



# FRONTIER<sup>20</sup>

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.

Landmark Ceramics - UST, Inc.  
1427 N Main St  
Mount Pleasant, TN 38474  
Tel. 931-325-5700  
[tech-support@lcsusa.com](mailto:tech-support@lcsusa.com)



# FRONTIER20

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# 1. PORCELAIN PAVERS ADVANTAGES

**20** THICKNESS  
PORCELAIN PAVERS



### ANTISLIP

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



### SAVING OVER TIME

Low maintenance cost.



### RESISTANT TO MOSS AND MOLDING

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



### 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!



### 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.



### STAIN RESISTANT

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



### NO SEALING NEEDED

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

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.



### 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 stripping.



### SCRATCH RESISTANT

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



### EASY TO INSTALL



### 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.



### 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.



### 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 thinsset mortar suitable for porcelain paver.



### FROST RESISTANT

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



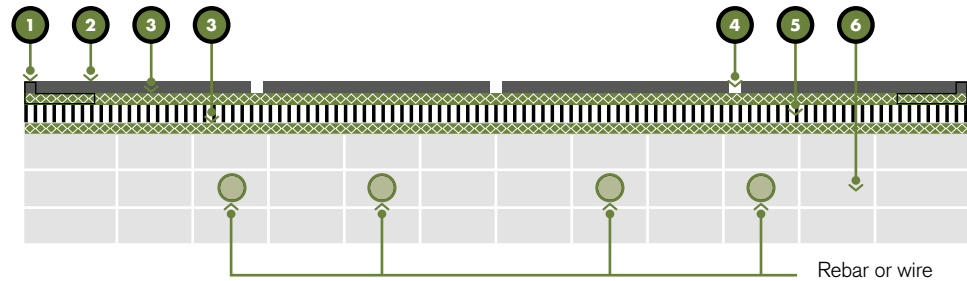
## 2.A THIN SET MORTAR APPLICATION OVER REINFORCED CONCRETE

### 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 -  $\frac{5}{32}$ ").

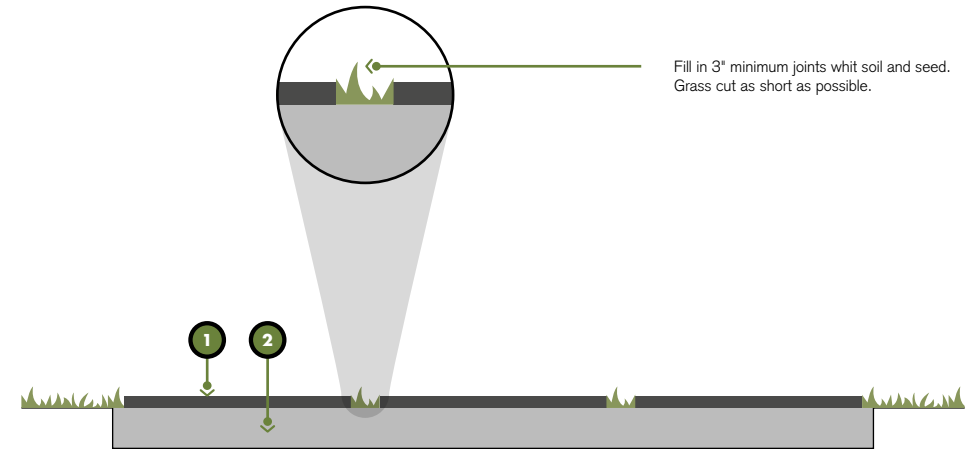
Please note that the above section drawing is meant to be an example only. Project and site evaluation, structural design must be performed by a qualified professional engineer.

## 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 -  $\frac{5}{32}$ ").

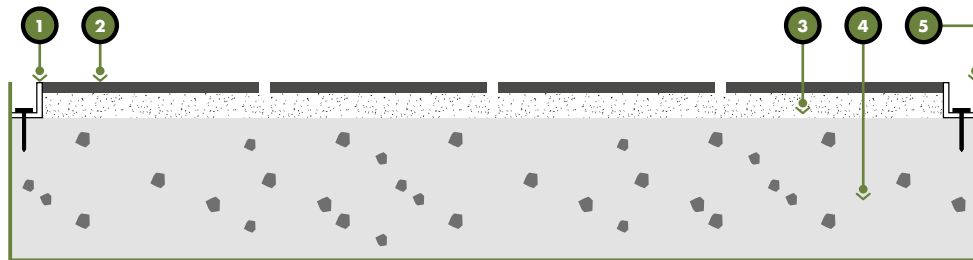
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**2.C TYPICAL FLEXIBLE BASE INSTALLATION**  
(PEDESTRIAN FOOT TRAFFIC)

**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  $\frac{3}{16}$ " (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  $\frac{3}{4}$ " nominal (20 mm) pavers.
- 3.  $\frac{3}{4}$ " 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 -  $\frac{5}{32}$ ").

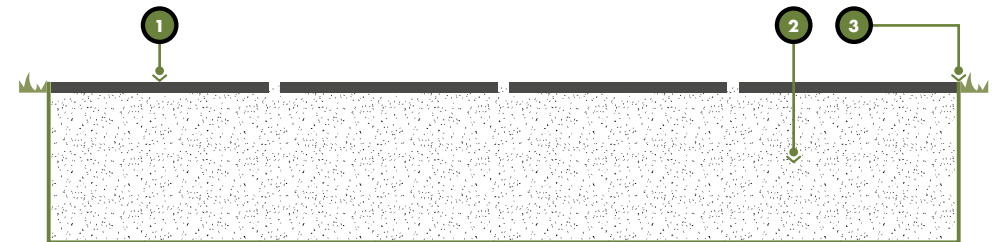
Please note that the above section drawing is meant to be an example only.  
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**2.D OVER SAND BASE INSTALLATION**  
(PEDESTRIAN FOOT TRAFFIC)

**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  $\frac{3}{16}$ " (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  $\frac{3}{4}$ " 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 -  $\frac{5}{32}$ ").

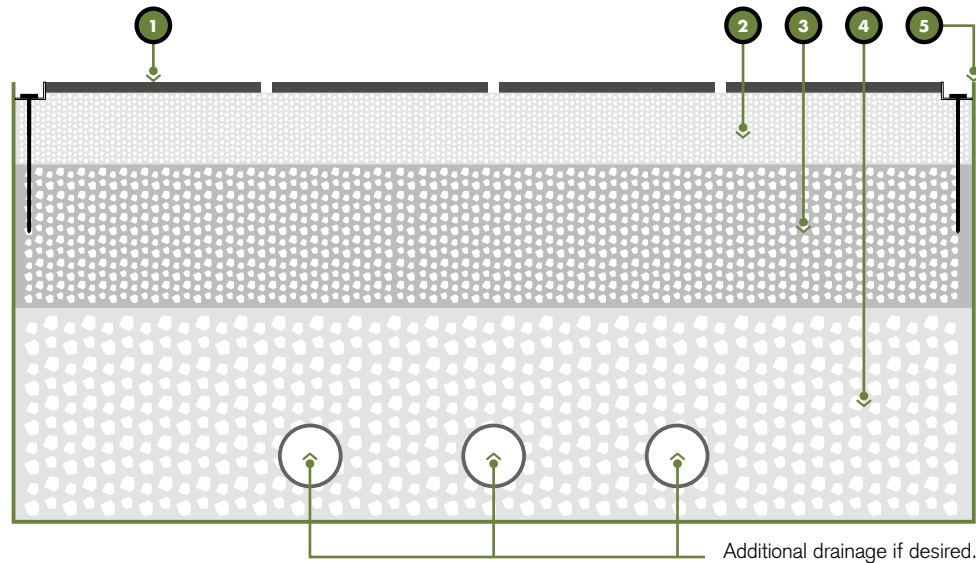
Please note that the above section drawing is meant to be an example only.  
Project and site evaluation, structural design must be performed by a qualified professional engineer.

**2.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").

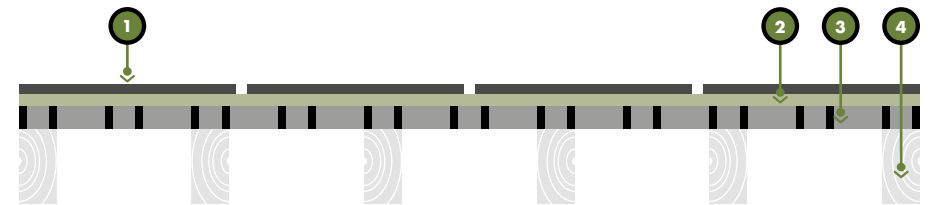
Please note that the above section drawing is meant to be an example only. Project and site evaluation, structural design must be performed by a qualified professional engineer.

**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 1/3 rd, 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. 1/8 th 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.

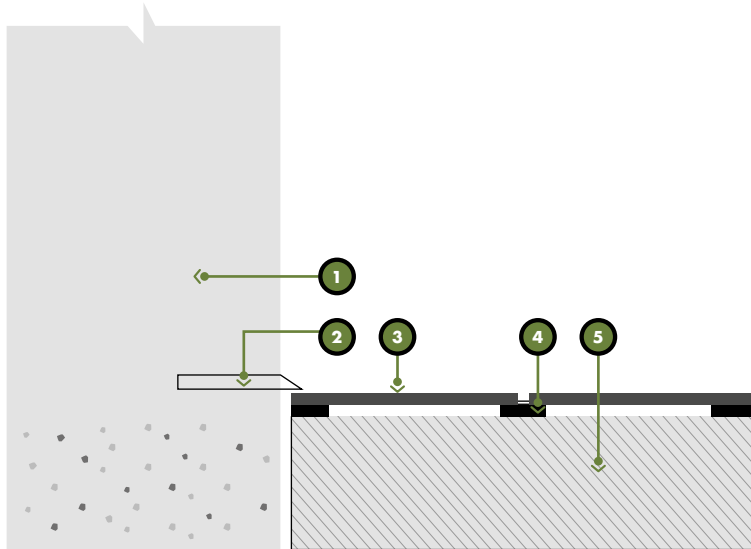


**2.G LOW HEIGHT SUPPORTS (UP TO 3/4" - 20 MM)  
PEDESTAL INSTALLATION OVER EXISTING SUBSTRATE \***  
(PEDESTRIAN FOOT TRAFFIC)

**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 substraight.

\* For installation on adjustable height pedestals (from 1 1/4" to 16) visit <https://hardscape.landmarkceramics.com> or email [tech-support@cusa.com](mailto:tech-support@cusa.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 porcelain pavers with a plate compactor.  
Never install porcelain pavers without spacers (min 4mm - 5/32").

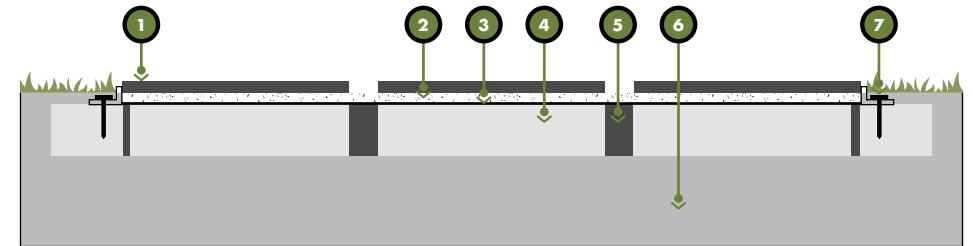
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**2.H SAND SET OVER CONCRETE**  
(PEDESTRIAN FOOT TRAFFIC)

**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 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.

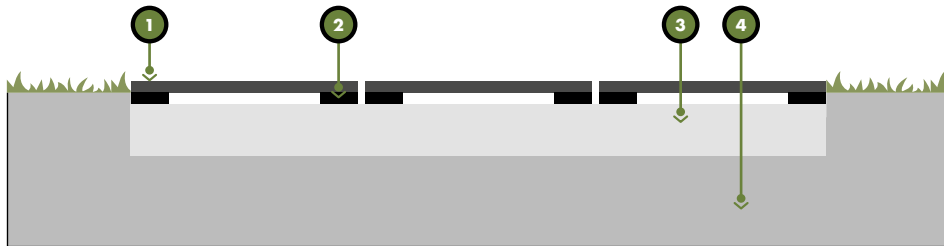


**2.1 INSTALLTION OVER ¾" PEDESTAL ON CONCRETE**  
(PEDESTRIAN FOOT TRAFFIC)

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

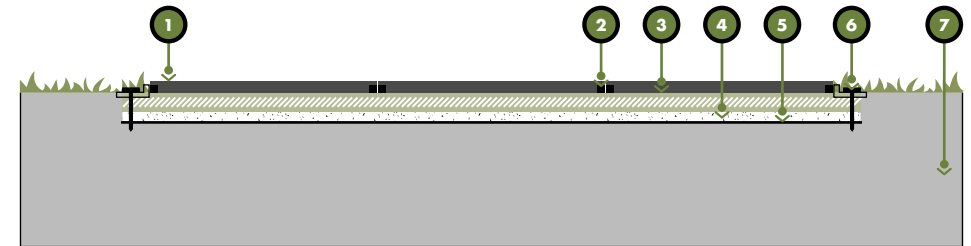
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**2.2 INSTALLATION WITH HIGH DENSITY PANELS**  
(PEDESTRIAN FOOT TRAFFIC)

**PRACTICAL INSTALLATION**

Follow the drawing below.

- The edge restraint system is 0.75" - 1" height profile.
- Attach the edge restraint into the panel.
- Lay fabric directly on top of the subgrade to contain sand.
- Install panel onto sand bed course 1".
- 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 ¾" nominal (20 mm) pavers.
- 2. Spacers.
- 3. High density panels.
- 4. Sand ½" - 1"

- 5. Fabric.
- 6. 1" inch peripheral anchor.
- 7. 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 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.



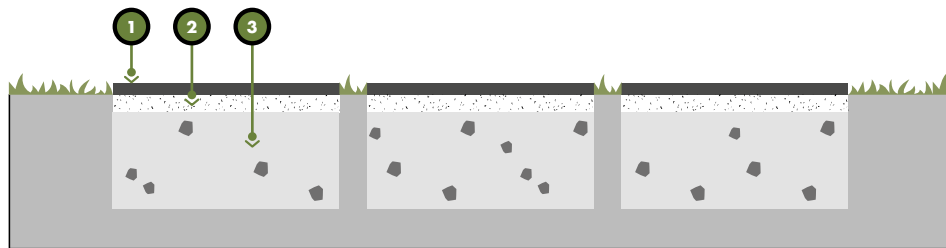


## 2.K DRY LAY OVER GRASS ON COMPACTED ROAD BASE INSTALLATION (PEDESTRIAN FOOT TRAFFIC)

### PRACTICAL INSTALLATION

Follow the drawing below.

- Compacted base road is composed of  $\frac{3}{4}$  compacted gravel.
- Sand bed course poured onto compacted gravel and screed to have smooth surface.



1. Frontier20 porcelain  $\frac{3}{4}$ " 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 -  $\frac{5}{32}$ ").

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.

**WARNING**

- OUTDOOR PAVINGS INSTALLED UNGLUED ABOVE THE GROUND LEVEL ARE SUBJECT TO THE ACTION OF THE WIND, WITH THE RISK, IN SOME CASES, OF BECOMING AIRBORNE. THE MANUFACTURER RECOMMENDS TO REQUIRE THE ASSISTANCE OF A QUALIFIED PROFESSIONAL IN ORDER TO CHECK THE SUITABILITY OF THE INSTALLATION SYSTEM ABOVE THE GROUND ADOPTED, 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.
- A CERAMIC SLAB INSTALLED ON A RAISED PEDESTAL SYSTEM MAY FRACTURE ON IMPACT IF A HEAVY OBJECT IS DROPPED ONTO IT FROM A HEIGHT, WITH A RISK OF INJURY TO ANYONE STANDING OR WALKING ON SUCH SLAB. FAILURE TO ADHERE TO THE MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION OF SLABS ON RAISED PEDESTAL SYSTEMS MAY RESULT IN SERIOUS INJURY. FOR FURTHER INFORMATION AND RECOMMENDATIONS CONCERNING THE INSTALLATION SYSTEMS PLEASE REFER TO [HTTPS://HARDSCAPE.LANDMARKCERAMICS.COM](https://hardscape.landmarkceramics.com) OR TO THE FRONTIER20 20 MM CATALOGUE.

**NOTE**

IF THE APPLICATION OF THE 20 MM ( $\frac{3}{4}$ ") SLABS FORESEES 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:

- WITH REGARD TO A RAISED FLOOR INSTALLATION A CERAMIC SLAB MAY FRACTURE ON IMPACT IF A HEAVY OBJECT FALLS ON IT FROM ANY SIGNIFICANT HEIGHT. THEREFORE THE MANUFACTURER RECOMMENDS TO CHECK THE SPECIFIC INTENDED USE BEFORE STARTING THE INSTALLATION AND TO FOLLOW TABLE FOR RAISED INSTALLATION PROVIDED BELOW. IN CERTAIN CONDITIONS, REINFORCING MUST BE APPLIED ON THE BACK OF THE SLABS (MESH PLUS OR GALVANIZED STEEL SHEET) SUPPLIED AND APPLIED BY THE MANUFACTURER;
- WITH REFERENCE TO ANY DRY INSTALLATION SYSTEM OF FLOORING ABOVE THE GROUND LEVEL, THE MANUFACTURER RECOMMENDS TO COMPLY WITH LOCAL REGULATIONS AND CONDITIONS OF USE WITH REGARD TO WIND-LOAD, LOADBEARING, SEISMIC EVENTS, ETC.  
FAILURE TO COMPLY WITH THESE RECOMMENDATIONS MAY LEAD TO IMPROPER USE OF THE PRODUCT AND COULD CAUSE SERIOUS DAMAGE OR INJURY.

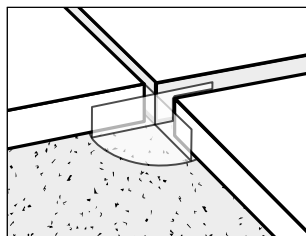


## INSTALLATION INFORMATION AND RECOMMENDATIONS

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 install the standard base thickness to install porcelain pavers for the needs of the area. When installing porcelain pavers, the bedding course 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  $\frac{3}{16}$ " (4 mm) spacers must always be used to install pavers on sand set and permeable installations. The photo on the right illustrates the use of the  $\frac{3}{16}$ " spacer to support and space the 4 paver corners.
- Never install pavers with porcelain to porcelain contact.
- The use of plate compactors is not recommended to be used on the porcelain pavers.



## JOINT FILLING

When installing porcelain paver on sand set base, fill the 4 mm (approx  $\frac{3}{16}$ " ) paver joints with 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.

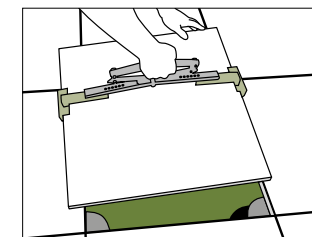
#### IMPORTANT NOTE: LEGAL DISCLAIMER

The nominal measurements include 4 mm 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.

## HANDLING AND SPECIALTY TOOLS

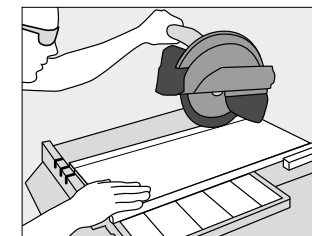
Porcelain paver pallets are shipped with a very strong plastic covering and the individual units are packaged in protective cardboard boxes. The protective cardboard boxes guard them from the possibility of chipping.

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 insures 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.



#### IMPORTANT NOTES:

1. Use the manufacturer's instructions when choosing polymeric sand for your project.
2. The use of cement blended sand and polymeric sand can reduce plant growth and insect infiltration within the joint infill material.
3. Whether using traditional sand or a cemented blended sand, ensure the gradation of the sand is fine enough to pass through and fill the  $\frac{3}{16}$ " (4 mm) joints.

## 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

Ordinary maintenance must be carried out using specialized detergents to remove stains but these detergents must not leave a wax, film or membrane residue. Rinsing well with plenty of clean water is a fundamental part of the cleaning procedure, therefore we advise against the use of products which state that they “do not need rinsing”.

### OTHER RECOMMENDATIONS

Bright colored products, in particular white and extra-white tiles, are very delicate and, although for all intent and purpose are hygienically clean, However, they can get dirty more easily than darker tiles. It is therefore necessary to remember that these particular products require careful regular maintenance. Sealers are unnecessary, especially in the case of our **Frontier20** Product line. Sealing will change the D.C.O.F. (Dynamic Co-efficient of Friction) resulting in a surface that will become more slippery. Also because Porcelain has such a low absorption the sealer will unlikely stick and most likely the sealer will flake off over time.



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
<b>INORGANIC STAINS</b>			
Cement Carbon Calcium Efflorescence Chalk Metallic residues Rust Cement-based grout Colored grout Wall paint	Acid	<b>DETERGENT WITH AN ACID BASIS *</b>	
		<b>DETERDEK</b> 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
		<b>KERANET</b> (liquid) or similar	MAPEI Americas Headquarters 1144 E. Newport Center Drive Deerfield Beach, Florida 33442
<b>ORGANIC STAINS</b>			
Coca Cola Ice Cream Coffee Wine Beer Animal fats Vegetable fats Mustard Mayonnaise Ketchup Jam Linseed oil Lipstick Wax	Alkaline and neutral	<b>LIMITED FOAM TYPE PRODUCT **</b>	
		<b>PS87</b> 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
		<b>FILACLEANER</b> 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
		<b>Ammonium</b>	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		<b>FILASOLV</b> 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
		<b>Aceton</b>	Universal
		<b>NITRO - THINNER</b>	Universal
		<b>TURPENTINE</b>	Universal
		<b>TRICHLOROETHYLENE</b>	Universal
		<b>CIF AMMONIACAL</b>	Universal
Tire		<b>HAND CLEANSER</b>	Universal
Silicone and chewin-gum		<b>Ice+scraper</b>	

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 decalcificiant 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.



# **LANDMARK** C E R A M I C S

**Landmark Ceramics - UST, Inc.**

1427 N. Main Street  
Mount Pleasant, TN 38474

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Tel. 931.325.5700

<https://hardscape.landmarkceramics.com>

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