

UNILOCK NATURAL STONE INSTALLATION GUIDE



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NATURAL STONE

INSTALLATION GUIDE



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The successful installation of natural stone paving units from Unilock is dependent on the structural integrity of what lies below the surface of the slabs. This will include many factors such as wood or concrete decking integrity, site drainage, cutting and quality of concrete mortars and grouts.

INSTALLATION

1. All installations and their respective bases indicated in this guide, should always be installed on undisturbed native subsoil. Provisions for drainage and load-bearing capacity are ultimately the installer's responsibility and can be managed by slope, drains or depth of base.
2. Only use cementitious adhesives, modified mortars and grouts that are approved for exterior use. Always observe manufacturer's directions and be sure to conform to all ACI (American Concrete Institute) and PCA (Portland Cement Association) standards. Always install in accordance with ASTM C615, Standard Specification for Granite Dimension Stone; ANSI/CTI A108.1.
3. Building code requirements may vary. Always review local building codes prior to design and construction.
4. Use only approved geotextiles and geogrids.
5. **DO NOT** compact the surface of natural stone paving units with a plate compactor.
6. Use only diamond blades specifically designed for cutting natural stone paving units. Always "wet-cut" natural stone and wash slurry from both surfaces before installing.
7. Impervious sub-structures must always be sloped for drainage or be designed with provisions for drainage.
8. Thicknesses of base, concrete and bedding indicated in these details are typical. Actual design specifications should always be determined by a qualified professional. All base materials must be placed over undisturbed subsoil and compacted to 95% SPD. Never lay product on topsoil.

DISCLAIMER

The cross sections and diagrams included in this document are intended for the preliminary design and installation of natural stone paving units from Unilock. Unilock cannot guarantee and will not be held responsible for any installation failure and accepts no liability for the improper use of these details.

It is the installer's responsibility to ensure that all site and structural factors are properly addressed and a structural engineer may be required to provide site-specific engineering and installation specifications.

NOTE: Unilock cannot guarantee the tensile strength of natural stone paving units for pedestal applications or when substructures shift or deteriorate.

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PERSONAL PROTECTIVE EQUIPMENT (PPE)

Personal Protective Equipment (PPE) should be worn on site such as goggles, N100 stone dust rated masks and gloves, especially when the units are being cut. A minimum requirement for personal protective equipment on site should include a hardhat, protective gloves, protective shoes and high visibility clothing.



CLEANING

Natural stone may be susceptible to staining. When stains do occur, it is imperative that they are cleaned properly and safely to ensure that the appearance is restored and that the surface is not altered or damaged. Natural Stone can often be cleaned with just soap and water. Plain water with a stiff brush (DO NOT use a metal wire brush) is the best start; it won't cause damage to stone. **NEVER USE PRESSURE WASHERS** on fine finished materials; this can leave marks on the stone.

Organic stains, such as coffee, wine, food, algae etc., on unsealed surfaces, will usually dissipate naturally over time. Natural stone can be sealed to help prevent the penetration of stains. Always observe sealer manufacturer's directions for usage.

Always test cleaners and sealers on an unobtrusive area of the installation to ensure that the cleaner is producing the desired outcome before applying to the entire project.

ACIDS

NEVER use Hydrochloric or Sulphuric (Muriatic) Acid based cleaners to remove pointing/grouting residue from natural stone.

Phosphoric acid-based cleaners can be used on acid-resistant sandstones and granites.

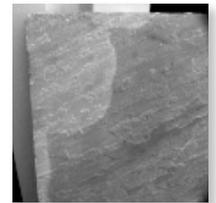
NEVER use any acid on limestone.

SEALERS

Any sealer applications in wet areas such as pool decks or patios should be done with impregnating sealers that remain "breathable". See manufacturer's specifications.

Products that **form a film are not recommended** for most applications because they do not allow moisture to get through and may also be slippery when wet.

Always test a small area in an unobtrusive location before sealing entire area.



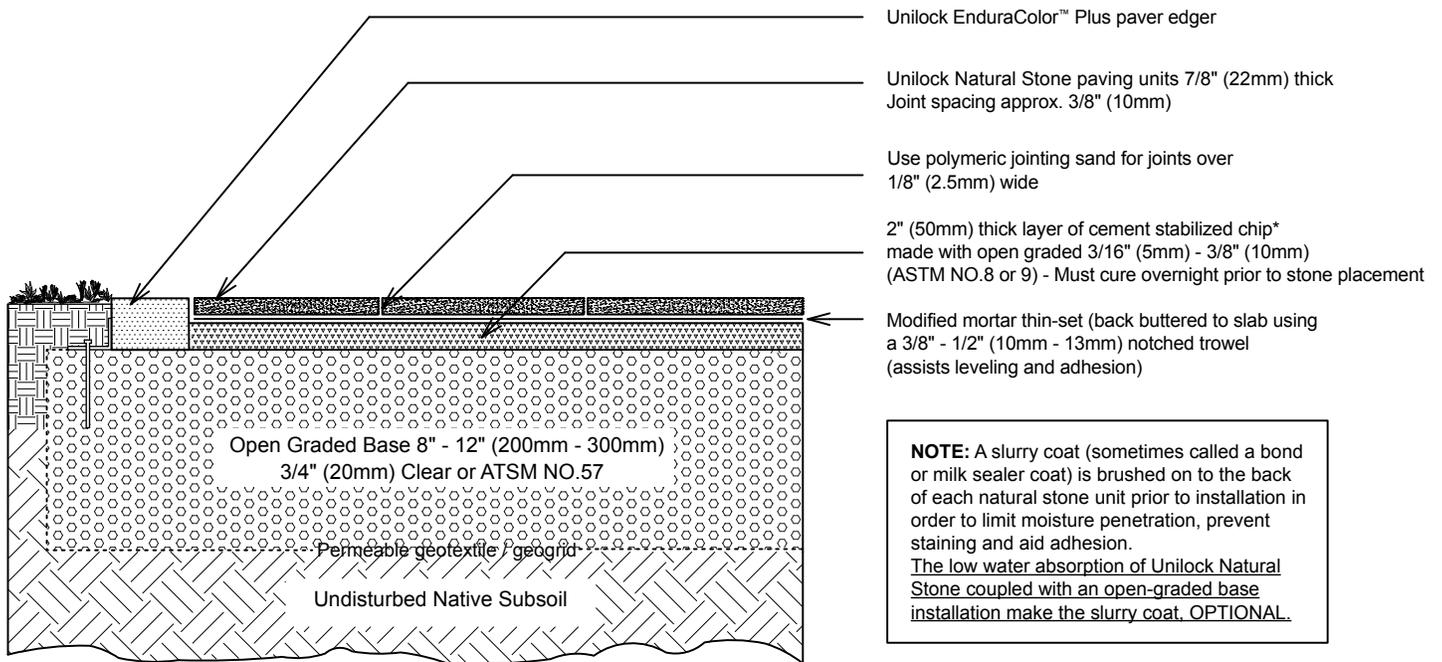
Light area indicates damage from acid.

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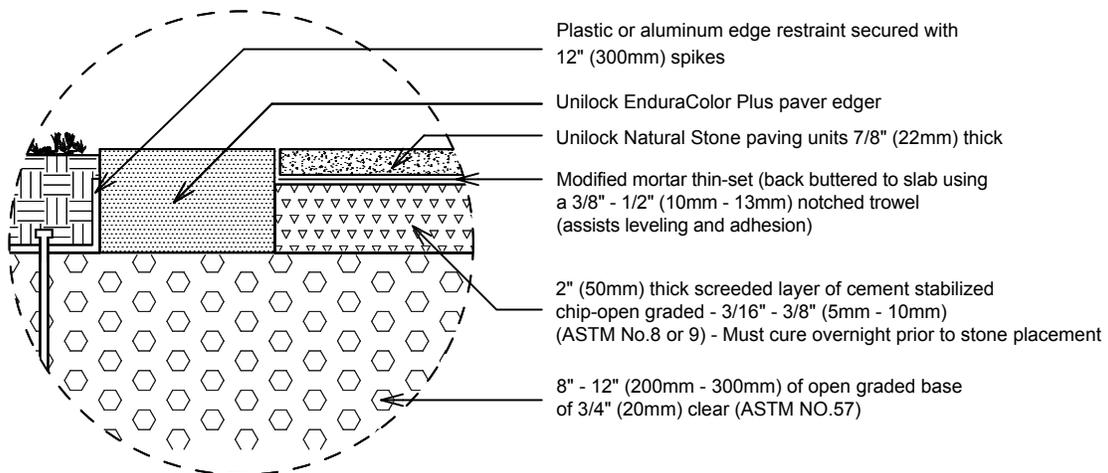
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OPEN GRADED BASE - RIGID BEDDING (STABILIZED CHIP) - FULLY PERMEABLE



*NOTE: Cement stabilized chip is a mixture of 80% open graded chip and 20% portland cement with enough water to create a pasty yet flowable mix.



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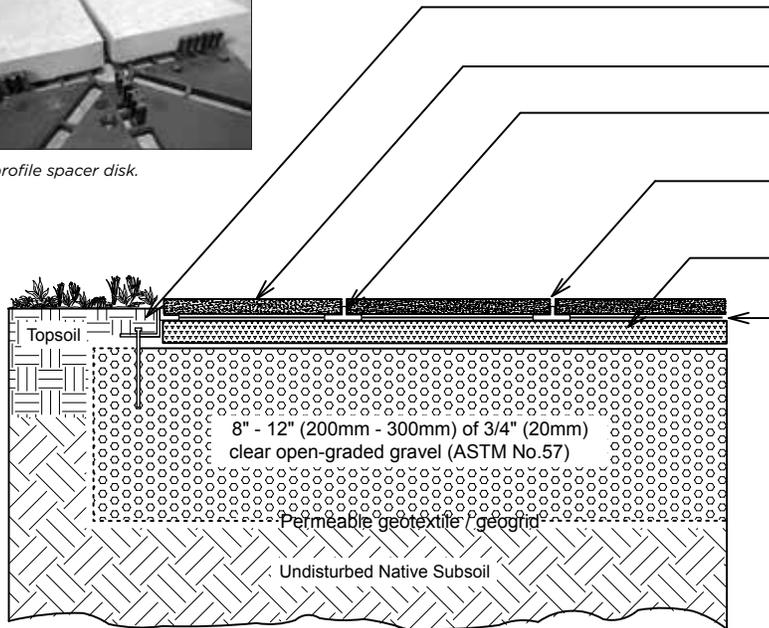


OPEN GRADED BASE - FLEXIBLE BEDDING

- FULLY PERMEABLE



Low profile spacer disk.



Plastic or aluminum edge restraint spiked in or poured-in-place concrete curb

Unilock Natural Stone paving units 7/8" (22mm) thick
Joint spacing approx. 1/8" - 1/2" (2.5mm - 10mm)

Low profile spacer disk - max 1/8" (2.5mm high) - If design permits

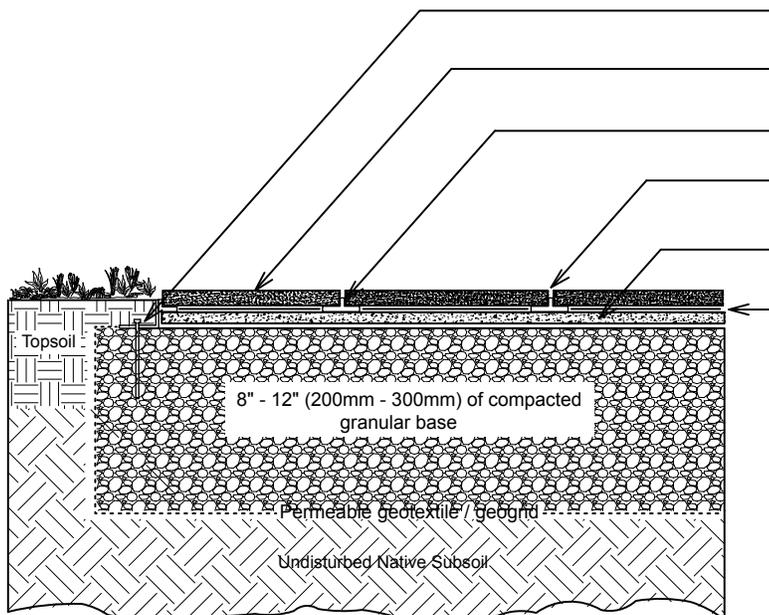
Use permeable polymeric jointing sand or EasyPro™ jointing compound for joints over 1/4" (5mm) wide

1 1/2" - 2" (30mm - 50mm) screeded layer of open-graded chip (ASTM 8, 9, or 10) (Also known as HPB)

Slurry / bond / milk sealer coat (see note)

NOTE: A slurry coat (sometimes called a bond or milk sealer coat) is brushed on to the back of each natural stone unit prior to installation in order to limit moisture penetration, prevent staining and aid adhesion. The low water absorption of Unilock Natural Stone coupled with an open-graded base installation make the slurry coat, OPTIONAL.

TRADITIONAL SAND-SET



Plastic or aluminum edge restraint spiked in or poured-in-place concrete curb

Unilock Natural Stone paving units 7/8" (22mm) thick
Joint spacing approx. 1/8" - 1/2" (2.5mm - 10mm)

Low profile spacer disk - max 1/8" (2.5mm high)
If design permits

Use non-permeable polymeric jointing sand in joints

1/2" - 1" (10mm - 20mm) screeded layer of coarse concrete sand (sometimes referred to as torpedo sand)

Slurry / bond / milk sealer coat (see note)

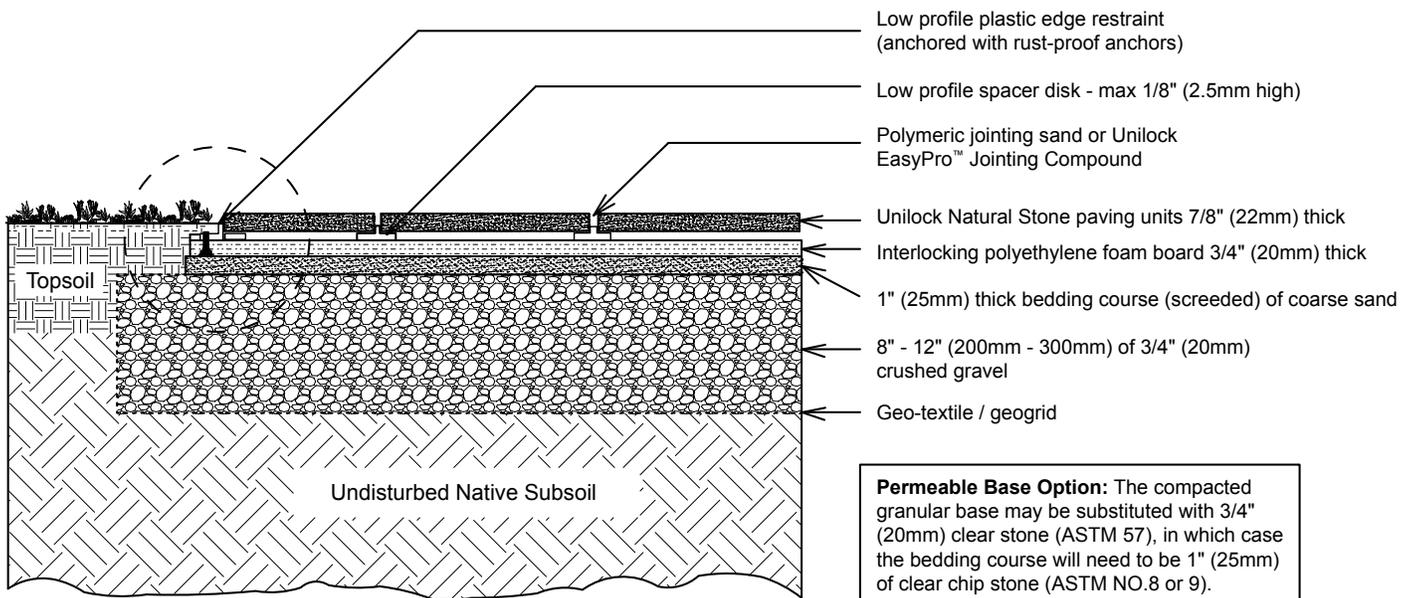
NOTE: A slurry coat (sometimes called a bond or milk sealer coat) is brushed on to the back of each natural stone unit prior to installation in order to limit moisture penetration, prevent staining and aid adhesion. Even though Unilock Natural Stone has low water absorption, a sand set installation can remain wet for longer periods of time. To mitigate risk of any discoloration to the natural stone as a result of moisture, a slurry coat is required.

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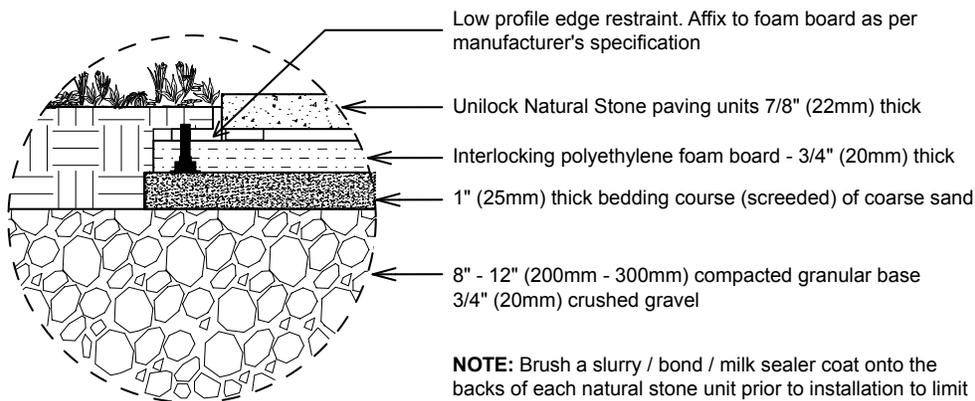


INTERLOCKING POLYETHYLENE FOAM BOARD (IPFB) - COMPACTED GRANULAR BASE



NOTE: Interlocking polyethylene foam board (IPFB) facilitates the rapid installation of natural stone paving slabs. Although foam board distributes load, it is important that the area below the board has good load bearing capacity and provides sufficient drainage to keep the area below free of any frost movement or settlement. IPFB's must have manufactured drainage holes.

Only use IPFB's manufactured for paving applications. DO NOT use for vehicular applications.



NOTE: Brush a slurry / bond / milk sealer coat onto the backs of each natural stone unit prior to installation to limit moisture penetration, prevent staining and aid adhesion.

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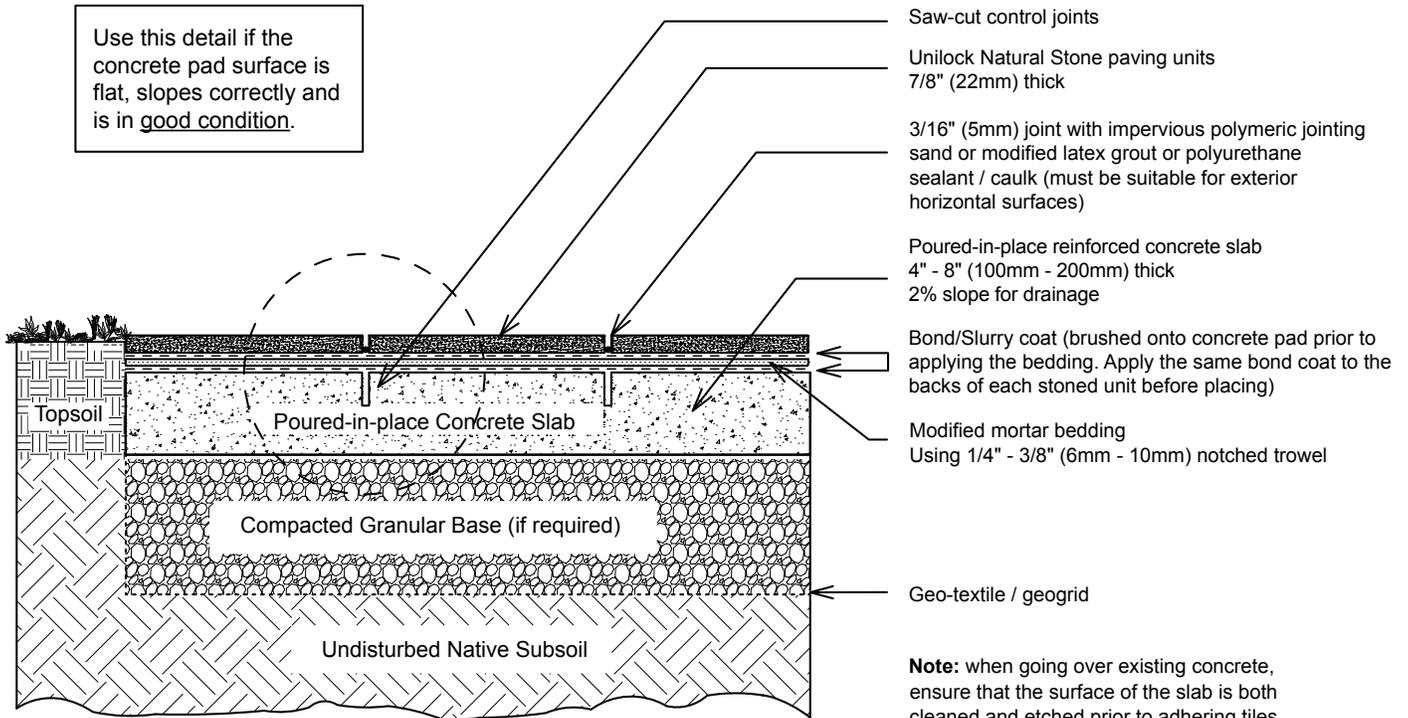
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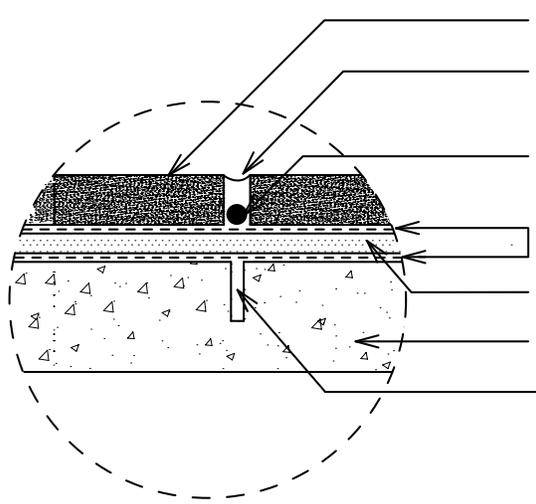
NEW OR EXISTING CONCRETE PATIO, PORCH OR BALCONY OVERLAY

- MODIFIED MORTAR BEDDING

Use this detail if the concrete pad surface is flat, slopes correctly and is in good condition.



- Saw-cut control joints
 - Unilock Natural Stone paving units 7/8" (22mm) thick
 - 3/16" (5mm) joint with impervious polymeric jointing sand or modified latex grout or polyurethane sealant / caulk (must be suitable for exterior horizontal surfaces)
 - Poured-in-place reinforced concrete slab 4" - 8" (100mm - 200mm) thick 2% slope for drainage
 - Bond/Slurry coat (brushed onto concrete pad prior to applying the bedding. Apply the same bond coat to the backs of each stoned unit before placing)
 - Modified mortar bedding Using 1/4" - 3/8" (6mm - 10mm) notched trowel
 - Geo-textile / geogrid
- Note:** when going over existing concrete, ensure that the surface of the slab is both cleaned and etched prior to adhering tiles



- Unilock Natural Stone paving units 7/8" (22mm) thick
- For joints 3/16" (5mm) use impervious polymeric jointing sand, modified latex grout or polyurethane sealant/caulk suitable for exterior horizontal surfaces
- 1/4" (6mm) Foam Backer Rod (reduces amount of caulking required)
- Bond/Slurry coat
- Modified Mortar Bedding Using 1/4" - 3/8" (6mm - 10mm) notched trowel
- Rebar reinforced concrete slab
- Locate saw-cut control joints in accordance with ACL and PCA. Position saw cuts directly under paving unit joints wherever possible

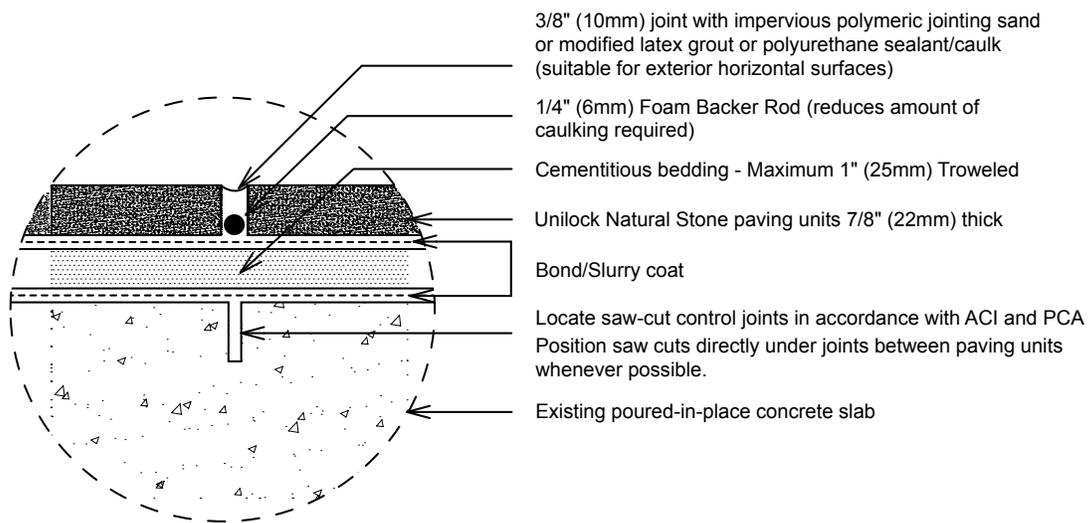
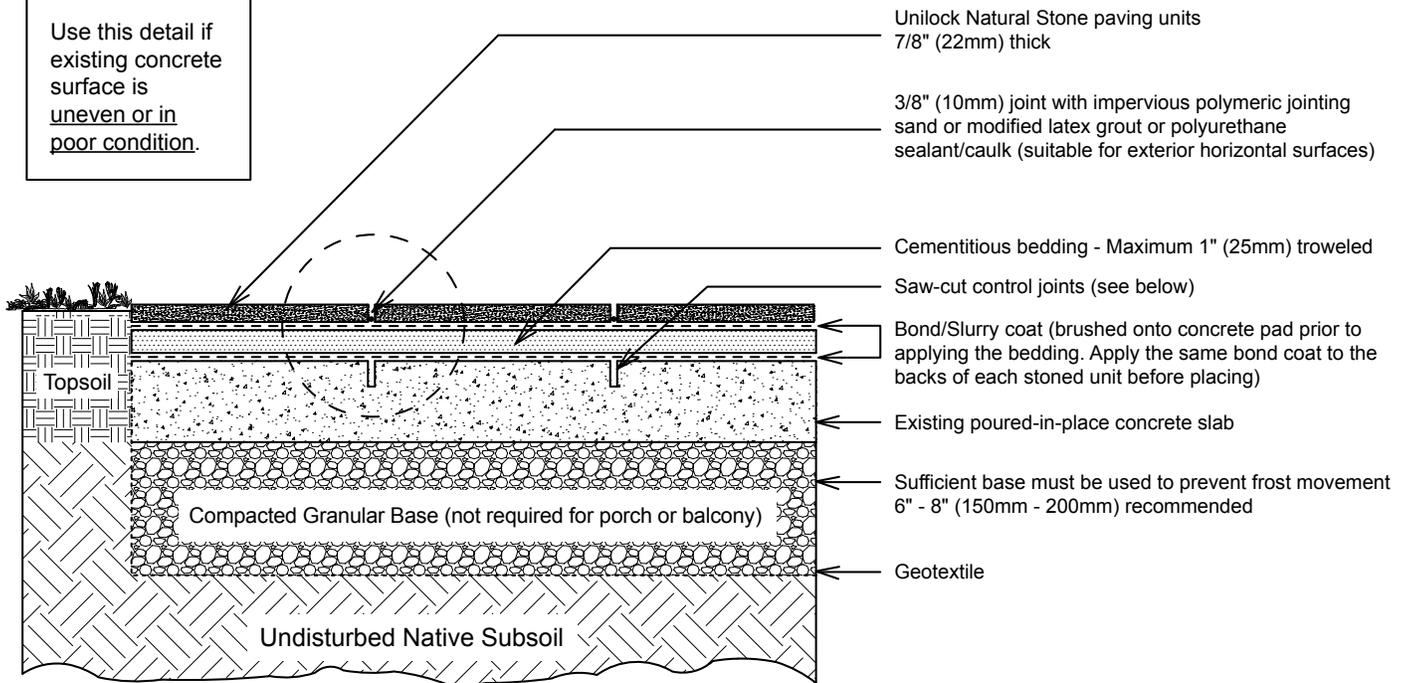
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EXISTING CONCRETE PATIO, PORCH OR BALCONY OVERLAY - CEMENTITIOUS BEDDING

Use this detail if existing concrete surface is uneven or in poor condition.



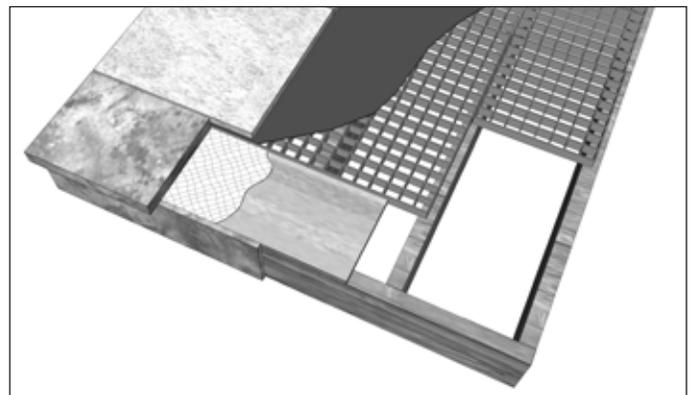
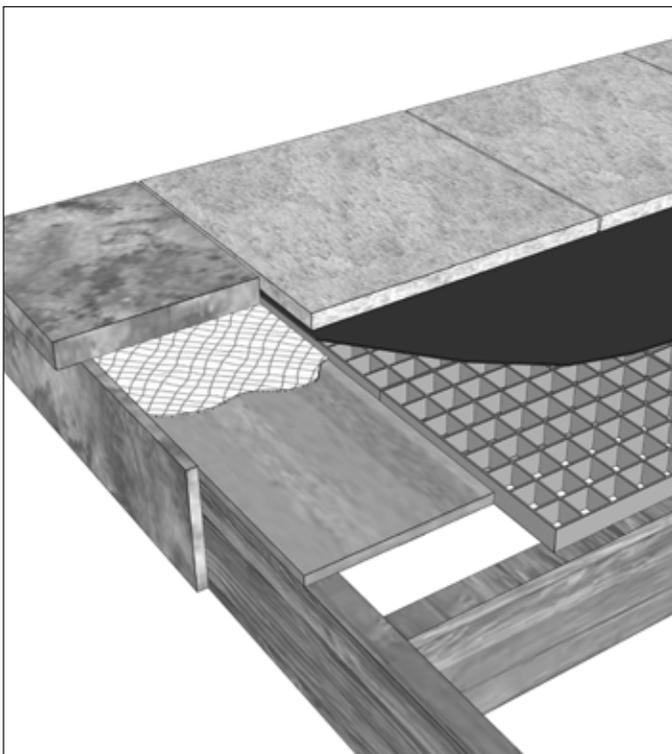
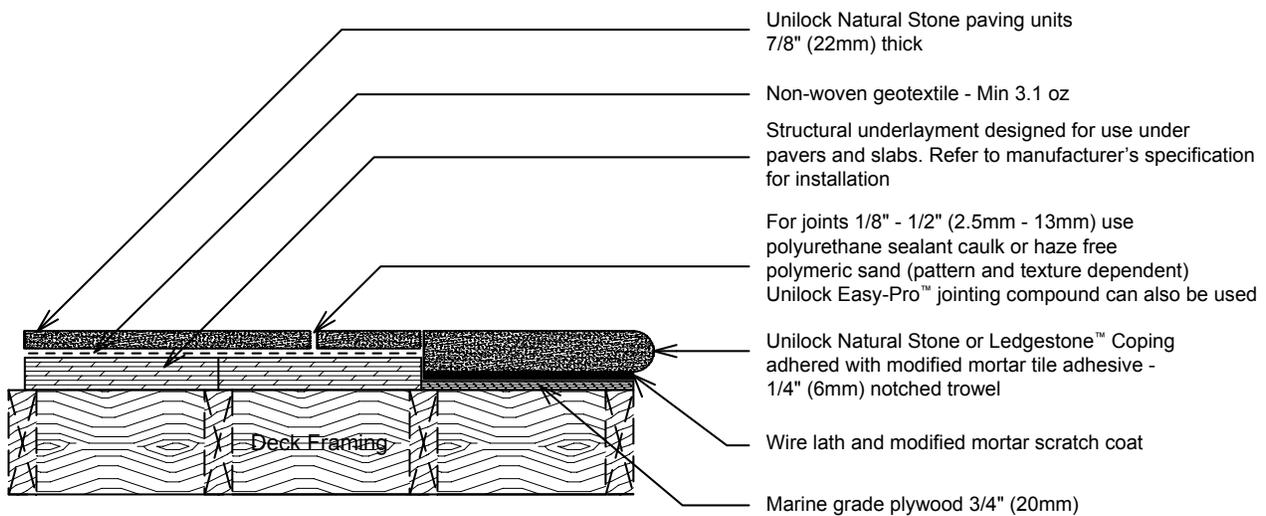
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WOOD DECK VENEER

- STRUCTURAL UNDERLAYMENT FOR ELEVATED DECKS



Note: The success of any natural stone installation over wood decking is entirely dependent on the decking structure. Always refer to underlayment manufacturer's specification for new or existing deck installations, and always follow local building codes.

To accommodate varying heights, structural underlayment can also be cut and recessed between joists.

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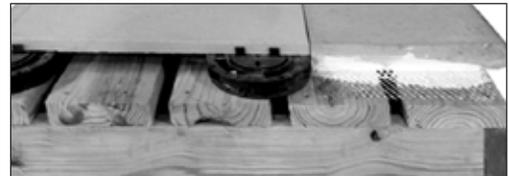
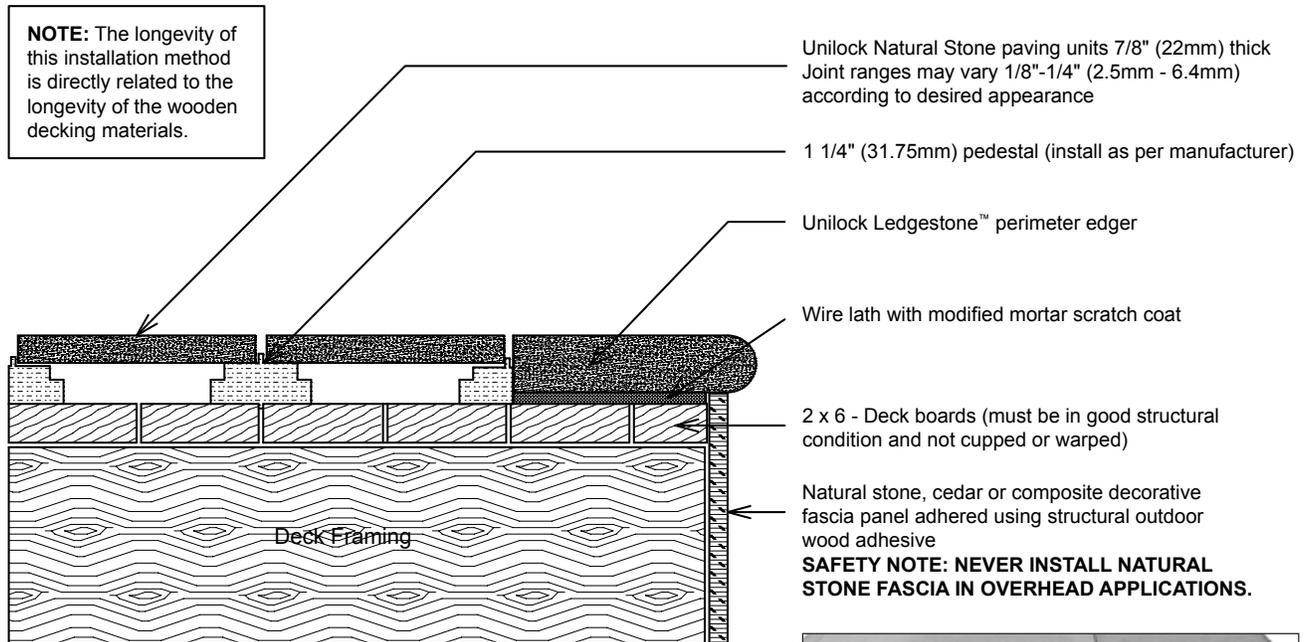
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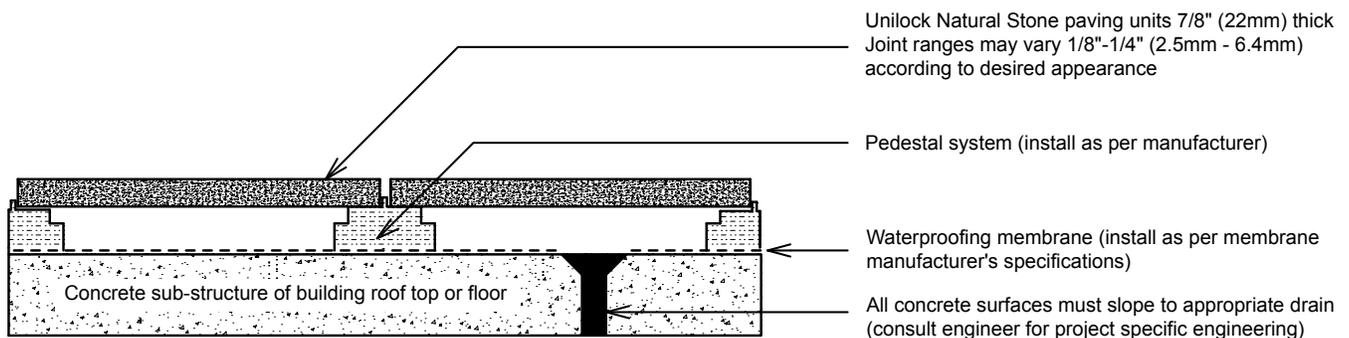
WOOD DECK VENEER

- LOW PROFILE PEDESTAL

NOTE: The longevity of this installation method is directly related to the longevity of the wooden decking materials.



PEDESTAL ON CONCRETE APPLICATION

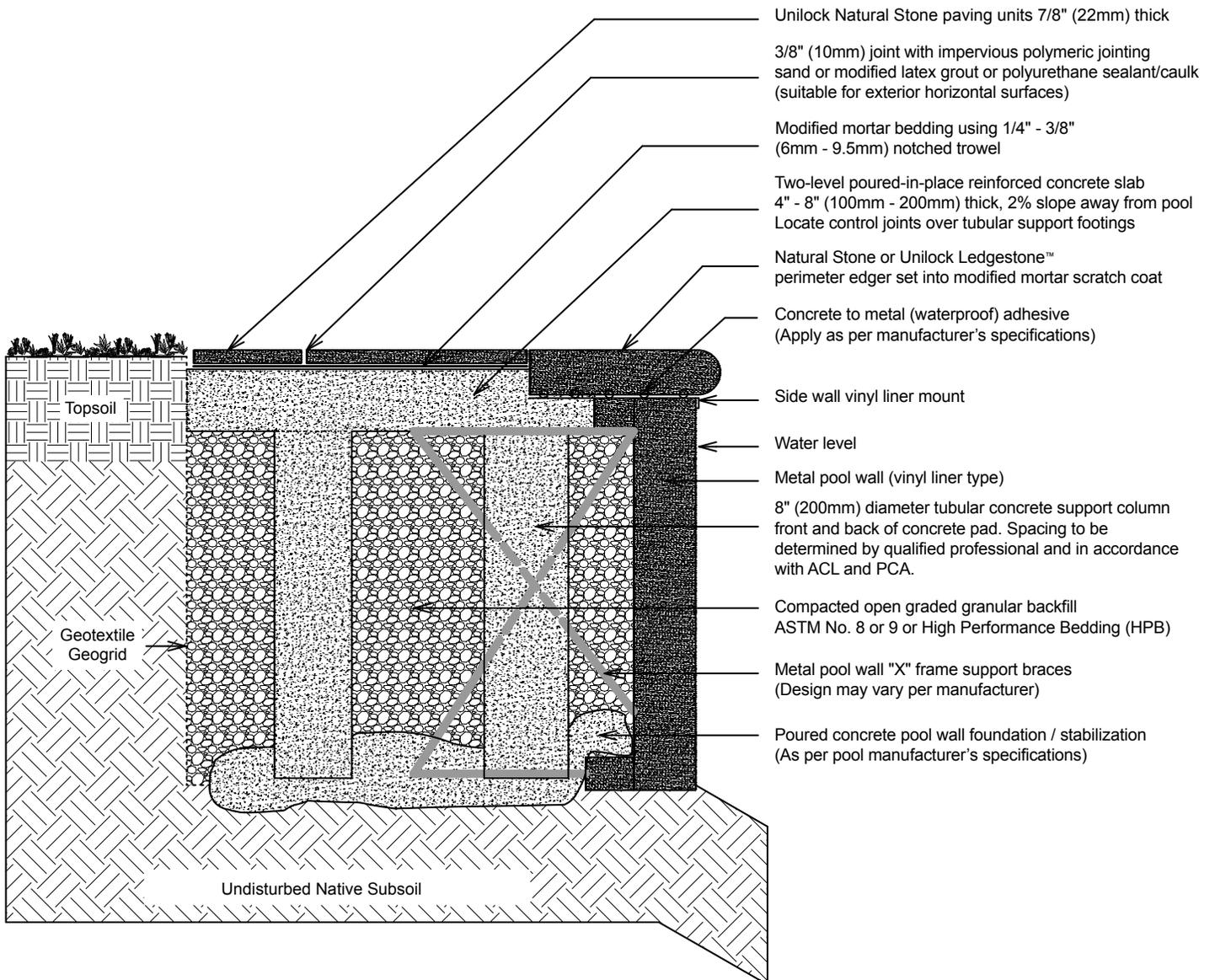


NOTE: Specific installation details may vary based on pedestal height, load-bearing requirements, safety standards and wind-lift. All roof top slab/pedestal installations must be engineered by a professional engineer.

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POOL COPING AND POOL DECK





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