INSTALLATION GUIDELINES FOR ACETex® HIGH STRENGTH REINFORCEMENT GEOTEXTILE

ACETEX woven geotextile is composed of filaments of high tenacity polyester. The weave 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 ACETex woven soil reinforcement geotextile 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.

ACETex woven geotextile is manufactured with either unidirectional or bidirectional strengths. Strength range is available from 100kN/m to 1200kN/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 50-100kN/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 geotextile. 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 geotextile is pulled reasonably "taut" such that loose folds and wrinkles are pulled out of the fabric when laid. When the fabric is being placed on a prepared drainage layer or working platform and such platform is relatively stable adjacent lengths of fabric are placed with side laps between 150-300mm unless otherwise required by contract documents. Greater overlaps may be required where the fabric 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 fabric 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 fabric may not be joined in the primary strength direction of placement.

It may be necessary to place sufficient geotextile 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 geotextile 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 geotextile layer.

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

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

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

EMBANKMENTS OVER PILES will require the use of a geotextile reinforcement product that can deliver significant tensile strength in both directions of the embankment. It is generally not feasible to manufacture a single reinforcement geotextile layer to achieve the design requirements of this application. The major issue is that when joining geotextiles 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 fabric rolls can be fully transmitted. Generally this makes the use of a bidirectional single geotextile layer expensive and impractical to place. It is best to use a combination of layers of geotextiles in these applications. One (or more) geotextile fabric layer is placed at right angles to the embankment width and another layer (or more) is placed in the length direction of the embankment. The grades of fabric 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 geotextile fabric in the direction normal to embankment lengths. Generally side laps for fabric placed at right angles to embankment length may be 150-300mm. Fabric 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 laps for fabric 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 laps may be required. The use of sewing techniques may be considered to minimize fabric wastage for such laps.

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

It is important that in all cases the geotextile is pulled reasonably "taut" such that loose folds and wrinkles are pulled out of the fabric when laid.

Where it is necessary that more than one layer of geotextile 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 geotextile layers.

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

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

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

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