



Horizontal Natural Stone Paver Installation over Concrete Slab TDS 182

LATICRETE® products are ideal for exterior and interior installations of natural stone over concrete slabs in all climates. This document provides a few options for direct bond and unbonded methods.

Concrete Surface Preparation

Concrete must be structurally sound, stable and rigid enough to support stone and similar finishes. Substrate deflection under all live, dead and impact loads, including concentrated loads, must not exceed $L/480$ for stone installations where L =span length (except where local building codes specify more stringent deflection requirements). Surfaces and ambient temperatures must be between 40°F (4°C) and 90°F (32°C) during installation and throughout the cure time. Bonding surface must be clean and free of dirt, oil, grease, paint, concrete sealers, curing compounds, and other potential bond inhibiting contaminants. Rough or uneven concrete surfaces should be made smooth with [3701 Fortified Mortar Bed](#) or a LATICRETE mortar (e.g. [254 Platinum](#), [257 TITANIUM™](#) or [MULTIMAX™ LITE](#)) to provide a wood float (or better) finish. Dry, dusty concrete slabs should be dampened and excess water swept off. Installation may be made on a damp surface but not in standing water or puddles.

Expansion Joints

Expansion Joints must be maintained from the substrate through the stone work from all construction or expansion joints in the substrate in accordance with project specifications, details, and industry standards (e.g. TCNA EJ-171 Movement Joint Guidelines for Ceramic, Glass and Stone). Do not cover substrate joints with mortar and/or stone.

METHODS OF INSTALLATION

Direct Bond to Concrete and Hardened Mortar Bed – (See detail drawing 1)

Apply 254 Platinum, 257 TITANIUM™ or MULTIMAX™ LITE to the substrate with the flat side of the trowel, pressing firmly to work into surface. Comb on additional mortar using a 1/2" x 1/2" (12 mm x 12 mm) notched trowel. Back butter stone to ensure full bedding of the stone into the mortar. Place stone into wet, sticky mortar and beat in using a beating block and rubber mallet to embed stone and adjust level. Work in manageable sections spreading only as much mortar as can be covered with stone before it skins over. If mortar is skinned over (not sticky), remove and replace with fresh mortar. Check for a minimum of 95% coverage by periodically removing a stone and inspecting bedding mortar transfer onto back of stone. All stone edges and corners must be fully supported and embedded in mortar. This will help minimize the occurrence of cracks in the stone resulting from voids in the setting bed. Immediately clean mortar from the stone face using a damp sponge while the mortar is fresh as mortar will be difficult to remove once it has fully set.

Grout joints between stones can be filled with [PERMACOLOR® Select](#) or [PERMACOLOR Grout](#) after 24 hour cure time. Refer to applicable product data sheets for mixing and installation instructions.

Bonded Mortar Bed - (See detail drawing 2)

Mix 3701 Fortified Mortar Bed to a stiff, semi-dry consistency by adding approximately 0.8–0.9 gal (3 - 3.4L) of water to a 60 lb. bag (27.3 kg) of 3701 Fortified Mortar Bed. The mortar should be able to pack into a ball but will crumble when squeezed. Just before placing mortar bed, apply a slurry bond coat approximately 1/16" (1.5 mm) thick, made from 254 Platinum, 257 TITANIUM™ or MULTIMAX™ LITE mixed with water. Please refer [TDS 143](#) or the specific product data sheet for more information.

While the slurry bond coat is still wet and tacky spread, screed, and ensure the mortar bed is well compacted to the appropriate elevation. Then allow to dry/cure for 24 hours prior to placing stone per “**Direct Bond to Concrete and Hardened Mortar Bed**” instructions above using 254 Platinum, 257 TITANIUM™ or MULTIMAX™ LITE. When placing stone immediately over a fresh mortar bed, apply another slurry bond coat of 254 Platinum, 257 TITANIUM™ or MULTIMAX™ LITE to the surface of the fresh placed mortar bed and to the back of the stones. While the slurry bond coat is wet and sticky, place the stone and beat in well.

Grout joints between stones can be filled with PERMACOLOR® Select or PERMACOLOR Grout while placing stones or after 24 hour cure time. Refer to applicable product data sheets for mixing and installation instructions.

Unbonded Mortar Bed - (See detail drawing 3)

Before placing 3701 Fortified Mortar Bed, place a cleavage membrane (e.g. 4 mil [.1mm] thick polyethylene sheeting or 15 lb. [6.8 kg] builder felt) on the substrate.

Mix 3701 Fortified Mortar Bed to a stiff, semi-dry consistency by adding approximately 0.8–0.9 gal (3 - 3.4L) of water to a 60 lb. bag (27.3 kg) of 3701 Fortified Mortar Bed. The mortar should be able to pack into a ball but will crumble when squeezed.

Place mortar over the cleavage membrane approximately 1/2 the depth of the mortar bed and compact slightly. Next, place 2" x 2" (50 mm x 50 mm), 16 gauge, galvanized welded wire mesh over the mortar and then place the balance of the mortar bed. The wire mesh should be suspended in the middle of the mortar bed. Minimum unbonded mortar bed thickness shall be 2" (50 mm). Spread, screed, and ensure the mortar bed is well compacted to the appropriate elevation. Then allow to dry/cure for 24 hours prior to placing stone per “**Direct Bond to Concrete and Hardened Mortar Bed**” instructions above using 254 Platinum, 257 TITANIUM™ or MULTIMAX™ LITE. When placing stone immediately over a fresh mortar bed, apply a slurry bond coat to the surface of the freshly placed mortar bed and to the back of the stones. While the slurry bond coat is wet and sticky, place the stone and beat in well.

Grout joints between stones can be filled with PERMACOLOR Select or PERMACOLOR Grout while placing stones or after 24 hour cure time. Refer to applicable product data sheets for mixing and installation instructions.

Grouting and Filling Mortar Joints

Use PERMACOLOR Select or PERMACOLOR Grout for joints 1/16”- 1/2” (1.5 – 12mm) wide after stone has set firm.

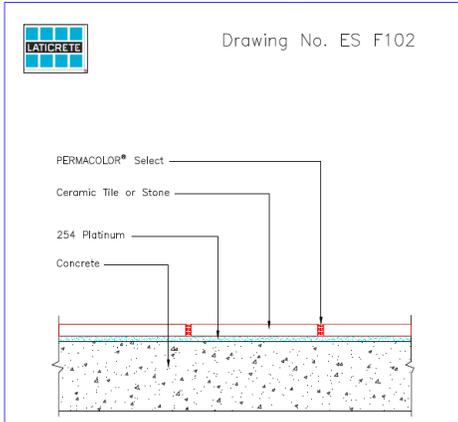
Before grouting, remove excess setting mortar, spacers, debris, dust, dirt, etc. using a scraper and a damp sponge. Do not leave water standing in joints. Substrate temperature must be between 40°F (4°C) and 90°F (32°C). Apply [STONETECH® Grout Release](#) or suitable STONETECH sealer (e.g. [STONETECH Heavy Duty Sealer](#)) to stone surface prior to installing grout. This will help prevent the grout color transfer to the stone surface. Refer to the Surface Care – Maintenance and Care Instructions section ([here](#)) for more complete information and recommendations for your specific stone type.

Mix grout per product data sheet mixing instructions. Place water in a clean mixing container and add mortar slowly. Mix with a slow speed mixer to a smooth flowable consistency. Allow grout to slake for 5 minutes, then remix grout.

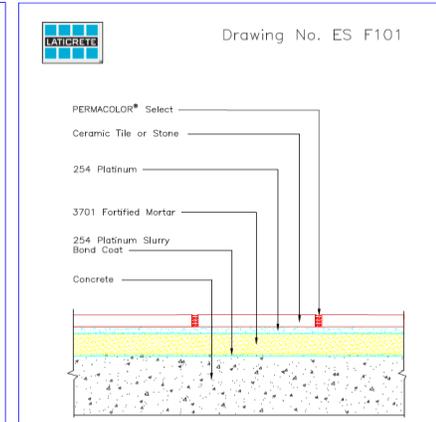
Dampen stone surface with water. Use a grout float to place grout into joints. The grout must fill the full depth of the joints leaving no voids. Immediately remove grout from the stone surface with a clean, damp sponge while grout is fresh. Grout will be difficult to remove once it dries on the surface. Protect grout from rain and foot traffic for a minimum of 24 hours at 70°F (21°C). Cooler temperatures require a longer cure time.

Use [LATASIL™](#) for movement joints in accordance with project specifications, details, and industry standards (e.g. TCNA EJ171 Movement Joint Guidelines for Ceramic, Glass and Stone).

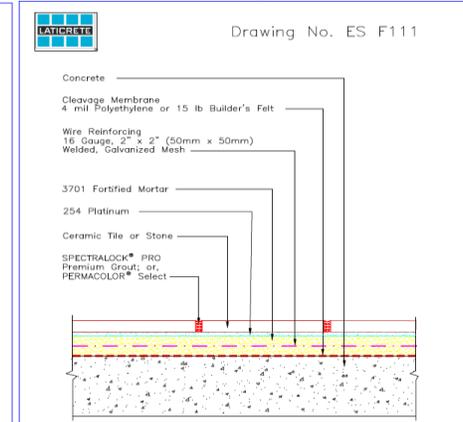
Drawing 1



Drawing 2



Drawing 3



MAINTENANCE

Stone Sealer

There are several natural look (e.g. [STONETECH® BulletProof® Sealer](#), [STONETECH Heavy Duty Exterior Sealer](#), etc...) and enhancing type sealers (STONETECH Enhancer & Sealer, STONETECH High Gloss Finish & Sealer, etc...) to choose from depending on the desired look and the level of protection required for your project. Additional information can be found [here](#) or by calling 888-786-6343 to speak to a Technical Service Representative.

Stone Cleaner

There are several types of cleaners; daily ([STONETECH Stone & Tile Cleaner](#)), heavy duty ([STONETECH KlenzAll™](#) or [STONETECH DEEPKLENZ™](#)), and specialty (e.g. [STONETECH Mold & Mildew Stain Remover](#)) cleaners that can be used to clean and maintain stone. Additional information can be found [here](#) or by calling 888-786-6343 to speak to a Technical Service Representative.

De-icing / Ice Melt Products

It is widely known that many de-icing products can cause damage when used on stone and cement based materials. LATICRETE recommends conducting a review of the maintenance / de-icing products used where stone and cement based products are installed. LATICRETE also encourages the use of non-corrosive, non-aggressive de-icing methods and materials. There are various types of non-corrosive de-icing materials available in the market place (e.g. calcium magnesium acetate). The following are a few links to companies that provide these types of materials:

<http://www.meltsnow.com/material-safety-data-calcium-magnesium-acetate.htm>

http://store.interstateproducts.com/Ice_Melts?gclid=CIOxjc6j-ZwCFRdc2godTxygaQ

Technical Data Sheets are subject to change without notice. For latest revision, check our website at <https://laticrete.com>
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