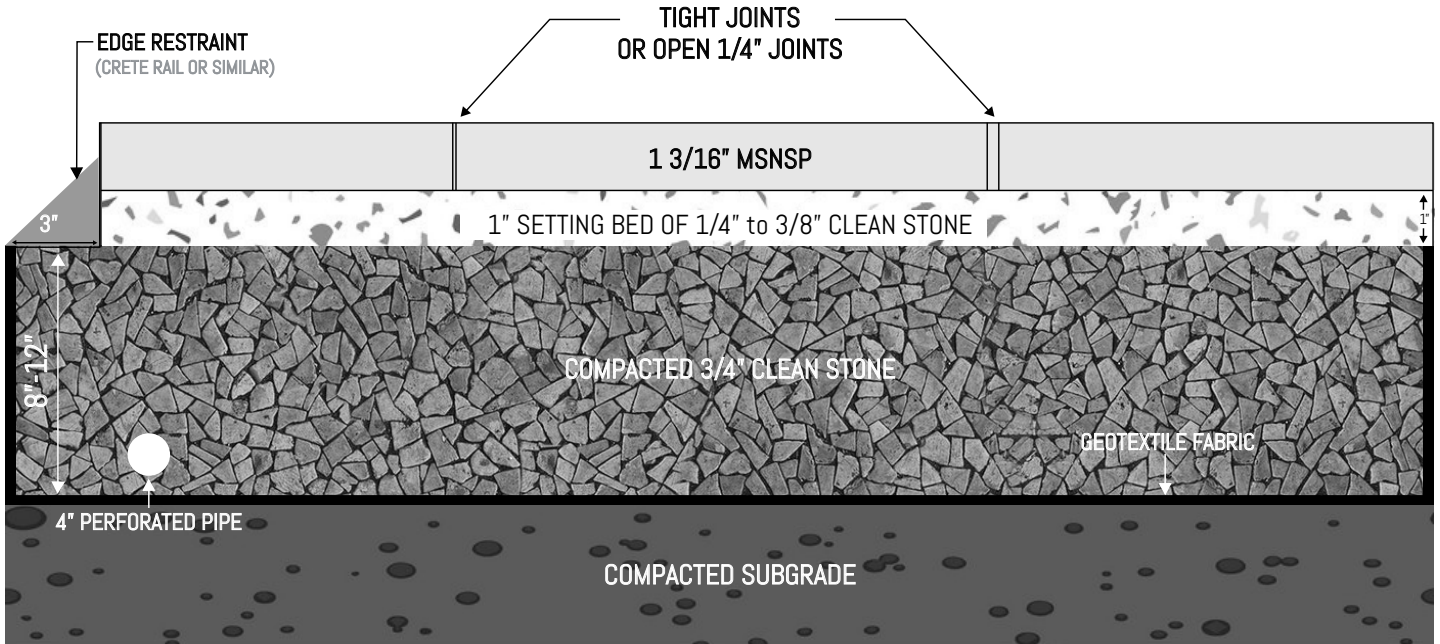



PERMEABLE PAVEMENT & OPEN-GRADED STONE 1 3/16"
MSNSP – Marmiro Stones Natural Stone Pavers – Pedestrian Application





For unique job conditions, soil types and/or climate conditions additional engineering may be needed.

Concrete sand and screenings hold moisture under Marmiro Stones® Natural Stone Pavers (MSNSP) and can affect the stones life integrity.

Tamping sandblasted marble & sandblasted travertine is not recommended. This will cause chipping along the edges of the stone.

BASE THICKNESS PER APPLICATION - RESIDENTIAL		
Project Type	Soil Type	
	Sand and/or Gravel	Silts or Clay
Pedestrian	8" - 10"	10" - 12"
Driveway - Light Vehicular	10" - 14"	12" - 18"



APPROVED MSNSP PRODUCT FOR THIS INSTALLATION METHOD		
MATERIAL TYPE	RECOMMENDED	NOT RECOMMENDED
MARBLE	✓	
TRAVERTINE	✓	
GRANITE	✓	
BLUESTONE	✓	
BASALT	✓	

Excavation

1. Please be sure to call 811 or your local utility companies to ensure utility lines are marked correctly before any excavation has begun.
2. If lines are found, please take proper precautions to ensure utility lines will not be disturbed. This includes discussing sprinkler lines and heads with the customer.
3. Dig soils to depth between 10.5" - 14.5" maintaining a slope of 3/16" per foot to allow for proper drainage. This slope should mimic the slope of your final elevation.
4. Compact your sub grade maintaining the slope as mentioned above. Install woven geotextile encapsulating the entire excavated area, including the vertical walls of the soil. **See diagram.**
5. Install a 4" perforated pipe with holes facing up to capture excess water. Pipe should daylight outside excavated area to relieve water build up. If daylight is not optional consider using a catch basin with grate.
6. Install 8"-12" of ASTM #57 (3/4" clean) stone compacting in 4" lifts using a vibratory plate compactor.

Installation

1. Final elevation of base should be 2" - 1/4" below finished grade.
2. Place the 1/4" - 3/8" clean stone (AASHTO #8, AASHTO #89, Rice Stone) for setting bed on top of #57 base.
 - **CONCRETE SAND IS NOT RECOMMENDED UNDER MSNSP**
 - **SCREENINGS ARE NOT RECOMMENDED UNDER MSNSP**
3. Set your 1" metal screed rails at an acceptable working width.
4. A good practice would be to place screed rails parallel to a fixed finished grade edge.
5. Screeding the setting bed: Pull clean stone along the metal screed rails using an aluminum straight edge.
6. Remove screed rails, place setting bed material in the voids and use trowel to level with setting bed.
7. Based on the pattern and job site conditions choose your starting point that is most practical from staging of materials.
8. During installation of MSNSP, it is best practice to use string lines or laser equipment to maintain square at the starting point.
9. Options for joint spacing
 - Tight joint, free from any material.
 - Open joint or 1/8" open-graded stone using 1/4" or 3/8" spacers.
10. Due to variations in natural stone, it is required to pull from multiple crates.
11. Perform all cutting using a diamond blade. Cutting wet can provide a smoother cut and may decrease chipping on MSNSP.
12. Edge restraint: Remove excess setting bed material outside of finished edge. Mix Crete-Rail™ in bucket. Apply with a trowel.
13. Travertine & marble with open-joint application: Use a vibratory plate with rubber mat or vibratory roller.
14. Travertine & marble with tight-joint application: ONLY use a white non-marking mallet to set the stones.