

## INSTALLATION GUIDELINES FOR ACEGRID® HIGH STRENGTH REINFORCEMENT GEOGRID

**ACEGRID** geogrid is composed of filaments of high tenacity polyester. The woven construction that is used produces a dimensionally stable product suitable for a wide variety of long term soil reinforcement applications. The major attributes of the ACEGrid woven soil reinforcement geogrid is the ability to deliver high tensile strengths at relatively low strains that will be soil strain compatible. Such applications would include reinforcement of soft soils under embankments, voids bridging, reinforcement of embankments over piles and closure and reinforcement of lagoon bridging works.

ACEGrid woven geogrid is manufactured with either unidirectional or bidirectional strengths. Strength range is available from 40kN/m to 600kN/m.

Unidirectional product is manufactured with sufficient cross directional strength that the product is stable. Unidirectional strength product is manufactured with the major strength dominant in the length direction of the roll. This is generally called the warp direction of the roll. The cross directional strength of the roll of these unidirectional products is called the weft direction and is typically of the range 30-100kN/m. Bidirectional product is manufactured such that the roll direction strength (warp) is equal to the cross roll direction strength (weft).

The type of structure to be reinforced will determine the orientation and type of geotextile in these applications of soil reinforcement.

**EMBANKMENTS OVER SOFT GROUND** generally use a unidirectional reinforcement geosynthetic. The primary strength direction is laid perpendicular to the embankment length. The roll is laid out across the embankment to be reinforced and cut to the embankment plan width. It is important that the geosynthetic is pulled reasonably "taut" such that loose folds and wrinkles are minimised when the fabric is laid. When the geosynthetic is being placed on a prepared drainage layer or working platform and such platform is relatively stable adjacent lengths of geosynthetic are placed with side laps between 150-300mm unless otherwise required by contract documents. Greater overlaps may be required where the geosynthetic is laid directly on the soft soil formation. In such instances the use of sewing techniques may be considered for such side laps to minimize geotextile usage. Subsequent lengths of geotextile are laid in such a fashion in the normal direction to the length of embankment to be reinforced. It is important to note that lengths of geosynthetic may not be joined in the primary strength direction of placement.

It may be necessary to place sufficient geosynthetic both across the embankment and normal to the embankment face at embankment terminations to avoid instability issues at terminated faces. It may be advisable to maintain such embankment termination slopes at approx 1(V):4 (H) to assist in preventing failure at such locations.

Where it is necessary that more than one layer of geosynthetic is required to achieve the design working strength requirements of the reinforcement application, it is advisable to separate each layer by approximately a minimum 150mm spacing with suitable granular material placed between each geosynthetic layer.

Placement of fill on the geosynthetic should be achieved by end dumping or pushing product off previously placed cover material. Driving directly on the reinforcement geosynthetic should be avoided.

In all instances and before placement of any reinforcement geosynthetic the rolls should be verified for correct roll identification, length, and installation location consistent with the contract drawings.

All geosynthetic shall be covered within three days of placement. A suitable method of positioning geosynthetic against wind uplift shall be used prior to cover.

**EMBANKMENTS OVER PILES** will require the use of a geosynthetic reinforcement product that can deliver significant tensile strength in both directions of the embankment. It is generally not feasible to manufacture a single reinforcement geosynthetic layer to achieve the design requirements of this application. The major issue is that when joining geosynthetics in the length and cross direction of the embankment significant overlaps are required to ensure sufficient bond length is achieved such that tensile forces in the layer and between joins in geotextile rolls can be fully transmitted. Generally this makes the use of a bidirectional single geosynthetic layer expensive and impractical to place. It is best to use a combination of layers of geosynthetics in these applications. One (or more) geosynthetic layers are placed at right angles to the embankment width and another layer (or more) are placed in the length direction of the embankment. The grades of geosynthetic will be chosen to suit the design requirements for each direction both across and along the embankment over the piles. There should be no joining of geosynthetic in the direction normal to embankment lengths. Generally side overlaps for geosynthetic placed at right angles to embankment length may be 150-300mm. Geosynthetic placed in the longitudinal direction of the embankment should be "end lapped" at least two pile spacing distances but should always be verified by bond length calculations. Side overlaps for geotextile laid parallel to the embankment lengths may generally be maintained at a minimum 150-300mm unless otherwise required. When placing directly on soft ground formations rather than stable working platforms a greater overlap distance for side overlaps may be required. The use of sewing techniques may be considered to minimize geotextile wastage for such overlaps.

The case of piled embankments is unusual in that it is necessary to mobilise the full design working strength of the geosynthetic to the edge of the pile formation at embankment extremities. It is generally required to install the geosynthetic at embankment edges with sufficient anchorage length on the return such that geosynthetic "pullout" is avoided and that the required design strength may be fully mobilised.

It is important that in all cases the geosynthetic is pulled reasonably "taut" such that loose folds and wrinkles are minimised when the geosynthetic is laid.

Where it is necessary that more than one layer of geosynthetic is required to achieve the design working strength requirements of the reinforcement application it is advisable to separate each layer by approximately minimum 150mm spacing with suitable granular material placed between geosynthetic layers.

Placement of fill on the geosynthetic should be achieved by end dumping or pushing product off previously placed cover material. Driving directly on the reinforcement should be avoided.

In all instances and before placement of any reinforcement geosynthetic the rolls should be verified for correct roll identification, length, and installation location consistent with the contract drawings.

All geosynthetic shall be covered within three days of placement. A suitable method of positioning geosynthetic against wind uplift shall be used prior to cover.

For detailed assistance please do not hesitate to contact Global Synthetics.

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