

GRASSROAD

**HDPE GRASS REINFORCING
PAVERS**



DESIGN AND LAYING GUIDE

FIRST PUBLISHED 1998.



GrassConcrete

POLICY

The G C Group companies, Grass Concrete Limited, Grass Concrete International Limited and Landscape Grass (Concrete) Limited are committed to a policy of providing for our clients a range of environmentally engineered products and services, a process started in the early seventies with our patented **GRASSCRETE** system. Since then, our range has grown and now includes the HDPE **GRASSROAD Pavers** system detailed here, enabling us therefore to offer to the best of our knowledge the world's only "complete" grass reinforcement range.

Under an exclusive agreement for **GRASSROAD Pavers**, we hold the European licence for this system which was designed and developed in the USA in the mid 1980's as the forerunner of HDPE paving.

With all of our systems and services we adhere strictly to a "Fit for Purpose" commitment. This dictates that we always endeavour to match the correct system to a client's requirements irrespective of commercial pressures. This occasionally means that we may have to point out areas of concern with specifications received. We hope, however, in all cases to temper this by providing a response which is based upon our considerable experience and is, therefore, we feel the correct choice.

DESIGN PARAMETERS

GRASSROAD Pavers are designed to create a paving layer with a surface grass cover of up to 95%. Once fully established the paving units, subject to maintenance, can be virtually undetected within the resulting turf.

Inevitably, with any system offering such a high grass cover, there has to be considerations of type and frequency of use. It is essential, we feel, that HDPE paving systems should be specified appropriate to their intended use which should not include frequent traffic.

HDPE pavers rely upon grass and root anchorage for stability coupled with the essential allowable bearing capability of its sub-base. Regular trafficking or a high water table can, therefore, limit the effectiveness of the system.

It is a practice amongst competitors to 'suggest' load bearing capability by publishing compression or crush tests of the units as the sole reference. This can be misleading as it does not reflect the true nature of the product. Units are not likely to crush or break as a failure mode but will tend to be pushed down into the sub-base/sub-grade.

GRASSROAD Pavers have been regularly tested by a number of United States Fire Authorities with fire appliances weighing up to 30 tonnes operating by stabilizer legs directly onto the surface.

Under normal circumstances **GRASSROAD HDPE Pavers** are suited to the following applications:

- OVERFLOW CAR PARKS** **FIRE ACCESS TRACKS** (low use)
- GRASS VERGE HARDENING** (pedestrian/light traffic)
- EMBANKMENTS** (shallow dry slopes)

PROGRAMMING

As a significant element in the paving systems stability is its grass cover, care should be taken to allow sufficient time for grass establishment prior to use. In any event we recommend that a full seasons growth be allowed before all but emergency use.

On construction projects we recommend that the pavers are not used for temporary haul activities which will destroy grass cover and impair loadbearing capability.

Where earlier use is required we would recommend the specification and use of our **GRASSCRETE** cast on site concrete paving system which can be loaded after initial concrete cure.

EARTHWORKS

In composite thin layer reinforcement systems such as HDPE pavers, tensile strength can only be maintained if the supporting ground is able to resist deformation.

For all traffic applications we therefore recommend that a DTp Clause 803 Type 1 sub-base be laid. For normal ground conditions (CBR + 4%) a depth of 150mm is generally sufficient. However in poorly draining ground a greater depth is recommended to increase the available drainage head.

Over compaction of the sub-base should be avoided as this will impair the drainage rate and limit the development of moisture seeking grass roots.

We do not recommend the mixing of topsoil into the sub-base, a practice occasionally specified for HDPE pavers. Topsoil by nature is a variable commodity. Its use could affect the performance of the sub-base by significantly increasing the plasticity index of the layer. This could lead to loadbearing problems during wet periods and potential frost heave in colder conditions. We also feel that the practical implications of trying to site mix topsoil and granular sub-base could be sufficiently daunting to encourage a change from such a specification.

The sub-base should be laid to degrees of tolerance as close as possible to those of the finished paving layer. There is little scope for re-tolerancing within the sand blind and the paving depths.

After completing the sub-base layer this should be screed blinded with 25mm of a sharp sand which should be sufficiently coarse as to permit free drainage without volume change. It should also be reasonably resistant to foot trafficking. We recommend that the sand be laid and levelled immediately in advance of the paving layer during rainy or frosty conditions.

GRASSROAD Pavers

The honeycomb cells are orientated so that the appearance is constant irrespective of direction viewed. Aesthetically, therefore, there is no preferred direction of laying. Consideration should, however be given to avoiding edge cuts which leave thin 'slips' of paver which could subsequently be displaced.

Positioning of **GRASSROAD** Pavers should be undertaken on a row by row basis using string lines to maintain level where appropriate.

To commence first row, position by lifting slightly the ends of each meeting unit before lowering into place. This enables the interlocking lugs to be located (see fig. 1 and fig. 2).

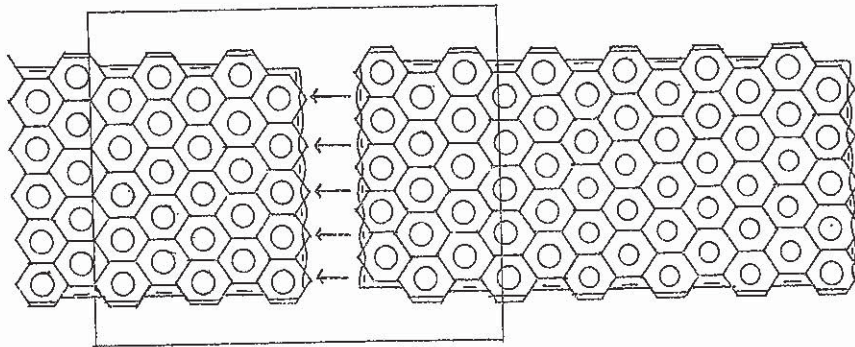


Fig. 1
End interlocks located

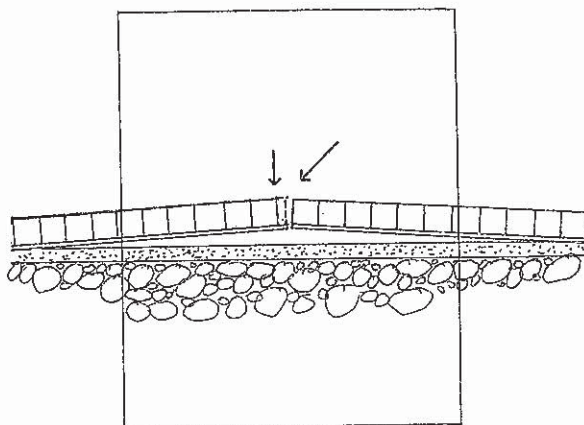


Fig. 2
Lift each end then lower into position

Having completed row 1, the process is repeated for row 2 with the complete line of pavers pre-laid with a slight gap between this and the previous row (see fig. 3).

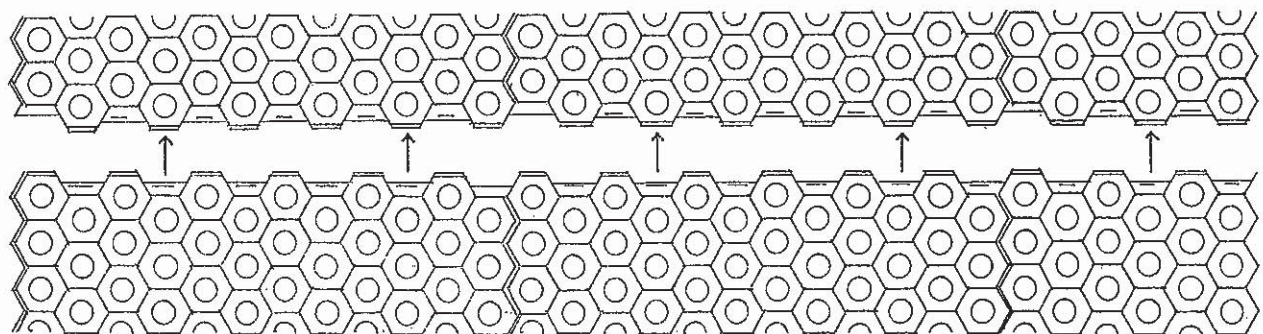


Fig. 3

The completed row is then offered to the previous row with the side interlocks located by again lifting each edge and lowering into place (see fig. 4 and fig. 5). This can be stack bond or stretcher bond layout to choice.

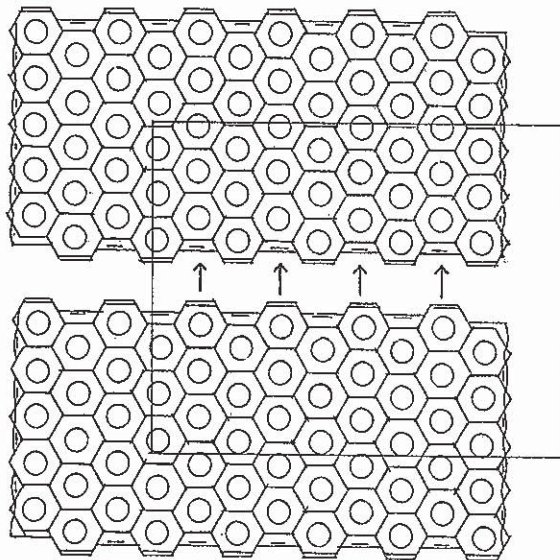


Fig. 4
Side interlocks located

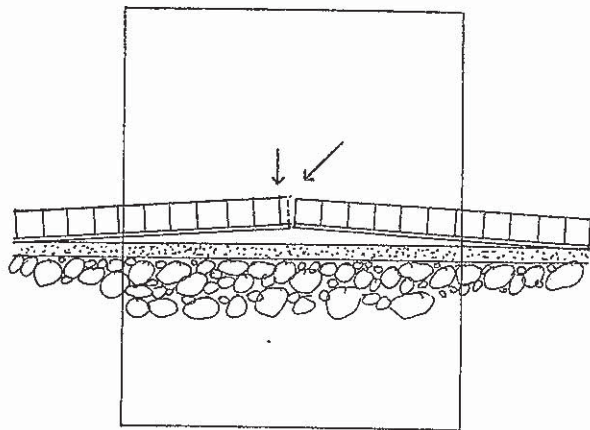


Fig. 5
Lift each row then drop into position

To form irregular or curved edges, overlay the required line with pavers. Once in place cut to line with a 110v circular saw or angle grinder taking care to limit the depth of cut to no lower than the sand blind. Alternatively, where no power is available, units can be cut by handsaw before dropping into position. We recommend that units are not tightly wedged in place as this can limit both grass establishment and thermal movement.

TOPSOILING

We recommend that a screened soil be used consisting of a sandy loam, dressed with a granular pre-seeding fertilizer. Where seeding is to be undertaken, the soil should be drawn over the pavers with a bladed squeegee.

The soil will naturally settle after rainfall and should then be reinstated to a level 5 to 10mm below the finished level of the pavers. After watering, broadcast the seed at the specified rate. In exposed conditions it is advisable to cover over the seed with a fine top dressing to limit wind drifts.

During dry weather conditions the soil and germinating seed should be kept moist by watering as late in the day as possible. Watering during mid-day heat can lead to evaporation before nourishment has taken place and can cause soil to form a hard surface crust through which seedlings cannot penetrate.

Where turf is used the topsoil infill should be to a depth which enables turves to be compressed into the pockets with the side walls of each cell acting effectively as a "pastry cutter".

Prior to laying, both soil and turves should be well watered and the soil layer treated with a pre-seeding fertilizer. Turves should be laid edge to edge with staggered joints taking care not to overtighten around the edges of the paved areas. As the laying proceeds, lightly roll the turf using a deadweight roller so that full contact is gained. During this process slight settlement of the pavers level under rolling will inevitably occur. The degree will be influenced by types of sand, soil and turf together with the deadweight of the roller. We recommend, therefore, that a trial strip be undertaken at the commencement of laying to determine the extent of settlement.

The requirements for germination and establishment of grass in the **GRASSROAD Pavers** are no different to that of any other grassed amenity area. They may require regular watering during early establishment and will require routine seasonal applications of fertilizer to sustain and replenish growth.

As grass wedging and root anchorage are significant factors in the system's structural capability, care should be taken in planning the commencement of surface loading. Early loading will result in damage to grass development by preventing shoot growth. It will also place stress upon root anchorage as pavers trampoline under the shifting load. *We recommend, therefore, that the pavers are not loaded during the first growing season.*

SEED SPECIFICATION

The characteristics of the seed mix should take into account the likely surface use. We have previously indicated that vehicular traffic should be limited to the classification of "occasional/overspill". Each of these factors call for slightly different seed characteristics with overspill areas requiring a quick recovery capability whereas very occasional use may dictate a need for a low maintenance, low growth height mix. To enable a tailor made choice we detail below typical mixes for differing types of application.

Very low use access roads with possible shade

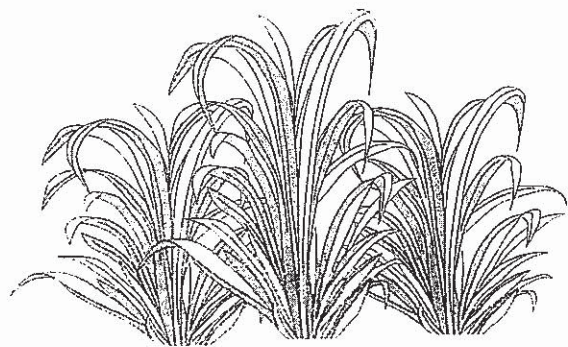
- 20% Chewings Fescue
- 20% Slender Creeping Red Fescue
- 30% Strong Creeping Red Fescue
- 25% Hard Fescue
- 5% Browntop Bent

(sowing rate 20–30kg/m², mowing height 25–50mm)

Overspill parking or amenity areas

- 50% Perennial Ryegrass (including dwarf cultivars)
- 20% Slender Creeping Red Fescue
- 25% Strong Creeping Red Fescue
- 5% Brown Top Bent

(sowing rate 25–25kg/m², mowing height 25mm plus)



Please note that we have a policy of continuous product development. As a result of this, information is subject to change without notice.