Grass Block Installation Guidelines

The SmartStone Grass Block is unique in various aspects. It therefore also requires attention to specific details in terms of its installation. This guideline is intended to offer simple advice on the installation of these blocks. Much of the information contained in this document was extracted from SANS 1200MJ, the official South African standard for concrete paving installation.

SmartStone cannot guarantee that the information in this document is 100% correct for any individual project and therefore can't accept any responsibility for errors or problems encountered by anyone who uses the information in this document. Furthermore, SmartStone cannot accept any liability for consequential or actual damages of any kind incurred as a result of the information and advice in this document.

SmartStone strongly recommends that you obtain professional, on-site advice by an engineer, as every paving project is unique with its own unique problems.

We consider this document as work in progress. Please share any further advice with your SmartStone representative, in order for us to improve this set of guidelines where possible. The SmartStone Grass Block with its grid-like cavities is designed to facilitate the growth of grass, and allows grass to be cut in the conventional manner. Because of its design, the SmartStone Grass Block is not recommended for heavy duty industrial applications.

Conceptually there are two applications for SmartStone Grass Blocks:

- A paved surface with some degree of permeability.
- A paved surface planted with grass. In this document, these two options serve as guidelines in most aspects of installation.

In our experience, the greatest issues around this product are:

This product must be laid FLAT. If it is laid in curves, especially concave in nature, then major spalling could occur. This is why a larger jointing gap of 10mm is suggested. The 100mm height of the product does not allow for curvatures.

1. BASE PREPARATION

Irrespective of its application, it is critical to the long-lasting stability of SmartStone Grass Block paving that the supporting base for the blocks be properly constructed.

The four main aspects of the base preparation are:

- Drainage
- Sub-grade
- Base course
- Bedding course

2. DRAINAGE

- The SmartStone Grass Block, is a permeable form of interlocking paving for areas where the stability of paving is needed, but the function and aesthetics of grass is desirable. The Grass Block system allows some stormwater to infiltrate through the grass cells, decreasing the volume of runoff that leaves the site.
- Where permeability is of critical importance it is recommended that the system should not be planted but rather for the cavities to be filled with 6.7mm single size stone.
- For a system where permeability is of critical importance, it is recommended to consult an engineer concerning the design of suitable layer works.

The remainder of this document will focus on the installation of Grass Blocks to be planted with grass.

3. SUB-GRADE

- The sub-grade is the upper part of the soil, natural or constructed, which supports the loads transmitted by overlying paving.
- All vegetation and top soil must be removed.
- Must be well-drained and compacted.
- Insufficiently prepared sub-grade will cause a Grass Block installation to fail in the long term.

4. BASE COURSE

- The base course is the foundation for the Grass Blocks. The sub-grade could serve as a base course where the sub-grade material is compact and uniform. (Consult an engineer for advice.)
- The base course should be compacted with a roller or heavy plate compactor.
- The compacted surface should be tight or close knit to prevent downward migration of bedding course material.
- Insufficiently prepared base course will cause a Grass Block installation to fail in the long term.

5. BEDDING COURSE

- The bedding course is the layer that the Grass Blocks rest on.
- Well-graded, washed river sand is recommended as a bedding course material for Grass Blocks.
- It is essential for bedding sand to drain well.
- The uncompacted bedding course should be 30-40mm thick as recommended by SANS 1200MJ.
- Carefully screed (level) the bedding course with a straight edge.
- Do not use topsoil or compost as bedding course even if grass will be planted in the blocks.
- Bedding sand MUST be moist when the pavers are packed.
- According to SANS 1200MJ only enough bedding sand should be spread out for one day's installation at the most. (If more bedding sand is spread out - it will become too dry.)

6. EDGE RESTRAINTS

Restrain the perimeter of the laid Grass Blocks to prevent the washing out of the bedding sand and grout (this will cause subsidence of Grass Blocks on the edge and could result in movement of the blocks).

<u>Good edge restraints are:</u>

- Kerbs like the Bosun Figure 12 garden kerb for small domestic applications or Bosun heavy duty kerbs for larger sites. Kerbs should be in place before levelling bedding sand.

7. HANDLING OF PRODUCTS

To minimize damage to Grass Blocks during transport:

- Transport in packs. Place packs as close as possible to the laying surface to prevent excessive handling.
- Transport Grass Blocks effortlessly with the fully mechanical Paver Transport Cart, supplied by Cretesol (https://www.cretesol.co.za/paver-transport-cart/).
- Carry blocks by hand to the laying area.
- As a last resort, Grass Blocks could be transported in specially prepared wheelbarrows and packed / unpacked individually by hand. Wheelbarrows should have a padding lining and even between layers of blocks, similar to the thick fabric used by moving contractors.

8. SETTING OUT

Ensuring that your pattern stays aligned:

- Use taut setting out lines (a grid of string or nylon lines spaced at exact intervals).
- Constantly re-check your lines in all directions while installing the pavers, as it is very difficult & time consuming to straighten lines at a later stage.

9. LAYING PATTERNS

The SmartStone Grass Block is installed in a stack bond pattern, where blocks are laid directly next to one another in a grid, similar to the way tiles are laid.

10. CUTTING

If necessary, Grass Blocks can be cut:

- With a brick cutting machine or,
- With an angle grinder with a masonry disc or diamond blade.
- Use the ridges on the blocks as guidelines where possible.

11. LAYING THE SMARTSTONE GRASS BLOCK

- Concrete is brittle. Consequently, expect up to 5% of the product to have small chips when delivered. Chipped products should be used for cutting where possible. It is imperative that the home owner, quantity surveyor, and/or contractor allow for wastage of 5% in order to replace blocks that are chipped or damaged through handling during the laying process.

12. COMPACTION OF PAVING

It is recommended that newly laid Grass Blocks be compacted by:

- A plate compactor with a rubber mat.
- Ensure bedding sand is moist, yet not saturated with water when compacting at this stage.

13. JOINT FILLING

- River sand is used as jointing and filling material in the installation of Grass Blocks.
- Sweep the river sand over the paved area in order to fill the voids and gaps between Grass Blocks.
- Grass seeds and fertiliser could be mixed with the river sand.
- Compost and lawn dressing are not recommended as joint filling.
- Compact the paved area again after filling the joints and voids, and sweep additional sand onto the area if required.
- It is recommended that the final level of river sand be 5mm- 10mm below the top surface. This will provide protection to grass from vehicle tyres and lawn mowers.

14. GENERAL

- Creeping grasses like Kikuyu and LM are recommended to plant in Grass Blocks.
- Tufts of non-creeping grass could be used when it is required to maintain the concrete pattern of the blocks between the grass. Consult a horticulturist for a non-creeping grass suitable for this purpose in your climate.