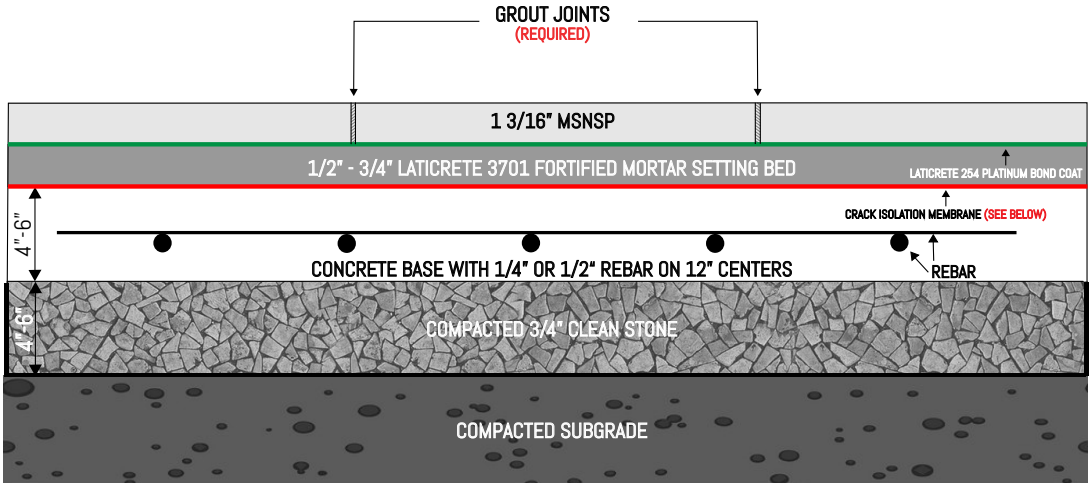
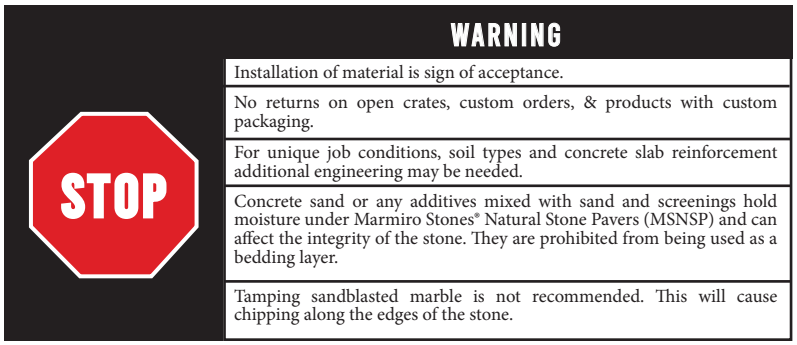
WET LAID: 1 3/16"

MSNSP – Marmiro Stones Natural Stone Pavers – Pedestrian





WARNING

Installation of material is sign of acceptance.
No returns on open crates, custom orders, & products with custom packaging.
For unique job conditions, soil types and concrete slab reinforcement additional engineering may be needed.
Concrete sand or any additives mixed with sand and screenings hold moisture under Marmiro Stones® Natural Stone Pavers (MSNSP) and can affect the integrity of the stone. They are prohibited from being used as a bedding layer.
Tamping sandblasted marble is not recommended. This will cause chipping along the edges of the stone.

1) SITE PREPARATION & EXCAVATION

a. Call Before You Dig
- Always contact 811 or your local utility locating service to mark underground utilities before any excavation. Include discussions with the client about irrigation lines, drainage, and sprinkler heads.
- Dig soils to depth between 10.5” - 12.5” maintaining a slope of 3/16” per foot to allow for proper drainage. This slope should mimic the slope of your final elevation.

2) EXCAVATION & SLOPE

a. Excavate to a depth of 10.5”–12.5”, accounting for all layers, and maintaining a consistent slope of 3/16” per foot away from structures for effective drainage. This slope must be consistent from sub grade to final grade.

3) SUBGRADE PREPARATION

a. Compact native sub grade soil using a vibratory plate compactor to achieve a uniform, stable base.
b. Maintain slope throughout compaction.
c. Install a woven geotextile fabric, fully encapsulating the excavated area, including vertical sidewalls, to stabilize soil and prevent sub-base migration.

4) SUB-BASE INSTALLATION

a. Place and compact a minimum of 4” of ASTM #57 stone (3/4" clean angular stone) as the sub-base layer.

5) CONCRETE SLAB

a. Pour a 3500-PSI concrete slab, reinforced with ½” rebar on 12” centers.
b. Application types:
- For heavy-duty applications, a minimum thickness of 6” is recommended and ½” rebar (#4 bar)
- Pedestrian applications, 4” thickness may be sufficient, ¼” rebar (#2 bar).

c. Finish the concrete with a slope matching final grade: 3/16” per foot minimum.

d. Locate concrete control joints and honor them up through the installation — do not bridge them solid with mortar bed or stone. Place movement joints in the stone per industry standard (TCNA EJ171), planning their locations to fall on stone joint lines, vertical or horizontal, rather than through the field of a piece.

e. Provide an expansion joint at every interface between dissimilar structures — such as where the installation meets a pool, a building foundation, columns, curbs, or other fixed elements — in additio to concrete control joints and stone movement joints, and honor all of these up through the installation rather than bridging them solid with mortar bed or stone.

6) WATERPROOFING / CRACK ISOLATION / SUPPRESSION MEMBRANE

a. Roll/brush two coats of Laticrete HYDRO BAN (or similar) to required wet-film thickness; allow to cure.
b. Do not use over cracks >1/8" (3 mm) in width.
c. Do not expose unprotected membrane to sun or weather for more than 30 days

7) SETTING BED & PAVER INSTALLATION

a. Elevation Allowance
- Ensure the finished concrete surface sits (+-) 2” below finished grade to accommodate setting bed and stone thickness.

8) SETTING BED MATERIAL

a. Final elevation of concrete base recommended (+-) 2” below finished grade.
b. Surface Preparation
- All surfaces should be between 40°F (4°C) and 90°F (32°C) and structurally sound, clean and free of all dirt, oil, grease, laitance, paint, concrete sealers or curing compounds. Dry dusty concrete slabs or masonry should be dampened and excess water swept off. Installation may be made on a damp surface.

c. Mortar setting bed MIN ½” – 1” MAX
- Laticrete 3701 Fortified Mortar
  (1) Use approximately 4.8-5.0 qts. (4.5-4.7 L) of water for 25 lbs (11.3 kg) of powder. (To mix smaller quantities use 3.7 parts powder to 1 part water.)
  (2) Allow mortar to slake for 5 minutes. Remix without adding any more water or powder. During use, stir occasionally to keep mix fluffy. DO NOT temper with water.

d. Mortar Bed Installation
- Before placing the mortar setting bed, apply a slurry bond coat of 254 Platinum directly to the crack isolation/suppression membrane covering the concrete. While the slurry bond coat is still wet, spread the mortar bed and compact well to the desired depth.

9) SETTING STONE INTO AN UNCURED (GREEN) 3701 MORTAR BED

a. Set stone within the bed's open window — while it's still workable, before it firms up.
b. Trowel 254 Platinum (WHITE ONLY) directly onto the wet mortar bed, working it in with the notched trowel and combing it into consistent ridges.
c. Back butter the stone, flattening the trowel ridges with the flat side of the trowel until the modified mortar forms a thin, flat, even layer across the back of the stone. This step is critical to achieving full adhesion and minimizing the potential for moisture transfer.
d. Set the stone with a perpendicular movement to collapse the ridges.
e. Beat in with the non-marring, neutral-color rubber mallet across the full face.
f. Work section by section, matching bond-coat and stone-setting pace to how much bed you can cover before it firms up.
g. Check flatness and joint alignment continuously as you go.

9A.) SETTING STONE CURED 3701 MORTAR BED

a. Confirm minimum 24-hour cure at 70°F (longer if cooler/more humid) before proceeding.
b. Sound the cured bed to check for hollow spots before coating it.
c. Apply 254 Platinum (WHITE ONLY) with a notched trowel, combing into consistent ridges.
d. Back butter the stone, flattening the trowel ridges with the flat side of the trowel until the modified mortar forms a thin, flat, even layer across the back of the stone. This step is critical to achieving full adhesion and minimizing the potential for moisture transfer.
e. Set the stone with a perpendicular movement to collapse the ridges.
f. Beat in with the non-marring, neutral-color rubber mallet across the full face.

*Verify control and Expansion Joints

- If control and expansion joints are present, they shall be provided through the tile work from all construction or expansion joints in the substrate. Do not cover expansion joints with mortar.

10) FINISHING

a. Grouting the joints is REQUIRED for all wet laid applications.
   - Grout installation after a minimum of 24 hours curing time at 70°F.
   - Laticrete Permacolor Grout – 1/8”- 1/4” joint.
     (1) Use approximately 2 .4 – 2 .6 quarts (2.3 L – 2 .5 L) of clean potable water for 25 lbs. (11.3 kg) of PERMACOLOR Grout. Place water in a clean 5 gal. mix bucket and add grout powder. Mix with a slow speed drill mixer (300 rpm) for 1 minute.
     (2) Clean tile surface with a damp sponge. Spread with a sharp, firm rubber grout float or wall float for narrow wall joints. To remove excess grout, hold the float at a 90° angle and pull it at a 45° angle diagonally across the joints to avoid pulling out the material. Note: If the grout begins to stiffen during installation, remix with drill mixer for 10–15 seconds. DO NOT ADD MORE WATER.
     (3) Begin initial cleaning by lightly wiping down entire area to be cleaned with a damp sponge. Wash with a damp sponge (not wet). Work diagonally with the joints. Allow to dry 3 hours at 70°F (warmer days will have a faster dry time). For second cleaning use a damp sponge or dry cloth to remove remaining grout haze.
     (4) Fill all control and expansion joints with closed-cell backer rod and LATICRETE Latasil silicone sealant, sized and installed per manufacturer instructions to accommodate anticipated joint movement. Never fill these joints with grout or mortar. destrian applications, 4” thickness may be sufficient, ¼” rebar (#2 bar).

11) BEST PRACTICES

a. Based on the pattern and job site conditions choose your starting point that is most practical from staging of materials.
   - During installation of MSNSP it is best practice to use string lines or laser equipment to maintain square at the starting point.

b. Be sure to remove excess bedding mortar along exposed edges before ending the day.

c. MSNSP must be installed with at least 1/8” to 1/4” joint using spacers, depending on the pattern while maintaining straight lines.

d. Due to variations in natural stone, it is required to pull from multiple crates.
   - ***French Pattern – Pull from 2-3 crates for proper blending***
   - ***Single size – Pull from 4 crates for proper blending***

e. Perform all cutting using a diamond blade. Cutting wet can provide a smoother cut and may decrease chipping on MSNSP.

f. ONLY use a white non-marking mallet to set the stones.

REFERENCES / RELATED DOCUMENTS

Installation Standards

- TCNA Handbook for Ceramic, Glass, and Stone Tile Installation (current edition) Tile Council of North America
- ANSI A108/A118/A136.1 — American National Standard Specifications for Installation of Ceramic Tile and Stone Tile (current edition), including A108.1A/A108.1B (mortar bed methods) and A108.5 (dry-set/latex-Portland cement mortar installation)
- ANSI A118.15 — Improved Modified Dry-Set Cement Mortar (elevated shear-bond performance standard for large-format tile/stone, exterior veneer, and submerged applications)
- TCNA EJ171 — Movement Joint Guidelines for Ceramic, Glass, and Stone Tile Installations