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Installation Manual

May 9/14 No revision

Installation steps include job planning, layout, excavating and preparing the soil subgrade, applying geotextiles (optional), spreading and compacting the rock sub-base and/or base aggregates, placing the bedding layer, constructing edge restraints and placing the pavers.

Job Planning

1. Prior to excavating, check with the local utility companies to ensure that digging does not damage underground pipes or wires. Many localities have one telephone number to call (811) at least two days before excavation. Mark excavation location in white.
2. Overhead clearances should be checked so that equipment does not interfere with wires.
3. Site access by vehicles and equipment should be established so that the job can be built without delays.

Choosing a Paver

1. Determine the correct type and size of Xeripave[®] pervious paver or Xeribrix[®] that is ideal for project.

Type of Xeripave [®] Paver or Xeribrix [®]	Ideal Applications
Xeripave [®] Super Pervious Paver - 300 x 300 x 50 mm (11.81 x 11.81 x 1.97 inches)	Pedestrian Applications
Xeripave [®] Super Pervious Paver - 400 x 400 x 50 mm (15.75 x 15.75 x 1.97 inches)	Pedestrian Applications
Xeripave Super Pervious Paver - 300 x 300 x	Pedestrian and Vehicular Applications

100 mm	in a Running Bond Pattern.
Xeribrix® - 115 x 230 x 60 mm (4.5x9x2.38 inches)	Pedestrian and Light Vehicular Applications
Xeribrix® - 115 x 230 x 80 mm (4.5 x 9 x 3.125 inches)	Pedestrian and Light and Heavy Vehicular Applications

Layout

1. In preparing for excavation, the area to be removed should be marked with stakes. The stakes should be at least 12 inches away from the area to be removed so that they are not removed during excavation. The stakes should be marked to establish grades, or have string lines pulled and tied to them. Grade stakes should be checked periodically during the job to insure that they have not been disturbed.

Excavating, Drainage and Preparing the Soil Subgrade

1. During and after excavation, the soil should be inspected for organic materials or large rocks. If organic materials, roots, debris, or rocks remain, they should be removed and replaced with clean, compacted backfill material.
2. Free-standing water saturating the soil should be removed. After it is removed, low, wet areas can be stabilized with a layer of crushed stone and/or cement. Additional drainage is recommended in clay soils or other slow draining soils subject to vehicular traffic.
3. After excavation, Xeripave does not recommend any compaction of the subgrade to ensure maximum soil percolation however always refer to installation guidelines stated by a registered professional engineer. Monitoring the soil moisture content is important to reaching the desired soil stability. The moisture content of the subgrade soil should always be verified for compliance to specifications before installing recommended geotextiles.

Applying Geotextiles (Optional)

Geotextile fabric may be used in areas where soil remains saturated part of the year, where there is freeze and thaw, over clay and moist silty subgrade soils, or where traffic loads require additional support. When geotextiles are used, they preserve the load bearing capacity of the base over a greater length of time and avoid migration of base material into the subgrade.

1. As a separation layer, they prevent soil from being pressed into the aggregate base under loads, especially when saturated, thereby reducing the likelihood of rutting.
2. The minimum fabric overlap should be at least 12 in. (300 mm).

3. When placing the fabric in the excavated area, it should continue up the sides of the opening to help wrap and contain the rock sub-base and base layers above. (A minimum of 6 to 12 inches of fabric is recommended as a wrap, over the top edges of the base, depending on over excavation.)
4. Fabric should be free of wrinkles on all sides. When the aggregate is dumped on the fabric, the tires from trucks should be kept off the fabric to prevent wrinkling.

Spreading and Compacting the Rock Sub-base and/or Base Aggregates

1. There are three types of sub-base applications. Full exfiltration, Partial exfiltration and Non exfiltration. Refer to design professional or engineer for proper application. See detail page for cross section examples.
2. The rock sub-base, in vehicular applications, should be composed of a free draining material, with gradation of 3 in. (75mm) to $\frac{3}{4}$ in. (19mm), clean crush, no fines. (ASTM No. 2 Grading Requirement.)
3. The rock base should be composed of a free draining material, with gradation of 1 $\frac{1}{2}$ in. (37.5mm) to No. 8 (2.36mm), clean crush, no fines. (ASTM No. 57 Grading Requirement.)
4. The thickness of the sub-base and base is determined by traffic, soil type, subgrade soil drainage / moisture, and climate. Commercial sidewalks, patios and pedestrian areas should have a minimum base thickness (after compaction) of 4 in. (100 mm) over well-drained soils. Residential driveways on well-drained soils should be at least 6 in. (150 mm) thick. In colder climates, continually wet or weak soils will require that bases be at least 2 in. (50mm) to 4 in. (100mm) thicker.
5. Frozen base material should not be installed, nor should material be placed over a frozen soil subgrade.
6. Adequate compaction of the base, and sub-base, if needed, is critical to minimizing settlement of the pavers. Special attention should be given to achieving compaction standards adjacent to edge restraints, catch basins and utility structures. (Generally, spread and compact in 2 to 3 inch lifts.)
7. The aggregate base should be at its optimum moisture, when spread and compacted.
8. Installing aggregate base in 2-inch lifts and keeping damp will aid in obtaining desired Proctor density of compaction.
9. Bases for commercial pedestrian areas and residential driveways should be compacted a minimum 95% of standard Proctor density. While the highest percentage compaction (100%) is preferred, it may not be achievable on weak or saturated soils. Maintaining consistent lift thickness during compaction will help achieve consistent density.
10. Variation in final base surface elevations should not exceed $\pm 3/8$ in. (± 10 mm) when tested with a 10 ft. (3 m) straight edge.

Constructing Edge Restraints

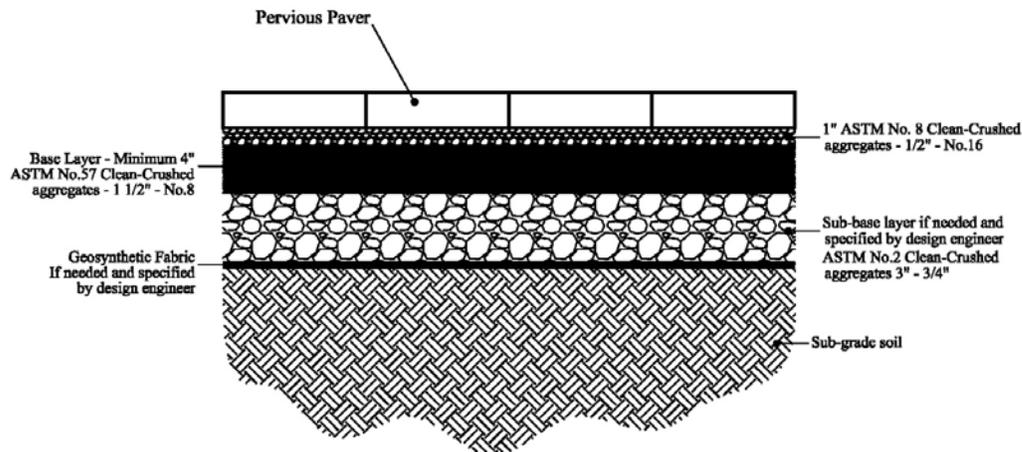
Edge restraints are recommended for all Xeripave installations. By providing lateral resistance and horizontal interlock to loads, they maintain continuity among the paving units. Aluminum, steel, plastic, or concrete are typical edge restraints.

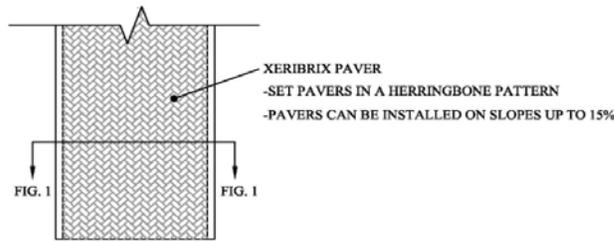
1. Edge restraints must be set at the correct level and their elevations should be checked prior to placing the pavers. Edge restraints are typically installed before the bedding layer and pavers are laid. However, some restraints can be secured into the base as the laying progresses.
2. For walkways, set one side of edging, then using a 2x4 (cut to path width) lay across stone base and set edging at other side of walk to maintain consistent spacing. (Measure a course of full pavers to desired width of path, to decrease cuts.)
3. Mechanical edge restraint is accepted for pedestrian applications.
4. For vehicular applications, concrete curb edge restraints are recommended.
5. See detail page for recommended depth and width of concrete curbing.

Bedding Layer for Xeripave® Super Pervious Pavers and Xeribrix®

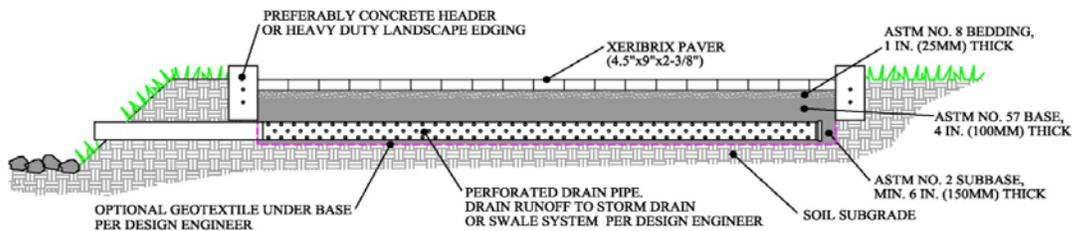
1. For the bedding layer, 2 in. (50mm) of clean crushed aggregate, 1/4 in. to 3/8 in. (6 mm to 10 mm) stones containing no fines should be installed over the rock base.
2. Bedding layer should be spread and screeded to proper thickness. (Do not compact bedding layer, unless it is for a vehicular application, or instructed to do so by the design professional)

Bedding sand and finishing joint sand, which is used in traditional paver installations, are **NOT RECOMMENDED** for Xeripave as it reduces filtration rates and sand may shift due to high rate of permeability of pavers.





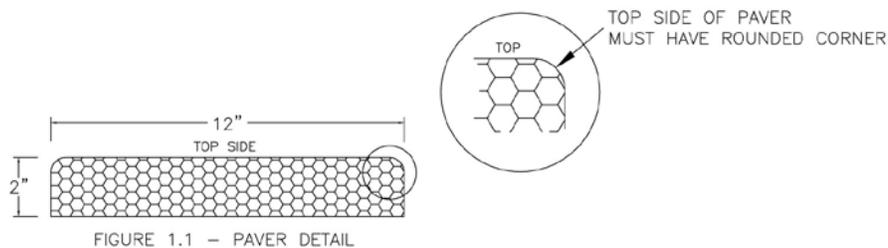
**XERIBRIX
NTS**



**FIGURE 1 - TYPICAL CROSS SECTION
NTS**

Placing the Pavers

1. With the installation of Xeripave® and Xerbrix®, users must differentiate between the top and bottom surface. Pavers should be installed top side up. To identify the top surface note the following: a formed, flat finish with filleted (chamfered), or rounded edges. An additional difference is the abrasive finish on the top surface to comply with ADA regulations. To identify the bottom surface users may note: it is not as flat as the top side and usually has a higher gloss finish with no chamfers. Care should be exercised to ensure pavers are installed top side up. Be aware that installing the pavers top side down will void any warranty claims with Xeripave.



2. Always start at the bottom of any sloped area in which pavers are being installed.
3. When placing the Xeribrix® in a vehicular application the 45 degree or 90 degree herringbone pattern can be used. In a pedestrian application of the Xeribrix® there are a multiple of patterns that can be used to obtain vertical, horizontal and rotational interlock. In both vehicular and pedestrian applications Xeribrix® can be used as a soldier or sailor boarder course.

4. Chalk lines snapped on the bedding grade or string lines pulled across the surface of the pavers should be used as a guide to maintain straight joint lines. Buildings, concrete collars, inlets, etc., are generally not straight and should not be used for establishing straight joint lines.
5. It is recommended to boarder project with full size pavers and any necessary cuts will be in the field. In the case that process cannot be achieved, cut pavers should be used to fill gaps along the edge of the pavement at a size no smaller than ½". Pavers may be cut with a diamond bladed masonry saw fitted with continuous water feed. DO NOT ATTEMPT TO CUT THE PAVERS DRY. Wash cut paver immediately to remove any dust or particulates.
6. After an area of pavers is placed, it should be compacted with a vibrating rubber plate. (Do not use metal plate directly on pavers.) 3/8" Plywood can also be placed over project when rubber guard is not available.
7. While a small amount of settling is typical for all flexible pavements, final surface elevations should not vary more than ±3/8 in. (+10 mm) under a 10 ft (3 m) straightedge, unless otherwise specified. Bond or joint lines should not vary ±1/2 in. (15 mm) over 50 ft (15 m) from taut string lines.
8. The top of the pavers should be 1/8 in. to 3/8 in. (3 mm to 10 mm) above adjacent catch basins, utility covers, or drain channels, with the exception of areas required to meet ADA design guideline tolerances. The top of the installed pavers may be 1/8 in. to 1/4 in. (3 mm to 6 mm) above the final elevations to compensate for possible minor settling.
9. Grout is not needed or recommended for Xeripave® Super Pervious Pavers or Xeribrix®. However if desired, use a #8 or #89 agregate to fill joints to within ¼" of top of paver. (For more detailed information of vehicular applications, please contact the manufacturer). The use of any type of polymeric sand on Xeripave® or Xeribrix® automatically voids warranty.

WARNING: The Xeripave installation manual is intended for use only as a guideline. It is NOT intended for use or reliance upon as an industry standard, certification or as a specification. Xeripave makes no promises, representations or warranties of any kind, expressed or implied, as to the content of this manual and disclaims any liability for damages resulting from the use of this manual. Professional assistance should be sought with respect to the design, specifications and construction of each project.