Turfstone™

Turfstone is a thick, rectangle slab with open grids that allows water to permeate through the system. Turfstone can be used for overflow parking, erosion control and parking lots where permeable paving is required. The open voids can be filled with drainage aggregate for maximum infiltration or soil to allow greenery to grow.

PRODUCT DETAILS

- Compressive strength - The average compressive strength shall not be less than 5000 PSI.
- Physical requirements: ASTM 1319-01
- Turfstone offers distinct advantages for erosion control, fire lanes, overflow parking, permeable pavements, slope surface stabilization, tree protection, scenic parks, university campuses, golf courses, emergency access areas and other vehicular access areas.

MAINTENANCE

Turfstone pavers planted with grass require the same maintenance as lawns, such as watering, mowing, removal of weeds and occasional fertilizing. Placing #8 aggregate may be used inside the Turfstone openings as an alternative. Snow can be plowed from Turfstone if the plow blade is raised slightly above the surface. Because of their large slab-style shape, Turfstone pavers may crack during compaction or while in use. One or two cracks in a unit will not affect the structural integrity or its performance.

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Product	W (in.)	L (in.)	H (in.)	Layers/Pal	Sq. Ft./Pal	Pcs/Pal	Pallet Wgt. (lbs.)
Turfstone	15 ¾	23 ⅞	3 ⅛	8	84	32	1,970

INSTALLATION

A typical grid pavement installation consists of compacted soil subgrade, a dense-graded base of compacted crushed stone, 1/2 to 1 in. (13 to 25 mm) thick bedding sand, and grids. The openings in the grids are filled with topsoil and grass (Figure 15), or aggregate (Figure 16).

Thicknesses required under conventional asphalt pavements are generally sufficient under concrete grids. A minimum of 8 in. (200 mm) of compacted aggregate base is recommended for emergency fire lanes supporting fire trucks, and truck axle loads, defined by AASHTO H20 and HS20 as well as for parking lots and driveways. Parking lots and driveways loads should generally not exceed 7,500 lifetime 18,000 lb (80 kN) equivalent single axle loads (ESALs). Thicker bases may be required when extremely heavy vehicular loads are expected.

Thicker bases may also be required when the soil subgrade is weak (California Bearing Ratio < 4%) typically with high amounts of clay or silt. Likewise, thicker bases or those stabilized with cement will be required over a high water table, in low-lying areas subject to flooding, or over continually saturated soils. For unstabilized aggregate bases, geotextile is recommended to separate the compacted soil subgrade from the base material for these situations.

Construction of dense-graded bases — Prior to placing a dense-graded base, the soil subgrade should be uniformly compacted to at least 95% of standard Proctor density per ASTM D698 (4). Dense-graded aggregate bases should be compacted to a minimum of 98% standard Proctor density (4). A wellcompacted base is essential to shedding water and remaining stable in freeze-thaw conditions. Specifications for crushed stone aggregate base materials typically used under asphalt pavements are suitable under concrete grid pavements. If no local standards exist, gradation of the base material should conform to ASTM D2940, Standard Specification for Graded Aggregate Material for Bases or Subbases for Highways or Airports (5). Figure 15 illustrates a typical cross-section with a dense-graded aggregate base.

For bases over poorly draining soils, perforated plastic, geotextile-wrapped drain pipe is recommended for removing excess water. The pipe should be directed to a drainage swale, storm sewer, or stream. If draining soils is impractical, aggregate bases can be stabilized with 4 to 6 percent (by weight) of cement to increase strength during drainage or freeze-thaw.

The maximum surface tolerance of the compacted base should be ± 3/8 in. (± 10 mm) over a 10 ft (3 m) straightedge. The base should extend beyond the perimeter of the grids a minimum of 12 in. (300 mm) when there is no building or curb to restrain them. The extended perimeter increases the stability of the grids and facilitates installation of staked edge restraints.

The gradation of washed bedding sand should conform to ASTM C33 (6) or CSA A23.1-FA1 (7). Gradations are provided in the guide specification at the end of this bulletin. Limestone screenings, stone dust or masonry sand should not be used. The thickness of the bedding sand should be between 1/2 and 1 in. (13–25 mm), and screeded to a consistent thickness. This is typically accomplished with screed rails or bars placed on the compacted base. The bedding sand over the bars is pulled across them with a screed board to establish a consistent sand thickness. The sand should have a consistent moisture content but not be saturated. It should not be disturbed prior to placing the grids.

The grids are placed on the screeded bedding sand with consistent joint spacing between 1/8 and 1/4 in. (3 to 6 mm). The units shouldn't be pushed or hammered such that they touch each other. If the grids touch, they may crack, chip or spall under repeated traffic. The units should be cut to fill any spaces along the edges prior to compaction. All installed units should be compacted into the bedding sand at the end of each day. Rainfall settles uncompacted sand, preventing the grids from pressing into the sand when compacted. If bedding sand is left uncompacted, it should be covered with plastic to protect it from rain. Otherwise, bedding sand saturated with rainfall prior to compaction will need to dry, be raked and re-screeded or be replaced. If left uncorrected, the grids will settle unevenly and move under traffic.