



MARMIRO STONES®

BY TURAN BEKISOGLU

HARDSCAPE INSTALLATION GUIDELINES



VOLUME 3

Study nature, love nature,
stay close to nature.

It will never fail you.

Frank Lloyd Wright

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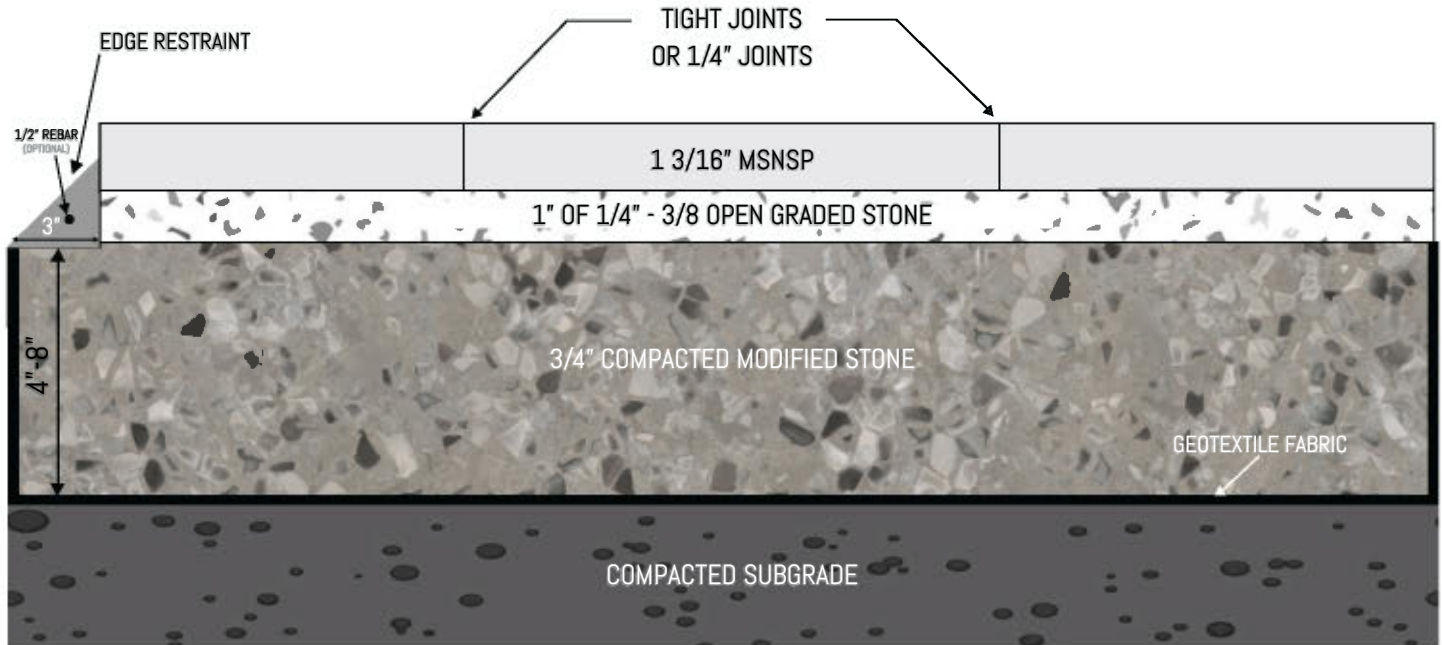
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DRY LAID ON MODIFIED BASE 1 3/16"
MSNSP – Marmiro Stones Natural Stone Pavers – Pedestrian Application



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 integrity and life of the stone. These are NOT recommended as a bedding layer.

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	4" - 6"	6" - 8"
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

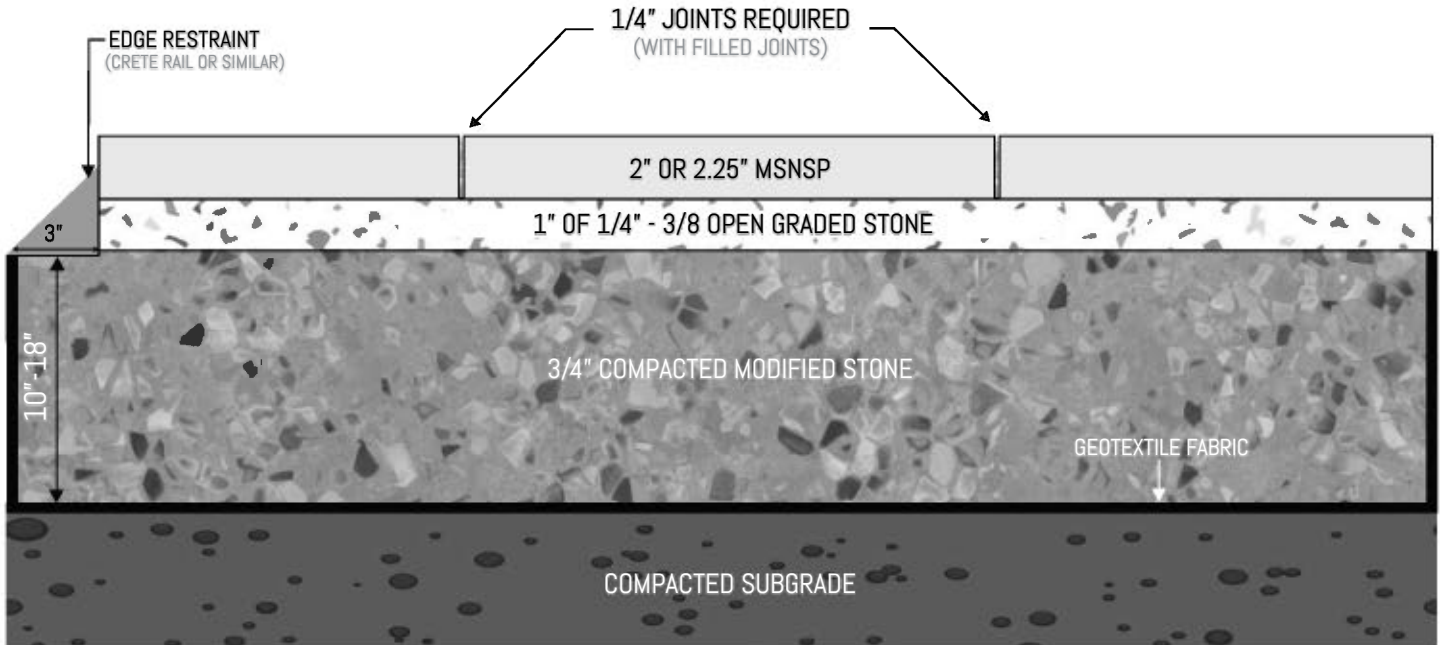
1. Please be sure to call 811 or your local utility companies to ensure utility lines are marked correctly before any excavation has begun.
 2. If lines are found, please take proper precautions to ensure utility lines will not be disturbed. This includes discussing sprinkler lines and heads with the customer.
 3. Excavate soils to depth between 6.5" - 10.5" 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 4"-8" of modified stone base compacting in 2"- 4" lifts using a vibratory plate compactor. It is strongly encouraged to make sure to apply water to the modified stone while compacting to ensure proper compaction is achieved. Compacting dry modified stone will not achieve proper compaction.
-


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 modified 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. MSNSP can be laid tight, or with a 1/4" joint depending on the pattern while maintaining straight lines.
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. Jointing material
 - A. Option one: Sweep fine masons sand (ASTM C-144) into joints.
 - B. Option two: Leave the joints empty. Polymeric sand is not recommended for any tight joint application.
14. Antiqued Travertine application: use a vibratory plate compactor with rubber mat or vibratory roller.
15. Antiqued Marble application: use a vibratory plate compactor with rubber mat or vibratory roller.
16. Sandblasted Marble application: use a white non-marking mallet to set the stones.

AASHTO – American Association of State Highway and Transportation Officials
ASTM – American Society for Testing and Materials

DRY LAID ON MODIFIED BASE 2"-2.25"
MSNSP – Marmiro Stones Natural Stone Pavers – Light Vehicular 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 integrity life of the stone. These are NOT recommended as a bedding layer.

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

2" & 2.25" MSNSP MUST be laid with at least a 1/4" joint using spacers for light vehicular applications.

BASE THICKNESS PER APPLICATION - RESIDENTIAL		
Project Type	Soil Type	
	Sand and/or Gravel	Silts or Clay
Pedestrian	4" - 6"	6" - 8"
Driveway - Light Vehicular	10" - 14"	12" - 18"



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

Excavation

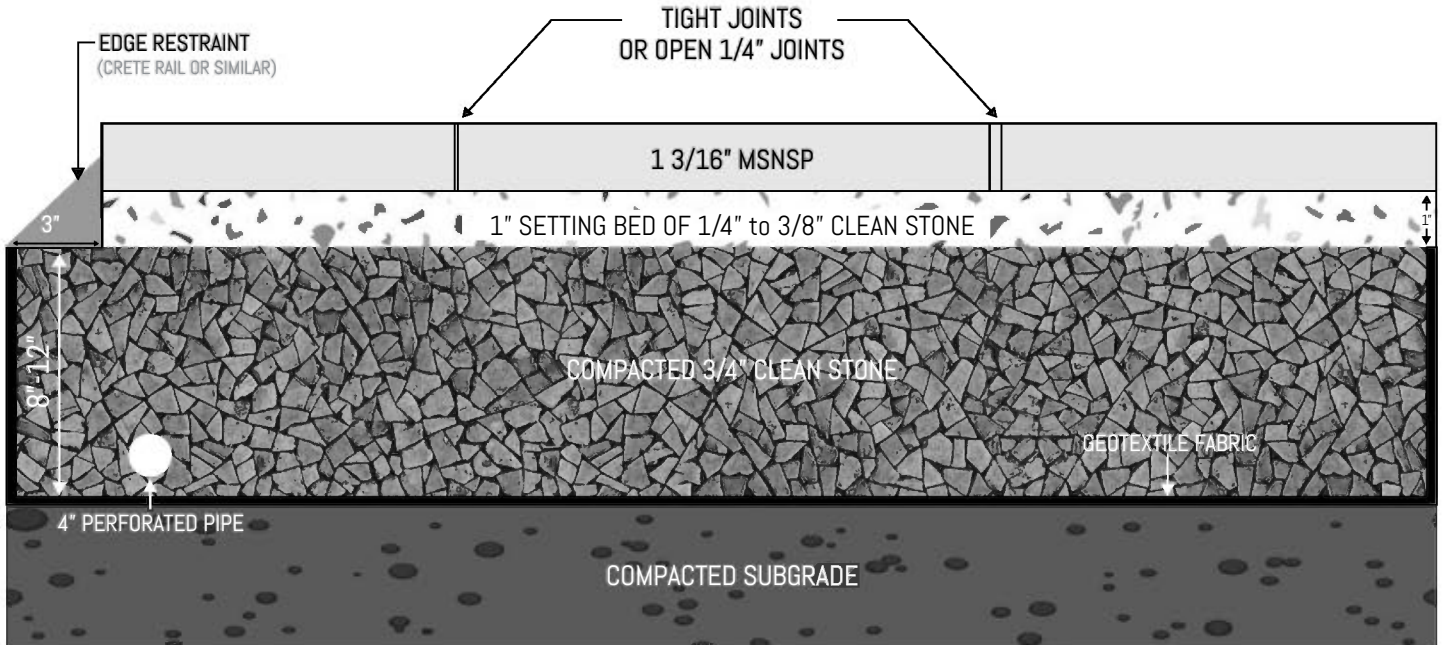
1. Please be sure to call 811 or your local utility companies to ensure utility lines are marked correctly before any excavation has begun.
2. If lines are found, please take proper precautions to ensure utility lines will not be disturbed. This includes discussing sprinkler lines and heads with the customer.
3. Dig soils to depth between 13" - 21" 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 10"-18" of modified stone base compacting in 2"- 4" lifts using a vibratory plate compactor. It is strongly encouraged to make sure to apply water to the modified stone while compacting to ensure proper compaction is achieved. Compacting dry modified stone will not achieve proper compaction.

Installation

1. Final elevation of modified stone should be 3" - 3 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 modified 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.
7. Remove screed rails, place setting bed material in the voids and use trowel to level with setting bed.
8. Based on the pattern and job site conditions choose your starting point that is most practical from staging of materials.
9. During installation of MSNSP it is best practice to use string lines or laser equipment to maintain square at the starting point.
10. MSNSP must be laid with a 1/4" joint using spacers maintaining straight lines using strings or lasers. If laid with tight joint, point loading and chipping will occur.
11. Due to variations in natural stone it is required to pull from multiple crates.
12. Perform all cutting using a diamond blade. Cutting wet can provide a smoother cut and may decrease chipping on MSNSP.
13. Edge restraint: Remove excess setting bed material outside of finished edge. Mix Crete-Rail™ in bucket. Apply with a trowel.
14. Sweep polymeric sand in joints. Follow manufacture's instructions on bag.
15. Antiqued Travertine application: use a vibratory plate compactor with rubber mat or vibratory roller.
16. Antiqued Marble application: use a vibratory plate compactor with rubber mat or vibratory roller.

PERMEABLE PAVEMENT & OPEN-GRADED STONE 1 3/16"

MSNSP – Marmiro Stones Natural Stone Pavers – Pedestrian Application



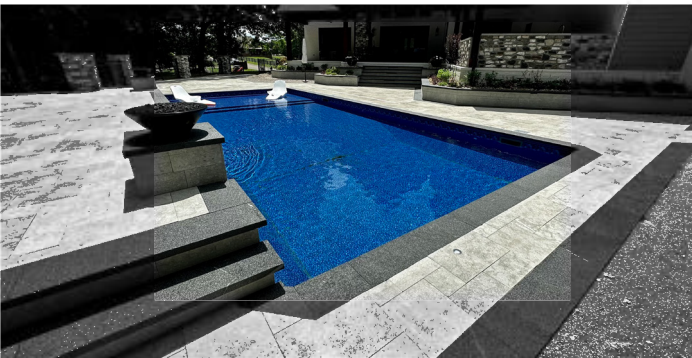
For unique job conditions, soil types and/or climate conditions additional engineering may be needed.

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

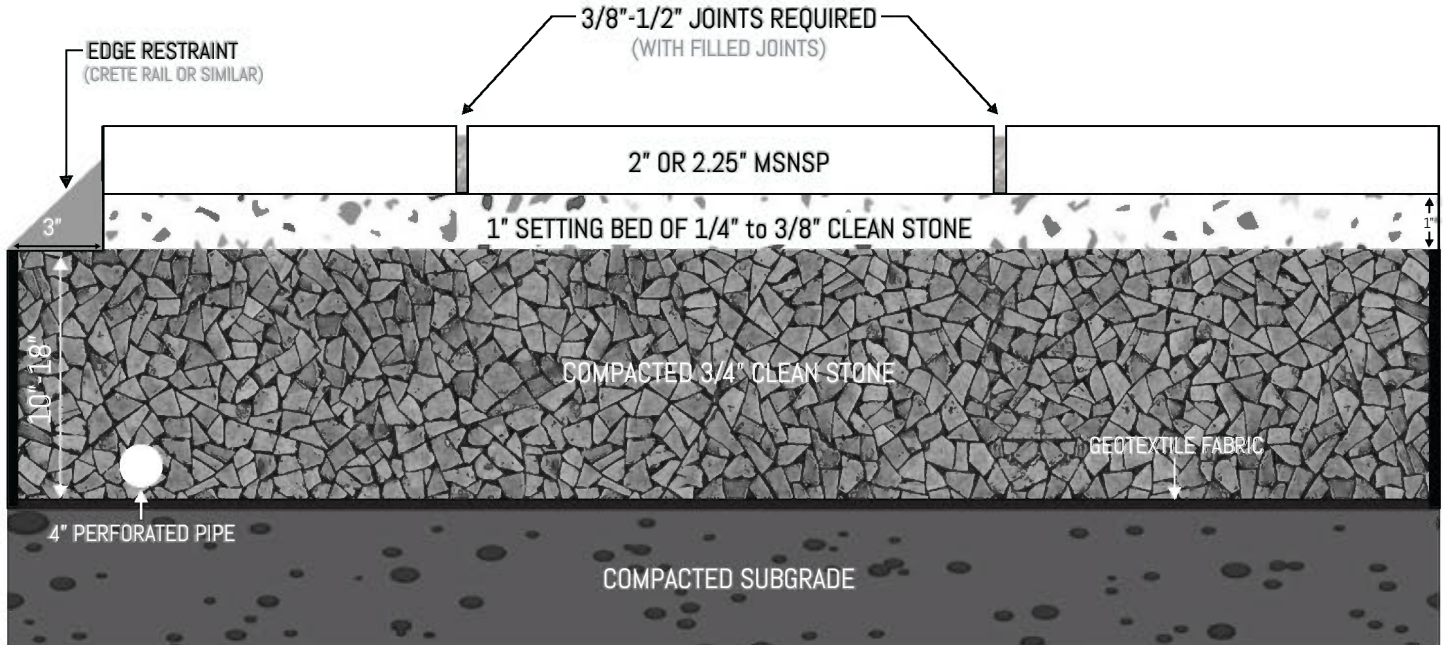
1. Please be sure to call 811 or your local utility companies to ensure utility lines are marked correctly before any excavation has begun.
2. If lines are found, please take proper precautions to ensure utility lines will not be disturbed. This includes discussing sprinkler lines and heads with the 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.

PERMEABLE PAVEMENT & OPEN-GRADED STONE 2"-2.25"

MSNSP – Marmiro Stones Natural Stone Pavers – Light Vehicular 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.

2" & 2.25" MSNSP must be laid with a 1/4" joint using spacers for light vehicular applications.

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

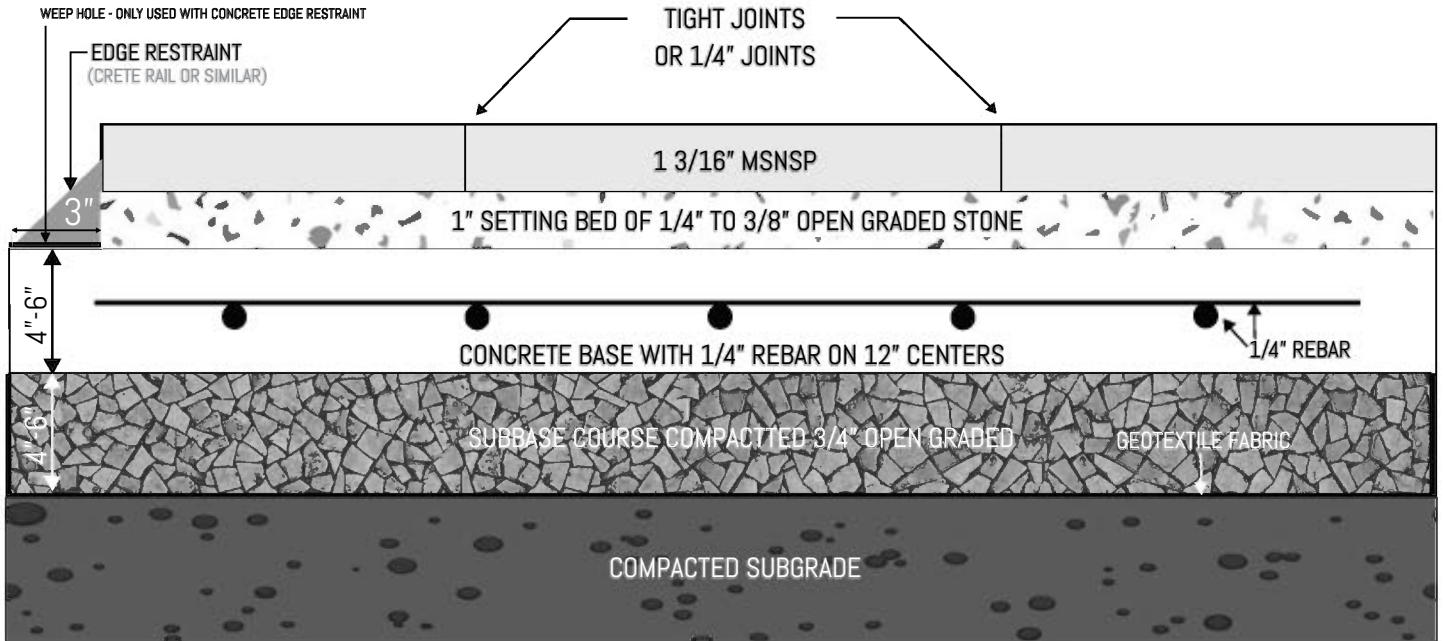
1. Please be sure to call 811 or your local utility companies to ensure utility lines are marked correctly before any excavation has begun.
 2. If lines are found, please take proper precautions to ensure utility lines will not be disturbed. This includes discussing sprinkler lines and heads with the customer.
 3. Dig soils to depth between 13.5" - 21.5" 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. The pipe should be placed at a height within the base in accordance with site condition and/or engineer specification.
 6. Install 12" - 18" 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. Pavers must be laid with a 1/4" or 3/8" joint using spacers maintaining straight lines. If laid with tight joint, point loading and chipping will occur.
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.

Lobascio System 1 3/16"

MSNSP – Marmiro Stones Natural Stone Pavers – Pedestrian Application



For unique job conditions, soil types and concrete slab reinforcement 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.

Note: Bluestone Washington Pattern is manufactured to have 1/2" grout joint. Joint fill is determined by installer. Mortar, Easy Joint, or 1/4" open-graded stone are recommended.



APPROVED MSNSP PRODUCT FOR THIS INSTALLATION METHOD

MATERIAL TYPE	RECOMMENDED	NOT RECOMMENDED
MARBLE	✓	
TRAVERTINE	✓	
GRANITE	✓	
BLUESTONE	✓	
BASALT	✓	

Excavation

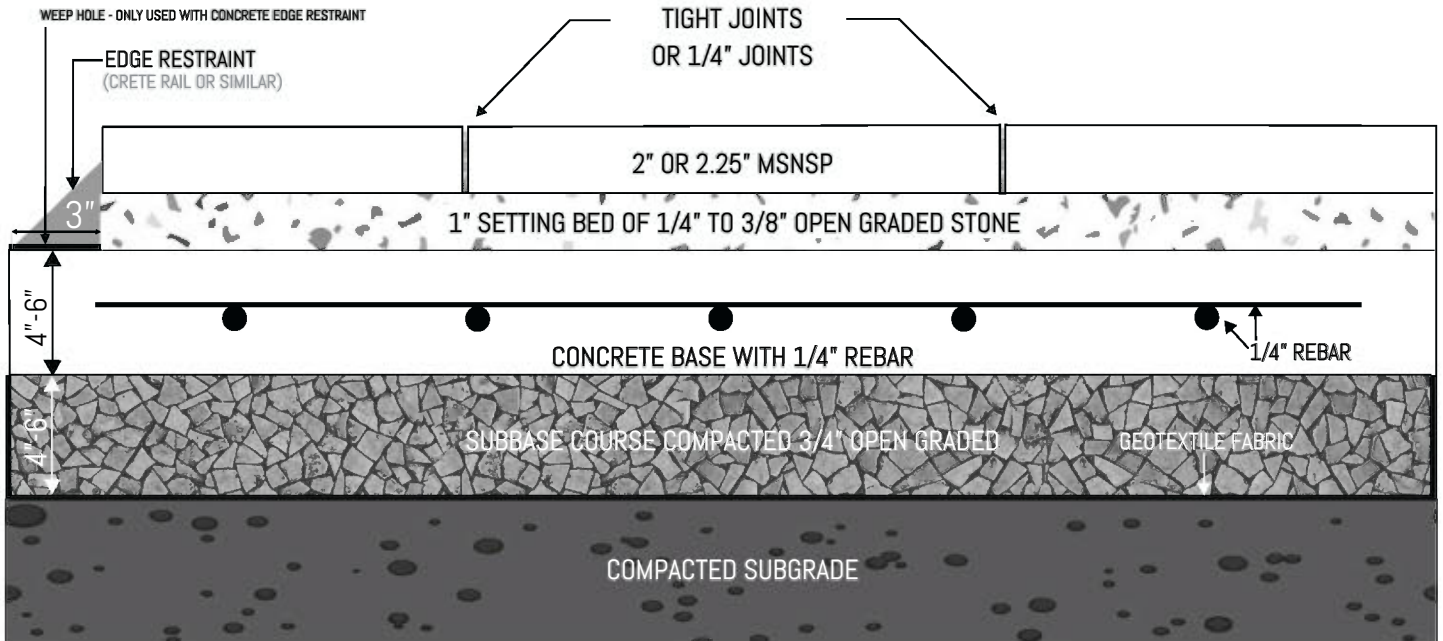
1. Please be sure to call 811 or your local utility companies to ensure utility lines are marked correctly before any excavation has begun.
 2. If lines are found, please take proper precautions to ensure utility lines will not be disturbed. This includes discussing sprinkler lines and heads with the customer.
 3. Dig soils to depth between 10.5" - 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.
 4. Compact your sub-grade maintaining the slope as mentioned above. Install geotextile, fabric encapsulating the entire excavated area including the vertical walls of the soil. **See diagram.**
 5. Install 4" - 6" of ASTM #57 (3/4" clean) stone as sub-base compacting using a vibratory plate compactor.
 6. For a 4" or 6" slab pour 3500 PSI concrete using 1/2" rebar on 12" centers.
 - A. Pitch concrete 3/16" per foot to control water and mirror finish grade.
-

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 modified 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.
 - A. During installation of MSNSP it is best practice to use string lines or laser equipment to maintain square at the starting point.
8. MSNSP can be laid tight or with a 1/4" joint depending on the pattern while maintaining straight lines.
9. Due to variations in natural stone, it is required to pull from multiple crates.
10. Perform all cutting using a diamond blade. Cutting wet can provide a smoother cut and may decrease chipping on MSNSP.
11. Edge restraint: Remove excess setting bed material outside of finished edge. Mix Crete-Rail™ in bucket. Apply with a trowel. Using Crete-Rail™ will allow water flow through the edge restraint not trapping water under the MSNSP.
12. Travertine & marble with tight-joint application: ONLY use a white non-marking mallet to set the stones.

Lobascio System 2" - 2.25"

MSNSP – Marmiro Stones Natural Stone Pavers – Light Vehicular Application

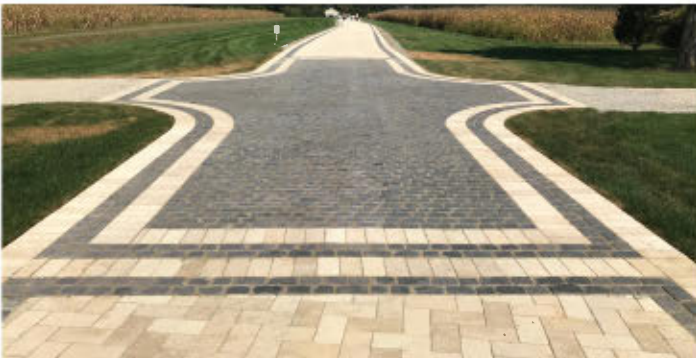


For unique job conditions, soil types and concrete slab reinforcement additional engineering may be needed.

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.

Note: Bluestone Washington Pattern is manufactured to have 1/2" grout joint. Joint fill is determined by installer. Mortar, Easy Joint, or 1/4" open-graded stone are recommended.



APPROVED MSNSP PRODUCT FOR THIS INSTALLATION METHOD

MATERIAL TYPE	RECOMMENDED	NOT RECOMMENDED
MARBLE	✓	
TRAVERTINE	✓	
GRANITE	✓	
BLUESTONE		X
BASALT	✓	

Excavation

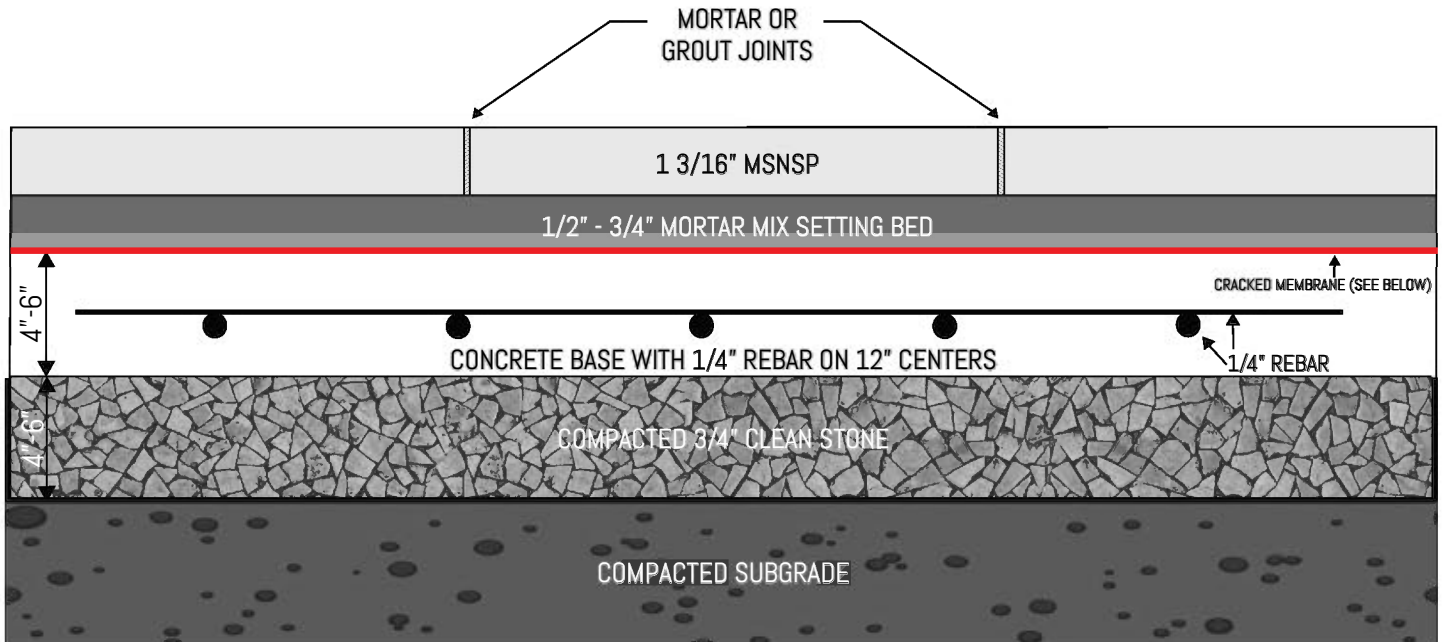
1. Please be sure to call 811 or your local utility companies to ensure utility lines are marked correctly before any excavation has begun.
 2. If lines are found, please take proper precautions to ensure utility lines will not be disturbed. This includes discussing sprinkler lines and heads with the customer.
 3. Dig soils to depth between 11.5" - 13.5" 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 4" - 6" of ASTM #57 (3/4" clean) stone as sub-base compacting using a vibratory plate compactor.
 6. For a 4" or 6" slab pour 3500 psi concrete using 1/2" rebar on 12" centers.
 - A. Pitch concrete 3/16" per foot to control water and mirror finish grade.
-

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 concrete 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. MSNSP must be laid with a 1/4" or 3/8" joint using spacers maintaining straight lines. If laid with tight joint point loading and chipping will occur.
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. Using Crete-Rail™ will allow water flow through the edge restraint not trapping water under the MSNSP.
13. Travertine & marble with open-joint application: use a vibratory plate with rubber mat or vibratory roller.

WET LAID 1 3/16"

MSNSP – Marmiro Stones Natural Stone Pavers – Pedestrian Application



For unique job conditions, soil types and concrete slab reinforcement 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.



APPROVED MSNSP PRODUCT FOR THIS INSTALLATION METHOD

MATERIAL TYPE	RECOMMENDED	NOT RECOMMENDED
MARBLE	✓	
TRAVERTINE	✓	
GRANITE	✓	
BLUESTONE	✓	
BASALT	✓	

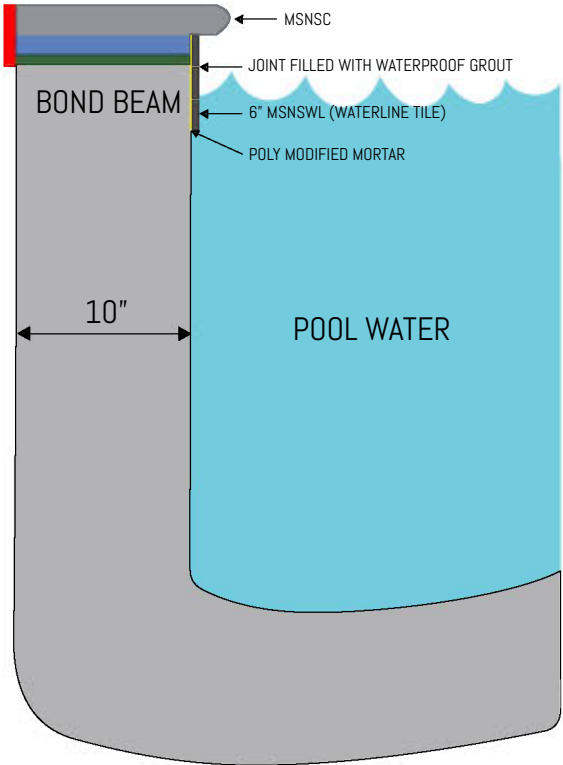
Excavation

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" - 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.
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 4" of ASTM #57 (3/4" clean) stone as sub-base compacting using a vibratory plate compactor.
6. For a 4" or 6" slab pour 3500 PSI concrete using 1/2" rebar on 12" centers.
 - A. Pitch concrete 3/16" per foot to control water and mirror finish grade.

Installation

1. Final elevation of concrete base should be 2" below finished grade.
2. Crack membrane installation types:
 - Schluter® – Ditra System
 - Laticrete® Anti-fracture membrane
3. Options for Mortar setting bed:
 1. Laticrete® Multimax™ MIN ½" – ¾" MAX
 - a) 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.)
 - b) 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.
 - c) Due to the fiber-reinforced formula back buttering the stone is not required.
 2. Type S Mortar mix – Up to 1" bed depth MAX
 - a) Mix 1 bag mortar mix to 16 shovelfuls of mason sand (ASTM C-144) in wheelbarrow or cement mixer adding 4-1/2 quarts (4.3 L) of clean water into the mixing container for each 80 lb (36.3 kg) bag. Slowly pour the contents of the bag into the mixing water. Mix until a firm, workable consistency is achieved.
 - b) IMPORTANT: Back butter the entire stone with thin set covering the entire back of the stone before laying onto the setting bed.
4. 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.
5. Be sure to remove excess setting bed mortar along exposed edges before ending the day.
6. MSNSP must be installed with at least 1/8" to 1/4" joint using spacers, depending on the pattern while maintaining straight lines.
7. Due to variations in natural stone, it is required to pull from multiple crates.
8. Perform all cutting using a diamond blade. Cutting wet can provide a smoother cut and may decrease chipping on MSNSP.
9. Only use a white non-marking mallet to set the stones.
10. Grouting the joints is REQUIRED for all wet laid applications.
 1. Grout installation after a minimum of 24 hours curing time at 70°F.
 2. Laticrete® Permacolor Select Grout – 1/8"- 1/4" joint.
 - a) 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. mixing bucket and add grout powder. Mix with a slow speed drill mixer (300 rpm) for 1 minute.
 - b) 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.
 - c) 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 to 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.

POOL AND SPA COPING
MSNSC - Marmiro Stones Natural Stone Coping – Gunitite Pool



* NOTE 1/8" - 1/4" MORTAR JOINT BETWEEN COPING PIECES



Epoxy-mesh backed stone is used to increase the strength of stone due to natural veining.

Laticrete® LATIPOXY® 300 Adhesive is required for long term adhesion of stone to concrete wall.

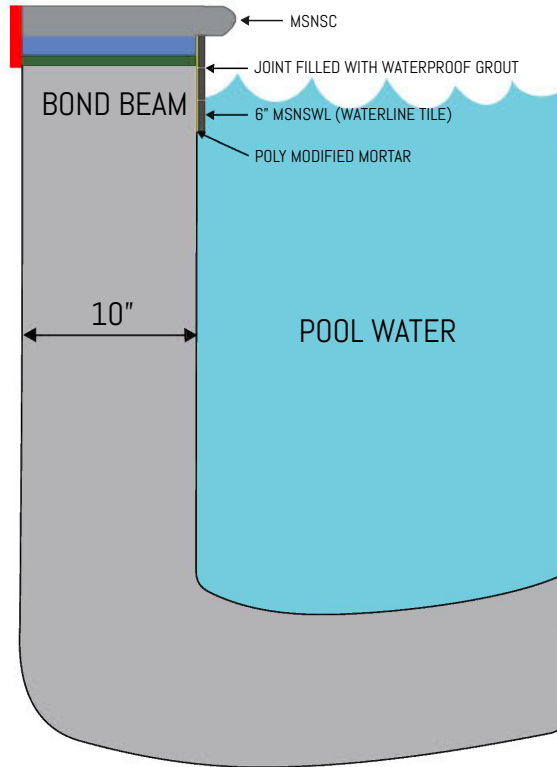


Installation

1. Surface preparation: Make sure that the pool edge is clean, dry, and free from any debris, dirt, or dust. You can use a vacuum cleaner or a broom to remove any loose particles.
2. Mixing the mortar: Follow the manufacturer's instructions to mix the Laticrete® MULTIMAX™ mortar. Use the recommended amount of water and mix the mortar until it has a smooth consistency. It is essential to mix the mortar properly to ensure good adhesion.
3. If bond beam is uneven it is highly recommended to apply an even layer of thin set to ensure a level surface is created. NOTE: If coping is installed on an uneven surface, it could cause stone to crack.
4. Applying the mortar: Apply a minimum ½" – ¾" maximum Laticrete® MULTIMAX™ mortar to the pool edge. Make sure that the layer is even and has a consistent thickness. Don't apply too much mortar at once, as it can cause the stone to shift.
5. Back butter by applying thin set on back of MSNSC piece evenly to entire area that will be adhered to mortar bed. This will increase your bond strength.
6. Installing the natural stone: Press the natural stone pool coping into the mortar, starting at one end of the pool edge and working your way across. Use a level to ensure that the stones are even and aligned correctly. If necessary, use a rubber mallet to gently tap the stones into place. It is best practice to use string lines on top to maintain consistent height and behind coping to keep consistent straight lines.
 - A. A good sign enough mortar was used, you should see some mortar push out behind coping and in between joints.
7. Grouting: Once the mortar has cured, apply Laticrete® PERMACOLOR® grout between the MSNSC. Follow the manufacturer's instructions to mix the grout and apply it using a grout float. Be sure to remove any excess grout before it dries.
 - A. Before starting to grout, remove spacers and debris in grout joints and remove dust and dirt using a wet sponge. Do not leave water standing in joints.
 - B. Mixing: 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 mixing container and add grout powder. Mix with a slow speed drill mixer (300 rpm) for 1 minute. Wait for 5 minutes and remix with drill for 1 minute.
 - C. Apply: Using a grout bag, apply grout to joints filing completely. Use a 3/8" slicker trowel or jointing tool to give a concave look.
8. Cleaning: 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 to 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.
9. Expansion Joint: This is a REQUIRED step. Install a foam backer rod behind coping and pool deck material. Example: if joint is ¼" use a 3/8" foam backer rod to ensure tight fit. It is ok to lay backer rod on top of each other as long as you have at least 3/8" for caulk.
 - A. Once backer rod is installed, apply self-leveling caulk on top of backer rod to fill up expansion joint. Choose correct color for caulk that is aesthetically pleasing with stone.
 - B. NOTE: Mortar or glue is not an acceptable material for an expansion joint.

WATERLINE TILE - 6"x6" to 6"x24"

MSNSWL - Marmiro Stones Natural Stone Waterline Tile – Gunitite Pool



* NOTE 1/8" - 1/4" MORTAR JOINT BETWEEN COPING PIECES



Epoxy-mesh backed stone is used to increase the strength of stone due to natural veining.

Laticrete® LATIPOXY® 300 Adhesive is required for long term adhesion of stone to concrete wall.

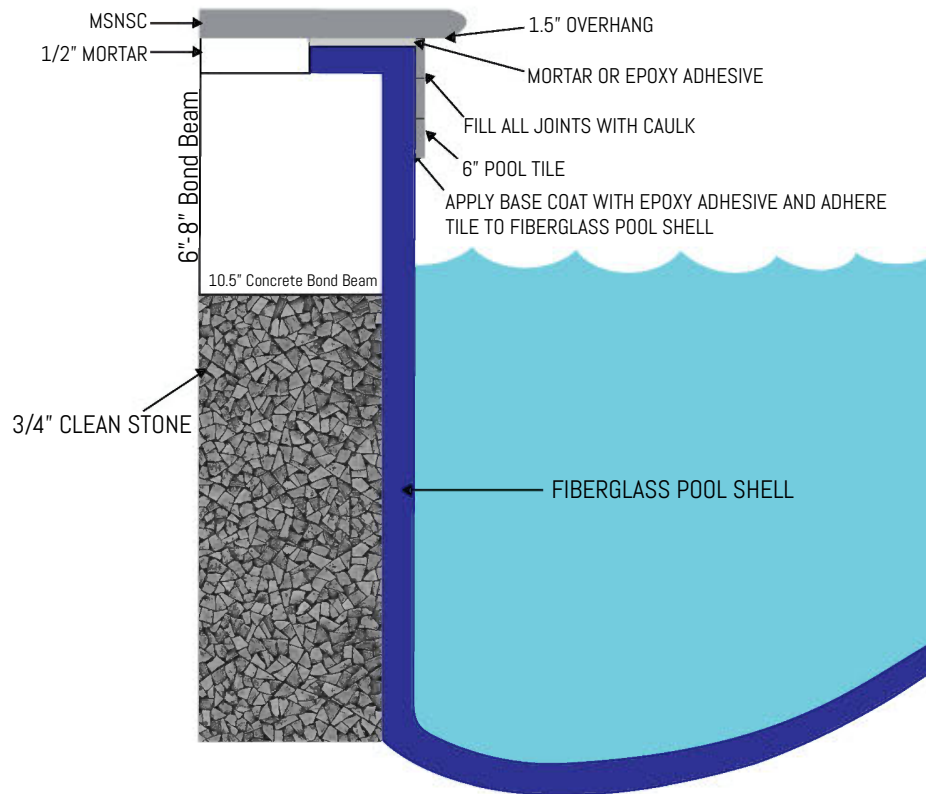


Installation

1. Surface Preparation: The surface of the gunite pool needs to be clean, smooth and free from any dirt, debris or loose materials. If the surface is not smooth, it needs to be leveled out using a grinder or sander.
2. Tile Layout: Before installing the tiles, a layout needs to be planned out to ensure that the tiles are aligned properly and the design is uniform. This can be done by leaving an 1/8" below the bottom of the coping and using bender board on the bottom of the tile to keep tile level during installation.
3. Tile Cutting: The tiles need to be cut according to the design and layout using a tile saw. It is important to wear safety goggles and gloves during this process.
4. Tile Adhesive:
 - A. For mesh-backed stone: a specialty adhesive, LATIPOXY® 300 by Laticrete®, should be applied to the back of the tile. The LATIPOXY® should be applied evenly and not too thickly.
 - B. For flat surface-backed stone: it is recommended to use Laticrete® 254 Platinum thin set for mortar. Be sure to also back butter each piece of stone to increase adhesion to pool wall.
5. Tile Installation: The tiles are then installed onto the prepared surface, starting from the bottom and working up. Be sure to leave 1/8" space beneath the bottom of the coping. A tile spacer can be used to maintain consistent spacing between the tiles.
6. Grout Application: Using Laticrete® SPECTRALOCK® Pro Grout Premium, spread grout using a sharp edged, firm rubber grout float. Work the grout diagonally across the joints, packing them full. "Cut" excess grout off the tile surface using the edge of the float held at a 90° angle like a squeegee, stroking diagonally to avoid pulling grout out of filled joints.
7. Once grout has been spread, wait approximately 20 minutes before cleaning (or within one hour of initial mixing of product). Wait longer at colder temperatures. Add initial wash cleaning additive to two gallons of clean water and mix until fully dissolved. Do not mix cleaning additive with grout.
8. Instead of a sponge, the use of a damp, well wrung, folded terry cloth towel can be helpful to remove excess grout while smoothing joints less than 1/8" (3 mm) on walls. Use light pressure when using folded terry cloth towel.

WATERLINE TILE - 6"x6" to 6"x24"

MSNSWL - Marmiro Stones Natural Stone Waterline Tile – Fiberglass Pool



Epoxy-mesh backed stone is used to increase the strength of stone due to natural veining and shipping. This should either be removed with grinder exposing at least 80% of the stone or use LATIPOXY® 300.

Laticrete® LATIPOXY® 300 Adhesive is required for long term adhesion of stone to concrete wall.

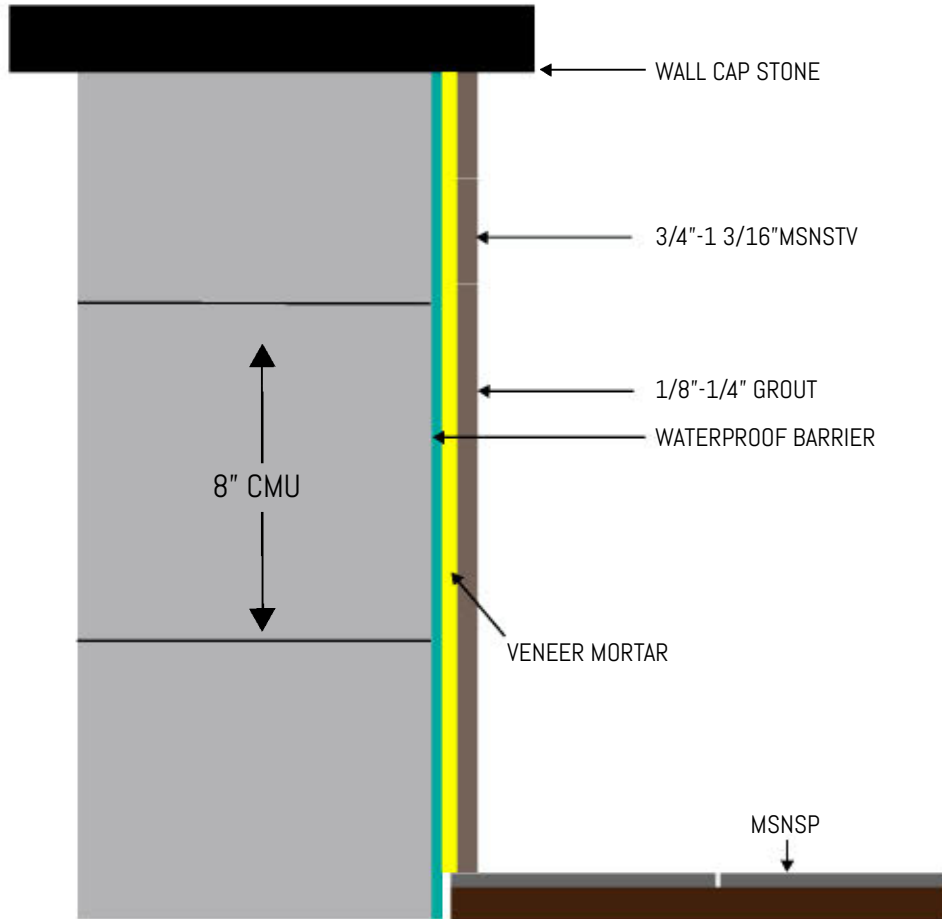


Installation

1. Surface Preparation: The surface of the fiberglass pool needs to be clean, smooth and free from any dirt, debris or loose materials. The water level should be lowered 1.5' below the bottom of the tile.
2. Tile Layout: Before installing the tiles, a layout needs to be planned out to ensure the tiles are aligned properly and the design is uniform. This can be done by leaving 1/8" below the bottom of the coping.
3. Tile Cutting: The tiles need to be cut according to the design and layout using a tile saw with a diamond blade. It is important to wear safety goggles and gloves during this process.
4. Tile Adhesive: a specialty adhesive, LATIPOXY® 300 by Laticrete®, should be applied to the back of the tile. The LATIPOXY® should be applied evenly and not too thickly.
5. Tile Installation: The tiles are then installed onto the prepared fiberglass surface. Be sure to leave 1/8" space beneath the bottom of the coping. A tile spacer can be used to maintain consistent spacing between the tiles.
6. Grout Application: Using Laticrete® SPECTRALOCK® Pro Grout Premium spread grout using a sharp-edged, firm rubber grout float. Work the grout diagonally across the joints, packing them full. "Cut" excess grout off the tile surface using the edge of the float held at a 90° angle like a squeegee, stroking diagonally to avoid pulling grout out of filled joints.
 - A. Once grout has been spread, wait approximately 20 minutes before cleaning (or within one hour of initial mixing of product). Wait longer at colder temperatures. Add initial wash cleaning additive to two gallons of clean water and mix until fully dissolved. Do not mix cleaning additive with grout.
 - B. Instead of a sponge, the use of a damp, well wrung, folded terry cloth towel can be helpful to remove excess grout while smoothing joints less than 1/8" (3 mm) on walls. Use light pressure when using folded terry cloth towel.

THIN VENEER WALL APPLICATION

MSNSTV – Marmiro Stones Natural Stone Thin Veneer - Masonry Wall Installation



Epoxy-mesh backed stone is used to increase the strength of stone due to natural veining.

Laticrete® LATIPOXY® 300 Adhesive is required for long term adhesion of stone to concrete wall.



Installation

On existing CMU or concrete wall

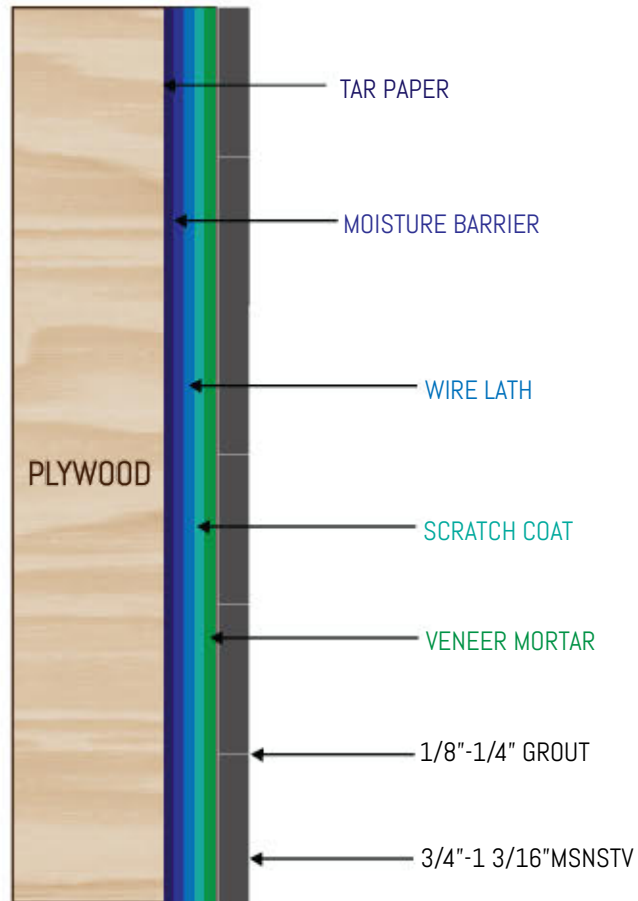
1. Apply HYDRO BAN® waterproofing system directly to the wall.
 - A. Application types but not limited to the following:
 - Raised spa wall with spillway
 - Water feature walls
 - Raised gunite walls
 - Tanning ledges or sun shelf
2. Apply one of the following approved mortars once waterproofing has dried:
 - Laticrete® 254 Platinum
 - Laticrete® 247 Titanium
 - Laticrete® Multimax™ Lite
3. For epoxy- back stone follow the following instructions. If no epoxy is present on stone skip to next step.

Laticrete® LATIPOXY® 300 Adhesive is required for long term adhesion of stone to concrete wall.

1. Rough or uneven concrete surfaces should be made smooth with Portland Cement Underlayment to provide a wood float (or better) finish.
2. Mixing: Pour LATIPOXY 300 Adhesive Part A and Part B into a clean mixing pail and mix thoroughly. Add LATIPOXY 300 Part C Filler Powder and mix to a smooth, trowelable consistency. Mortar is ready for use immediately after mixing.
3. Application: Apply mortar to the substrate with the flat side of the trowel, pressing firmly to work into surface. Comb on additional mortar with the notched side.
4. Apply MSNSTV in a leveled line, working from the bottom up.
5. Perform all cuts with a grinder using a diamond blade.
6. Mortar Joint Options:
 - A. Place MSNSTV (typical is 4" & 6" height material) with no mortar joint, creating a tight fit.
 - B. MSNSTV 3"-6"-9" system is designed for a 3/8" grout joint.
 1. Be sure to use spacers to maintain consistent joint spacing.
 2. Before starting to grout, remove spacers and debris in grout joints and remove dust and dirt using a wet sponge. Do not leave water standing in joints.
 3. Mixing: 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 mixing container and add grout powder. Mix with a slow speed drill mixer (300 rpm) for 1 minute. Wait for 5 minutes and remix with drill for 1 minute.
 4. Apply: Using a grout bag apply grout to joints filling completely. Use a 3/8" slicker trowel or jointing tool to give a concave look.
 5. Cleaning: 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 to 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.

THIN VENEER WALL APPLICATION

MSNSTV – Marmiro Stones Natural Stone Thin Veneer - Plywood Wall Installation



Epoxy mesh backed stone is used to increase the strength of stone due to natural veining.


Laticrete® LATIPOXY® 300 Adhesive is required for long term adhesion of stone to concrete wall.



Installation

1. On existing plywood wall
 - A. Apply a WRB (water-resistant barrier) to plywood
 - B. Apply metal wire lath using lath fasteners
 - C. Mortar setting bed
 1. Apply Laticrete® Multimax™ Lite as your scratch coat making a smooth finish using straight edge trowel.
2. For epoxy-back stone follow the following instructions. If no epoxy is present, on stone skip to next step.
 - A. Laticrete® LATIPOXY® 300 Adhesive is required for long term adhesion of stone to concrete wall.
 1. Rough or uneven concrete surfaces should be made smooth with Portland Cement Underlayment to provide a wood float (or better) finish.
 2. Mixing: Pour LATIPOXY 300 Adhesive Part A and Part B into a clean mixing pail and mix thoroughly. Add LATIPOXY 300 Part C Filler Powder and mix to a smooth, trowelable consistency. Mortar is ready for use immediately after mixing.
 3. Application: Apply mortar to the substrate with the flat side of the trowel, pressing firmly to work into surface. Comb on additional mortar with the notched side.
3. Apply MSNSTV in a leveled line, working from the bottom up.
4. Perform all cuts with a grinder using a diamond blade.
5. Mortar Joint Options
 - A. Place MSNSTV (typical is 4" & 6" height material) with no mortar joint, creating a tight fit.
 - B. MSNSTV 3"-6"-9" system is designed for a 3/8" grout joint.
 1. Be sure to use spacers to maintain consistent joint spacing.
 2. Before starting to grout, remove spacers and debris in grout joints and remove dust and dirt using a wet sponge. Do not leave water standing in joints.
 3. Mixing: 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 mixing container and add grout powder. Mix with a slow speed drill mixer (300 rpm) for 1 minute. Wait for 5 minutes and remix with drill for 1 minute.
 4. Apply: Using a grout bag apply grout to joints filing completely. Use a 3/8" slicker trowel or jointing tool to give a concave look.
6. Cleaning: 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 to 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.

Maintenance of Marmiro Stones Natural Stones

	Sandblasted marble – Power washing wands could cause streak marks on the surface if used improperly or too close to the surface.
	Surface cleaner – Be sure to move at a slower pace so the spinning bar cleans the surface entirely. If you move too fast you will leave round marks on the surface. This will be noticed once surface dries.
	Acid Warning – Please avoid using muriatic acid at all costs. It will etch the sandblasted surface.

Cleaning Day 1

1. Overview of stains that are present on the job:
 - Rust
 - Efflorescence
 - Leaf/Organics
 - Oil stains
2. Project with joints - Antiqued or Sandblasted
 1. Cold water with a surface cleaner with adjustable pressure.
 2. Wet surface in small workable area. This is the dilution process.
 3. Apply cleaner with a pump sprayer evenly in wet area.
 4. Apply GST Pro-Grade cleaner with a pump sprayer evenly in wet area.
 5. Allow to sit on surface for 2-5 minutes depending on weather conditions (DO NOT let the cleaner dry on the surface).
 6. Scrub the surface using a stiff bristle brush in a north and south then east and west pattern.
 7. Using the surface cleaner start at the lowest point of the pitch following the grade in a straight line moving the surface cleaner east and west overlapping each pass 6".
 8. In the same area move the surface cleaner north and south overlapping each pass 6".
 9. Once each section is complete, hose off excess suds/cleaner and dirt.
 10. Repeat this process overlapping each section.
3. Project with NO joints - Antiqued or Sandblasted
 1. Hot water with a surface cleaner with the highest pressure.
 2. Wet surface in small workable area. This is the dilution process.
 3. Apply cleaner with a pump sprayer evenly in wet area.
 4. Apply GST Pro-Grade cleaner with a pump sprayer evenly in wet area.
 5. Allow to sit on surface for 2-5 minutes depending on weather conditions (DO NOT let the cleaner dry on the surface).
 6. Scrub the surface using a stiff bristle brush in a north and south then east and west pattern.
 7. Using the surface cleaner start at the lowest point of the pitch following the grade in a straight line moving the surface cleaner east and west overlapping each pass 6".
 8. In the same area move the surface cleaner north and south overlapping each pass 6".
 9. Once each section is complete hose off excess suds/cleaner and dirt.
 10. Repeat this process overlapping each section.
4. Project with rust stains
 1. Spot clean with RSR-2000, (Call Marmiro Stones for product and pricing).

STONE TYPE	STONE FINISH	PATTERN	STONE THICKNESS	ADDITIONAL INFORMATION	INFILTRATION RATE INCH PER HOUR
MARBLE	ANTIQUED	FRENCH PATTERN	1 3/16"	TIGHT JOINT	719.2 IN. / HR.
MARBLE	SANDBLASTED	FRENCH PATTERN	1 3/16"	TIGHT JOINT	378.9 IN. / HR.
MARBLE	ANTIQUED	6"x12" HERRINGBONE	2.25"	1/4" JOINT	451.8 IN. / HR.
MARBLE	SANDBLASTED	FRENCH PATTERN	1 3/16"	1/4" JOINT	587.4 IN. / HR.
MARBLE	SANDBLASTED	24"x24", 16"x16", 12"x12", STACKED BOND	1 3/16"	1/4" JOINT	597.3 IN. / HR.
TRAVERTINE	ANTIQUED	16"x24", 12"x24" RUNNING BOND 24"x24"	1 3/16"	1/4" JOINT	719.2 IN. / HR.
TRAVERTINE	RECLAIMED	GATEWAY PATTERN®	2.25"	1/4" JOINT	503.5 IN. / HR.
MARBLE	SANDBLASTED	16"x24", 12"x24" 24"x24" RUNNING BOND	1 3/16"	3/8" JOINT	489.5 IN. / HR.
TRAVERTINE	ANTIQUED	24"x24", 16"x16" 12"x12", STACKED BOND	1 3/16"	3/8" JOINT	597.3 IN. / HR.
GRANITE	WATER BLASTED	4"x4" RUNNING BOND	2"	1/4" JOINT	881.0 IN. / HR.

Standard test method is ASTM C1781 for surface infiltration rate of permeable unit pavement systems.

DISCLAIMER

Marmiro Stones, Inc. has no control over the buyer's selection or use of any stone. Prior to using or permitting the use of our products, the buyer must determine the suitability of the products for the intended use and assumes all risk and liability whatsoever in connection therewith. The buyer must also determine the slip resistance suitability and maintainability as Marmiro Stones, Inc. is not responsible for any losses or damages sustained by the buyer, or any other person, as a result of improper installation or misapplication of our products. Please refer to the ASTM standards for more specific information concerning stone or paver specifications. Marmiro Stones, Inc. and its agents and employees are held harmless against any loss, damage, claim, suit, liability, judgement, or expense arising out of, or in connection with, any injury, damage, or loss to any property, or violation of any applicable laws or regulations resulting from, or in connection with, the sale, transportation, installation, or use of our products by the buyer.

Do's

- Good practice to take pictures of product tags on crates for records of each job.
- Always inspect material before opening crates of Marmiro Stones®.
- Vibratory plate compactor for pedestrian areas with a centrifugal force rating between 3,000-4,500 lbs. with no more than 4" lifts.
- Reversible vibratory plate compactor for light vehicular areas with a centrifugal force rating greater than 8,000 lbs, between 4"-6" lifts.
- Expansion joints are required between back of pool coping and Marmiro Stones® natural stone pavers on pool deck. See pool coping guideline page for details.
- A minimum ¼" joint is required for all driveway paver installations using Marmiro Stones natural stone pavers. Jointing sand or clean stone is required in joint.
- Make sure an expansion joint is between the coping and decking, as well as grout between each coping piece.
- When installing, lay coping out based on color range prior to mudding down.
- Butter the back of each stone fully when mudding down.
- Wipe up excess sealer upon applying prior to it drying.
- Clean the installed area prior to sealing.
- When installing French Pattern, be sure to pull from 2-3 crates at a time for best blending.
- When installing single size pieces, be sure to pull from 3-4 crates at a time for best blending.

Don'ts

- Do not use vibratory equipment on top of sandblasted marble or travertine.
- Do not lay driveway pavers without a joint. Must have a minimum of ¼" joint.
- Do not glue coping pieces on concrete gunite pool bond beam.
- Do not lay the sandblasted side of the marble or travertine down. The sandblasted side is the finished side.
- Do not lay the bamboo finished side (grooved surface) of the marble or travertine down. Do not apply mortar to this side - this is the finished side. Apply the veneer mortar to the smooth side of the stone.
- Do not use acid.
- Do not powerwash without testing a sample.

Gabo - Vacuum Lifter

Smoothly transfer various flooring installations, piece by piece. Handle tiles and landscaping elements with care as you move them from one area to another.



Diamond Blades

Suitable for most materials such as: marble, travertine, granite, limestone, sandstone, and more.



Laticrete®

PERMACOLOR®

Grout is a high-performance, fast-setting polymer-fortified grout that provides a tile grout joint that is dense and hard. PERMACOLOR® Grout is color-consistent and features built-in Microban® antimicrobial protection to keep the grout surface looking newer for longer.



MULTIMAX™™ LITE

The ultimate, lightweight one-step, polymer fortified, Large and Heavy Tile mortar for interior and exterior installation of ceramic tile, porcelain tile, glass tile, stone, quarry tile, pavers, and brick.



MVIS (Masonry Veneer Installation System)

Laticrete® MVIS products include adhesives, air and water barriers, pointing mortars and sealants. Using the MVIS system provides you with a permanent, high strength installation that is freeze/thaw stable and protected from water intrusion. We guarantee it! Our MVIS products are backed by either the LATICRETE® 15 Year System Warranty* or 25 Year System Warranty*.



Testing took place in Carlstadt, New Jersey. On September 1, 2022 the temperature was 84°, and on September 9, 2022, the temperature was 80°. Our products were tested in direct sunlight for the duration of both days. This chart gives a range of temperatures for each product and finish.

Crema Eda®

- Antiqued Finish
- Sandblasted Finish
- Sandblasted with Matte Sealer
- Sandblasted with Enhanced Sealer



Crema Eda® Rosa

- Antiqued Finish
- Sandblasted Finish
- Sandblasted with Matte Sealer
- Sandblasted with Enhanced Sealer



Kasha®

- Sandblasted Finish
- Sandblasted with Matte Sealer
- Sandblasted with Enhanced Sealer



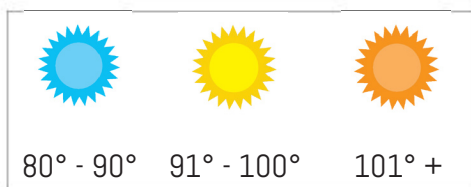
Crema Oliva®

- Antiqued Finish
- Sandblasted Finish
- Sandblasted with Matte Sealer
- Sandblasted with Enhanced Sealer







Afyon Cloud®




- Antiqued Finish
- Sandblasted Finish
- Sandblasted with Matte Sealer
- Sandblasted with Enhanced Sealer






Deep Blue®

- Antiqued Finish 
- Sandblasted Finish 
- Sandblasted with Matte Sealer 
- Sandblasted with Enhanced Sealer 

Orcca®

- Vintage Finish 
- Vintage with Matte Sealer 
- Vintage with Enhanced Sealer 

Karbon®

- Water Blasted Finish 
- Water Blasted with Matte Sealer 
- Water Blasted with Enhanced Sealer 





Terra

- Antiqued Finish 

Avena®







- Antiqued Finish 

Grano®

- Antiqued Finish 
- Sandblasted Finish 
- Sandblasted with Matte Sealer 
- Sandblasted with Enhanced Sealer 

Takoma Silver®

- Antiqued Finish 

Heat Testing Compared To:	
Light Porcelain Shade	
Medium Porcelain Shade	
Dark Porcelain Shade	
Bluestone Flamed	
Bluestone Flamed Matte Sealer	
Bluestone Flamed Enhanced Sealer	

HEAT TESTING DISCLAIMER

Compressive Strength ASTM - C170

Sample	Antiqued	Sandblasted
Crema Eda® Marble	13,453 psi	12,080 psi
Crema Eda® Rosa Marble	12,675 psi	13,434 psi
Kasha® Marble	N/A	18,200 psi
Afyon Cloud® Marble	10,968 psi	10,208 psi
Deep Blue® Marble	12,082 psi	11,929 psi
Terra Travertine	8,645 psi	N/A
Grano® Travertine	7,891 psi	7,945 psi
Avena® Travertine	9,287 psi	N/A
Takoma Silver® Travertine	11,639 psi	N/A
Crema Oliva® Marble	15,110 psi	14,868 psi
Karbon® Granite (Water Blasted)	N/A	19,535 psi
Orcca® Marble (Vintage)	N/A	14,933 psi
Marmiro® Bluestone Sandstone (Flamed)	N/A	14,133 psi

Flexural Strength ASTM - C880

Sample	Antiqued	Sandblasted
Crema Eda® Marble	N/A	1,284 psi
Crema Eda® Rosa Marble	N/A	1,466 psi
Kasha® Marble	N/A	1,295 psi
Afyon Cloud® Marble	N/A	1,308 psi
Deep Blue® Marble	N/A	1,878 psi
Terra Travertine	1,878 psi	N/A
Grano® Travertine	1,587 psi	N/A
Avena® Travertine	1,232 psi	N/A
Takoma Silver® Travertine	1,364 psi	N/A
Crema Oliva® Marble	N/A	2,341 psi
Karbon® Granite (Water Blasted)	N/A	1,429 psi
Orcca® Marble (Vintage)	N/A	2,083 psi
Marmiro® Bluestone Sandstone (Flamed)	N/A	1,785 psi

Freeze and Thaw ASTM - C666

Sample	Results	Notes
Crema Eda® Marble	Pass	No cracks or deformations noted.
Crema Eda® Rosa Marble	Pass	No cracks or deformations noted.
Kasha® Marble	Pass	No cracks or deformations noted.
Afyon Cloud® Marble	Pass	No cracks or deformations noted.
Deep Blue® Marble	Pass	No cracks or deformations noted.
Terra Travertine	Pass	No cracks or deformations noted.
Grano® Travertine	Pass	No cracks or deformations noted.
Avena® Travertine	Pass	No cracks or deformations noted.
Takoma Silver® Travertine	Pass	No cracks or deformations noted.
Crema Oliva® Marble	Pass	No cracks or deformations noted.
Karbon® Granite (Water Blasted)	Pass	No cracks or deformations noted.
Orcca® Marble (Vintage)	Pass	No cracks or deformations noted.
Marmiro® Bluestone Sandstone (Flamed)	Pass	No cracks or deformations noted.

Water Absorption ASTM - C97

Sample	Antiqued Water Absorption %	Sandblasted Water Absorption %
Crema Eda® Marble	0.17	0.19
Crema Eda® Rosa Marble	0.17	0.16
Kasha® Marble	N/A	0.52
Afyon Cloud® Marble	0.17	0.16
Deep Blue® Marble	0.17	0.18
Terra Travertine	1.98	N/A
Grano® Travertine	2.12	2.24
Avena® Travertine	1.71	N/A
Takoma Silver® Travertine	0.52	N/A
Crema Oliva® Marble	0.60	0.44
Karbon® Granite (Water Blasted)	N/A	0.11
Orcca® Marble (Vintage)	N/A	2.90
Marmiro® Bluestone Sandstone (Flamed)	N/A	1.76%

Density ASTM - C97

Sample	Antiqued Density	Sandblasted Density
Crema Eda® Marble	168.5 lbs/ft ³	167.4 lbs/ft ³
Crema Eda® Rosa Marble	168.3 lbs/ft ³	169.3 lbs/ft ³
Kasha® Marble	N/A	162.8 lbs/ft ³
Afyon Cloud® Marble	162.4 lbs/ft ³	164.2 lbs/ft ³
Deep Blue® Marble	163.8 lbs/ft ³	167.4 lbs/ft ³
Terra Travertine	153.1 lbs/ft ³	N/A
Grano® Travertine	154.7 lbs/ft ³	152.0 lbs/ft ³
Avena® Travertine	145.8 lbs/ft ³	N/A
Takoma Silver® Travertine	151.0 lbs/ft ³	N/A
Crema Oliva® Marble	162.8 lbs/ft ³	162.1 lbs/ft ³
Karbon® Granite (Water Blasted)	N/A	176.8 lbs/ft ³
Orcca® Marble (Vintage)	N/A	168.8 lbs/ft ³
Marmiro® Bluestone Sandstone (Flamed)	N/A	160.5 lbs/ft ³

DISCLAIMER

Marmiro Stones, Inc. has no control over the buyer's selection or use of any stone. Prior to using or permitting the use of our products, the buyer must determine the suitability of the products for the intended use and assumes all risk and liability whatsoever in connection therewith. The buyer must also determine the slip resistance suitability and maintainability as Marmiro Stones, Inc. is not responsible for any losses or damages sustained by the buyer, or any other person, as a result of improper installation or misapplication of our products. Please refer to the ASTM standards for more specific information concerning stone or paver specifications. Marmiro Stones, Inc. and its agents and employees are held harmless against any loss, damage, claim, suit, liability, judgement, or expense arising out of, or in connection with, any injury, damage, or loss to any property, or violation of any applicable laws or regulations resulting from, or in connection with, the sale, transportation, installation, or use of our products by the buyer.



MARMIRO STONES®

BY TURAN BEKISOGLU

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