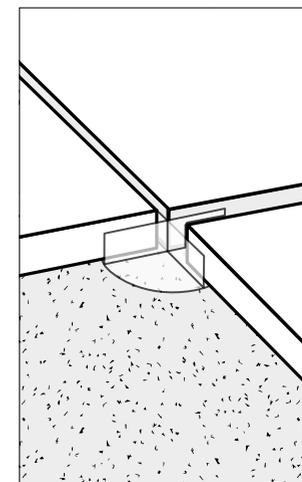
Depending on the location, contractors will lay the standard base thickness to install porcelain pavers for the needs of the area. When installing porcelain pavers, the bedding coarse sand must be pre-compacted and then struck off with a screed to the required thickness as shown in the drawings. Before the laying of the porcelain pavers, the sand layer underneath must be pre-compacted. The sand layer needs a 5 to 6% moisture content to insure a smooth strike off finish. Compacting dry sand will not give the desired results.

- Only use a paver saw with a wet cut porcelain blade to wet cut porcelain pavers.
- Before installing your porcelain pavers in sand set installations, pre-compact and strike off your sand leveling course.
- Plastic 3/16" (4mm) spacers, or 1/4" (6mm) spacers for modular patterns, must always be used to install pavers on sand set and permeable installations.
- Never install pavers with porcelain-to-porcelain contact.
- The use of plate compactors is not recommended to be used on the porcelain pavers.

02. PORCELAIN PAVERS JOINT FILLING.

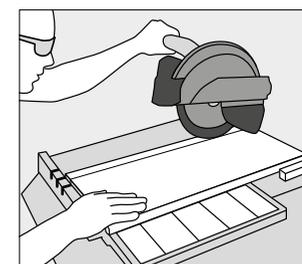
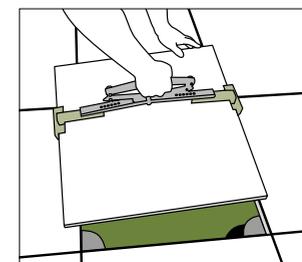
When installing porcelain paver on sand set base, fill the paver joints with one of these options:

- Traditional sand- Fill the open joints with traditional dry sand until completely filled. Sweep any excess sand off the pavers. Refilling of the joints with sand may be needed in the future due to wind and rain erosion.
- Polymeric sand-Polymeric sand is a blend of polymers which harden when subjected to moisture. Sweep the sand into the open joints until completely filled. All excess sand and dust must be swept from the surface. Use a blower for the final dust removal to make certain all excess sand is removed. Any residual sand or dust can result in staining of the surface. Once the filling of the joints and the cleaning of the surface is complete, mist the pavement with water which activates the polymer and cures the mixture.



03. PORCELAIN PAVERS HANDLING AND SPECIALTY TOOLS.

Porcelain paver pallets are shipped with a very strong plastic covering and the individual units are packaged in protective cardboard boxes. The protective cardboard boxes guard them from the possibility of chipping. The handling of multiple loose stones can result in damaging or chipping of the pavers. Protect any un-used boxed pavers from the elements once the plastic shipping cover is removed. This ensures the integrity of the protective cardboard boxes. Wet cut paver saw is used to cut paver accurately and cleanly to fit around edges and corners. The saw must be equipped with a diamond blade manufactured for wet cutting porcelain and designed to safely cut a 24" (60 cm) length porcelain paver. A paver clamp to easily handle the installation and removal of pavers. Gloves are highly recommended while handling and installing porcelain slabs to protect the hands from injury. Notched trowels and grout float tools for cementitious adhesive and grout installation. Follow the adhesive and grout manufacturer's recommendations to select the appropriate tools needed for application.



**04. PORCELAIN PAVERS
RAISED FLOORS INSTALLATION SYSTEMS: WARNINGS.**

Landmark products are made using the best technology available, and their technical performances match or exceed requirements from both ASTM and ISO standards for porcelain products. Nevertheless, if the application of the 20 mm slabs requires the ceramic product used in structural installations, the project engineer and/or customer must carefully assess the project requirements with regard to the technical specifications of the slabs.

To prevent the risk of damage or injury, the manufacturer recommends:

In a raised floor installation, it is important to note that, even though porcelain is an extremely hard and compact material, the ceramic slab is not bonded to the ground, but laid on raised pedestals. Since the ceramic slab is a hard, not elastic material, it could break for various reasons (such as, but not limited to, a heavy object falling on the paver, heavy equipment/machinery operated improperly, etc.).

Therefore, the manufacturer recommends checking the specific intended use before starting the installation and:

- Comply with the table for raised installation provided below.
- In all installations on pedestals higher than 3/4", reinforcing must be applied on the back of the slabs (double fiberglass mesh) which must be ordered through Landmark and which will be applied prior to shipment of the goods.
- If a Buyer, customer, or end user decides to use another anti-collapse solution other than double fiberglass mesh among those available in the market (including any double fiberglass mesh not applied by Landmark), Landmark specifically disclaims, and Buyer agrees, that Landmark shall not have any responsibility for damage to the product, objects, or persons caused by the breakage of any of pavers. Additionally, if a Landmark-supplied backing solution is not used on raised installations, Landmark disclaims, and Buyer agrees, that Landmark shall not have any responsibility for damage to the product, objects, or persons caused by the breakage of any pavers.

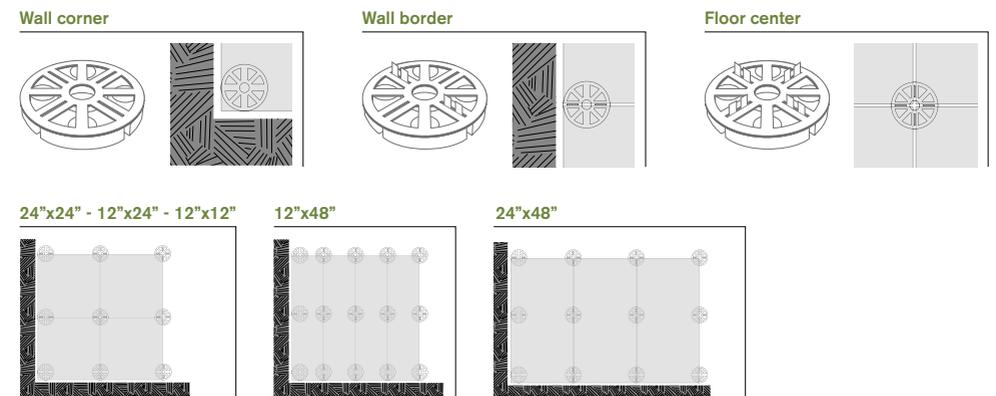
SUPPORTS REQUIREMENTS			
	SIZE	UP TO 3/4" (20MM)	ABOVE 3/4" (20MM)
	12"x12" (300x300 mm)	4 supports 0,32 pcs/sq ft	Please contact Landmark Ceramics
	12"x24" (600x300 mm)	4 supports 0,32 pcs/sq ft	Please contact Landmark Ceramics
	24"x24" (600x600 mm)	4 supports 0,32 pcs/sq ft	Please contact Landmark Ceramics
	24"x36" (600x900 mm)	6 supports 0,32 pcs/sq ft	Please contact Landmark Ceramics
	12"x48" (300x1200 mm)	6 supports 0,65 pcs/sq ft	Please contact Landmark Ceramics
	24"x48" (600x1200 mm)	6 supports 0,65 pcs/sq ft	Please contact Landmark Ceramics

For any dry installation system of flooring above the ground level, Landmark recommends compliance with local regulations and conditions of use regarding wind-load, loadbearing, seismic events, etc. Outdoor paving solutions installed unglued above the ground level are subject to the action of the wind, with the risk, in some cases, of becoming airborne. Landmark recommends using a qualified professional to check the suitability of any above ground installation system in accordance with the local laws and regulations and the conditions of use. Failure to do so could result in serious injury or property damage, for which Landmark shall have no liability.

Installations must be completed onto a solid, water-resistant substrate with the correct slope to guarantee water drainage.

Supports come equipped with four spacers that allow for the creation of grout lines between pavers. For a correct installation against walls or corners, it is necessary to keep the supports distant from the wall and remove 2 or 4 spacers as showed in the picture below. Landmark Ceramics recommends to strictly follow the instructions for the raised installation of Frontier20. Failure to comply with these recommendations may lead to improper use of the product and could cause serious property damage or injury. Additionally, failure to comply with these recommendations will result in the Warranty provided herein becoming null and void.

For further information and recommendations concerning the installation systems please refer to our website at <https://outdoor.landmarkceramics.com/installation-pavers.php> or <https://outdoor.landmarkceramics.com>.



All information provided in this document is subject to change. Please refer to our websites (<https://www.lcusa.com> and <https://outdoor.landmarkceramics.com>) for the latest, most accurate and up-to-date information.

FIRST FLOOR DEEP CLEANING AFTER INSTALLATION OVER CONCRETE

After Grouting the Joints (**pic.1**) It is important to remove the excess grout with a sponge and clear water (**pic.2**). After 12/48 hours, the grout in the joints will have “set up”/hardened significantly. There will be a noticeable residual “haze”. Typically, a diluted acid cleaner specifically for removing “Grout Haze”, combined with a soft scrubbing pad will remove the majority if not all the “Haze”.

Change your acid/water solution frequently for best results. It is also recommended to keep a bucket of clean water to remove the acid/water solution. It is recommended to keep and use clean dry towels to help remove as much residual water and keep the floor as dry as possible. Please refer to the cleaning chemical company’s suggested methods and dilution rates. (**pic.3**).

For areas with excess grout or grout that becomes adhered to the face of the tile, further cleaning with an Acid/Water Solution may be necessary. Please refer to the Cleaning Chemical Company’s instructions as not all acids or chemicals are the same. The excess grout residue (**pic.4-5**) must be removed so that it does not dry and stick on the surface. It is necessary to change the cleaning water frequently and rinse well. Care must be taken on inlayed, polished and especially Anti Slip products similar to Frontier20.

The use of a floor-washing machine combined with the use of a diluted acid detergent helps reach the spaces between adjacent tiles and clean them properly. If such a cleaning procedure is not carried out, or if such cleaning is carried out too late, the grout residue creates an absorbent film, which holds dirt, making the surface difficult to clean: in this case, Landmark Ceramics will not be liable for any damage caused to the surface.

ORDINARY CLEANING

After the first deep cleaning (described above) is complete, ordinary cleaning will be necessary based on traffic and use of the floor. We strongly advise against the use of waxes, oily soaps, impregnating products and treatments (water and oil repellent) on the porcelain stoneware product, as their application is unnecessary.

Many off the shelf detergents contain waxes and gloss-inducing additives which, after various washes, can deposit a bright coat on the floor. For films left by soap, lime scale, dirt, use an acid detergent, suitably diluted in water (read the product instructions carefully).

It is also important to point out that Hydrofluoric acid (HF) and its derivatives can irredeemably damage porcelain stoneware. For routine cleaning, Landmark recommends the use of bleach or ammonia, suitably diluted in water; for polished porcelain stoneware, dry the floor after washing to prevent unsightly smudges.

TIP: Since rinsing well with plenty of clean water is a fundamental part of the day-to-day cleaning procedure, Landmark advises against the use of products which state that they “do not need rinsing”.

EXTRAORDINARY CLEANING

In the case of particularly stubborn stains, we recommend using specific detergents such as those indicated in chart below. The removal of any type of stain is easier when the stain is still fresh. It is always important to test the detergents on a small area before applying to the entire surface, particularly in the case of porcelain stoneware with a lapped or polished finish.



PIC 1. Fill joint with grout.



PIC 2. Remove excess grout with clean water.



PIC 3. Add specific acid cleaning agent for porcelain tile to clean water.



PIC 4. First floor deep cleaning after 12/48 h from installation.



PIC 5. Removal of excess grout residues with hard brush.

CLEANING AGENTS

TYPE OF STAIN	SOLUTION	DETERGENTS	MANUFACTURER
INORGANIC STAINS			
Cement Carbon Calcium Efflorescence Chalk Metallic residues Rust Cement-based grout Colored grout Wall paint	Acid	DETERGENT WITH AN ACID BASIS *	
		DETERDEK or similar	UNITED STATES > Fila Chemicals USA, Corp. 10800 N.W. 21st Street #170 Miami, FL 33172 USA Tel. +1-305-513-0708 email filausa@filasolutions.com
		KERANET (liquid) or similar	MAPEI Americas Headquarters 1144 E. Newport Center Drive Deerfield Beach, Florida 33442
ORGANIC STAINS			
Coca Cola Ice Cream Coffee Wine Beer Animal fats Vegetable fats Mustard Mayonnaise Ketchup Jam Linseed oil Lipstick Wax	Alkaline and neutral	LIMITED FOAM TYPE PRODUCT **	
		PS87 or similar	UNITED STATES > Fila Chemicals USA, Corp. 10800 N.W. 21st Street #170 Miami, FL 33172 USA Tel. +1-305-513-0708 email filausa@filasolutions.com
		FILACLEANER or similar	UNITED STATES > Fila Chemicals USA, Corp. 10800 N.W. 21st Street #170 Miami, FL 33172 USA Tel. +1-305-513-0708 email filausa@filasolutions.com
		Ammonium	Universal
RESIDUAL RINGS of organic nature	Saline solution	Sodium hypochloride (bleach for white laundry)	Universal
Silicone oils Machine Oil Resins and glazes Coal and natural rubber Encres et feutres		FILASOLV or similar	UNITED STATES > Fila Chemicals USA, Corp. 10800 N.W. 21st Street #170 Miami, FL 33172 USA Tel. +1-305-513-0708 email filausa@filasolutions.com
		Aceton	Universal
		NITRO - THINNER	Universal
		TURPENTINE	Universal
		TRICHLOROETHYLENE	Universal
		CIF AMMONIACAL	Universal
Tire		HAND CLEANSER	Universal
Silicone and chewin-gum		Ice+scraper	

N.B. When using the above products, the instructions on the package should be followed.

* **Detergent with an acid base:** a detergent with an acid basis, specifically recommended after bath floor or wall installation, for the decalcioficant cleaning and the regular maintenance.

** **Limited foam type product:** a limited foam type product degreasing and general cleaning, suitable for all types of stains but especially for remove of vegetable and animals fats.



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