

PARAGRID REINFORCED SOIL SLOPES

Installation guidelines for construction using “external support” or “soil bag” method

1 Site Preparation

- a) Excavate to bottom of slope level as shown on the Drawings, remove any soft spots and replace with approved backfill;
 - b) Ensure the formation is level and, if so instructed by the Engineer, compact the formation with a suitable compaction device;
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2 Slope Construction

- a) The general sequence involves the laying of the PARAGRID, constructing the face support, placing and compacting of backfill up to the next PARAGRID level and wrapping the PARAGRID at the face and on to the laid backfill. Where external face support is used the PARAGRID is laid prior to placement.
- b) The external face support will normally comprise a timber form placed vertically or at an angle as appropriate against which the soil can be compacted. The timber form will itself be supported by a triangular steel frame which is held in place by a steel strip which will be temporarily buried in the soil at the level of the PARAGRID to be laid.
- c) Where soil bags are to be used these should be pre-filled at a convenient location.
- d) The PARAGRID should be first unrolled on flat ground and pre-cut to the exact length as shown on the Drawings. This should include the length necessary to wrap at the face and on to the compacted backfill at the next layer up;
- e) The front profile line of the slope should be marked out using tensioned strings or other suitable methods. The front slope angle of the structure should be marked out with timber reference frames;
- f) The pre-cut PARAGRID should then be laid flat at the required level and position with the wrap-over portion extending beyond the front profile line or up the back face of the timber form as appropriate. The PARAGRID should be laid with the principal strength direction perpendicular to the front profile line;
- g) The pre-filled soil bags should be stacked as shown on the Drawings such that one side of the bag coincides with the front line and within the PARAGRID reinforced soil structure. The soil bags should be stacked with the front slope formed as shown on the Drawings using the timber reference frames as guides. The soil bags should be stacked to a level corresponding with a compaction lift of the backfill soil;
- h) The tail end of the PARAGRID should be slightly tensioned by manual pulling to remove any slack.
- i) Care should be taken with the use of machinery during the backfilling and compaction activities to avoid damage to the PARAGRID;
- j) Suitable and approved backfill should be placed and compacted on the PARAGRID in layer thicknesses as required by the Engineer;

- k) The soil bags should be compacted with an excavator bucket by first pressing from the top followed by pressing onto the slope surface and shaping to the required slope profile;
 - l) This sequence of placing soil bags, if appropriate, backfilling and compaction should be repeated until the next PARAGRID level is reached.
 - m) The extended portion of the PARAGRID should be wrapped over the slope front and top and anchored in to the soil by pinning;
 - n) A small amount of soil should be spread on top of the anchored portion of the PARAGRID. The PARAGRID at slope face should be tensioned by pressing down with an excavator bucket on this small amount of soil;
 - o) Where an external support has been used this should be removed by pulling the steel frame from the soil when the wrap over section of the PARAGRID has been properly anchored by pinning and weighting;
 - p) Subsequent layers should then be built up by repeating the sequences of activities described in a) to o) until the final profile is achieved.
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3 Special Construction Details

- a) Corner details. The PARAGRID at the corners should be wrapped at the face as described in 2. The free portion of the PARAGRID should be folded over the corner edge and wrapped at the face of the adjacent slope;
 - b) Details for slopes on ground rising along the length of the face. These should be constructed by ensuring that the PARAGRID is always flat along the length of the face and dealing with rising ground by stepping the facing by multiples of the PARAGRID layer spacing.
 - c) Jointing of PARAGRID. The PARAGRID should be placed in one continuous length in the principal strength direction. No jointing in that direction should be permitted. No transfer of load is required in the direction perpendicular to the principal strength direction. As such adjacent edges the PARAGRID may be placed side by side closely with just one grid space overlap as a nominal detail requirement.
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4 Vegetation Cover to Slope Face

- a) Vegetation cover should be established to the slope face as soon as possible after construction is completed.
 - b) The vegetation cover should be achieved by pre-seeding the soil bags, post seeding manually or by hydroseeding methods and by the planting of other indigenous species where appropriate;
 - c) It is important that sufficient care and maintenance should be exercised initially to establish good vegetation cover. The choice of vegetation type should be one which is compatible with the local environment and the use of fertilizers together with frequent watering may be required.
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Linear Composites Limited
Vale Mills
Oakworth
Keighley
West Yorkshire BD22 0EB, UK
Tele: +44 (0)1535 643363
Fax: +44 (0)1535 643605
Email: mail@linearcomposites.com

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