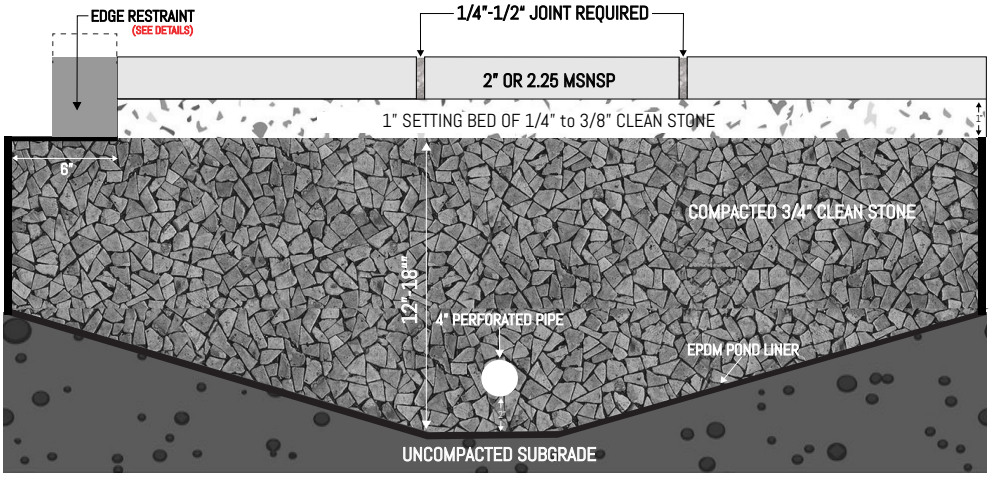
NO INFILTRATION PERMEABLE PAVEMENT SYSTEM: 2” - 2.25"

MSNSP – Marmiro Stones Natural Stone Pavers – Light Vehicular Application



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.

BASE THICKNESS & EXCAVATION DEPTHS PER APPLICATION - RESIDENTIAL		
	Soil Type	
Project Type	Sand and/or Gravel	Silts or Clay
Driveway – Light Vehicular	12”-16”	14”-18”

***MARMIRO STONES NOTE**

Follow local code and the engineer’s hydrologic/structural design. Keep all open graded aggregates and joints free of fines at every stage.

SYSTEM OVERVIEW

Intent: Fully contain stormwater above an impermeable liner; detain and pipe to storm drain for treatment — no discharge to native soils.

Use When: Poor/contaminated soils, high groundwater, or regulations prohibiting infiltration.

1) SITE PROTECTION

a. Erosion & sediment controls; stockpile stone on fabric/hard pads to prevent fines.

2) EXCAVATION

a. Please be sure to call 811 or your local utility companies to ensure utility lines are marked correctly before any excavation has begun.

b. If lines are found, please take proper precautions with the customer to ensure utility lines will not be disturbed. This includes, but is not limited to, septic fields, sprinkler lines and heads.

c. Excavate soils maintaining a slope of 3/16” per foot to allow for proper drainage. This slope should mimic the slope of your top of pavement.

d. Excavation should extend equal to the depth of excavation.

- Example: Base = 6”, Base & excavation should extend 6” past edge of pavement.

e. Depending on your soil type, compaction of your sub grade may be needed while maintaining the slope as mentioned above.

3) GEOTEXTILE & DRAINPIPE

a. Install impermeable (EPDM) pond liner encapsulating the entire excavated area, including the vertical walls of the excavated area using a shingle method, overlapping and sealing seams per manufacturer guidelines.

b. Install a 4” perforated pipe with holes facing down to capture excess water. Pipe should be exposed to daylight outside in excavated area to relieve water build up. If daylight is not optional, consider using a catch basin with a grate.

c. Provide clean outs when possible.

4) SUBSTRUCTURE - BASE

a. Install 12-18" of ASTM #57 (3/4" clean) stone compacting in 4" lifts using a vibratory plate compactor.

b. If #2 or #3 stone is specified as a sub-base, please follow guidelines of plans provided by town, engineer, or designer.

5) SETTING BED

a. Final elevation of base should be 2-1/4" below finished grade.

b. Place the 1/4"-3/8" clean stone (AASHTO #8, AASHTO #89, AASHTO #9) for setting bed on top of #57 base.
- Concrete sand is not recommended under MSNSP.
- Screenings are not recommended under MSNSP.

c. Set your 1" metal screed rails at an acceptable working width.

d. A good practice would be to place screed rails parallel to a fixed finished grade edge.

e. Screeding the setting bed: Pull clean stone along the metal screed rails using an aluminum straight edge.

f. Removing screed rails: Place setting bed material in the voids and use a trowel to level with the setting bed.

g. Based on the pattern and job site conditions, choose your starting point that is most practical from the staging of materials.

h. During installation of MSNSP, it is best practice to use string lines or laser equipment to maintain square at the starting point.

6) EDGE RESTRAINT

a. Curbing
- Natural stone edging placed in mortar bed
- Poured in place concrete curb.
- Pave Tool's Hybrid HD Edging using a 10" steel (V shaped) stake installed using the Quick-E-Hammer attached to a hammer drill shank type: SDS Max – 6.9 joules of impact.

7) FINISHING

a. Open joint using 1/4" or 3/8" spacers.
- Sweep ¼" or smaller of clean/washed angular stone for joint fill.

►All driveway applications using Marmiro Stones® products MUST be laid with joint-using spacers. If product is laid with tight joint, point loading can occur which causes chipping or failure.

8) BEST PRACTICES

a. A good practice would be to place screed rails parallel to a fixed finished grade edge.

b. During installation of MSNSP, it is best practice to use string lines or laser equipment to maintain square at the starting point.

c. 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.

d. Antiqued travertine application: Use a vibratory plate compactor with rubber mat or vibratory roller.

e. Antiqued & Vintage marble application: Use a vibratory plate compactor with rubber mat or vibratory roller.

f. Sandblasted marble application: Use a white non-marking mallet to set the stones.

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