Underwater Polypropylene Geotextile Installation Guide

1.0 General
1) This guideline covers general installation of polypropylene geotextiles in underwater applications.
2) Where contradictions occur follow the instructions of the project engineer.

2.0 Geotextiles Float
1) All woven and most needle-punched nonwoven geotextiles are made from 100% polypropylene.
   a) Polypropylene has a density of 0.91.
      i) As such, geotextiles will float in water and require a ballast.

3.0 Shallow Slope Projects
1) When a machine can reach the full extent of the geotextile placement:
   a) Place a steel pole with a buoy attached at one end through the geotextile roll core.
   b) Anchor the geotextile at the top of the slope by unrolling a portion and carefully driving the excavator onto it.
   c) Lower the geotextile into place.
   d) Immediately place a layer of rock on the geotextile to ballast it.
   e) Retrieve the pole by pulling on buoy ropes.

4.0 Larger Slope Projects
1) Create larger sewn panels on site with a portable sewing machine.
   a) Use a prayer seem.
   b) They achieve 60% of the geotextile's tensile strength.
2) Slope Installation.
   a) Lay sewn panel on level ground and attach sacrificial ballast.
      i) Typically scrap 20 mm rebar pieces attached along geotextile length at 6 foot centers.
      ii) Cable ties, wire or tape are attachment options.
      iii) Holes are made in fabric with a push rod the same diameter as the fastener.
   b) Place a steel core at one end of the panel.
   c) Attach two lengths of rope to the core and lay the rope along the geotextile.
   d) Roll the fabric, rebar and ropes onto the core and transport it to the installation area.
e) The rolled geotextile panel can now be lowered into position by unwinding the ropes.
   i) On long slopes, it may be more effective to place the roll on the slope shoulder and
      have the ropes hauled on board from a barge.
3) Immediately place a layer of rock on the geotextile to ballast it.

5.0 Anchoring

4) If required, use key trenches or aprons at the crest and toe of the slope to anchor the ends of
   the geotextile.
   a) The anchor trench should be backfilled with soil and compacted on completion of the
      geotextile installation.
   b) It is recommended that the front of anchor trenches are rounded and smooth to reduce
      stress on the geotextile.

6.0 Deep Water Installation

1) Float the prefabricated panel out to sea.
2) Ballast it into position on the seabed by dropping rock from a barge onto the floating panel as
   it sinks.
3) Prefabricated straps and weight pocket options.
   a) Geotextiles can be manufactured with special straps sewn into the fabric to assist with
      connection to installation rafts or similar.
   i) Folds or pockets can also be sewn in the fabric to contain weights such as sinking
      poles.
   ii) Contact US Fabrics for more information.
      (1) (800)518–2290
      (2) info@usfabrics.com
4) Immediately place a layer of rock on the geotextile to ballast it.

7.0 Overlapping

1) Panel overlap widths are site specific and generally at the discretion of the site engineer.
   a) A minimum overlap of 3 feet is recommended for under water geotextile placement.
2) Overlaps are required to ensure that all of the underlying soils are fully covered.
   a) Keep in mind the geotextile can move during placement of the rock.
3) Marking the ends of the geotextile.
   a) Spraying white lines on the fabric where the overlap occurs may be useful in some waters.
   i) For example, 3 feet in from the edge of the panels.
   c) Attaching floats to the edges of the rolled geotextile panel is another option.
8.0 Storage

1) Geotextile rolls are wrapped in a UV protective cover.
2) If stored outdoors for a prolonged period, the geotextile should be elevated from the ground and covered with a tarpaulin or opaque plastic.
   a) Contractor should insure rolls are adequately protected from:
      i) Moisture
      ii) Ultraviolet radiation
      iii) Chemicals that are strong acids or bases
      iv) Temperatures in excess of 140°F
      v) Animal destruction

This material is presented for general information only. Always verify the suitability for a specific application with the project engineer. Where contradictions occur, follow the instructions of the project engineer. There is no implied or expressed warranty regarding the installation procedures or the geosynthetic products in this guide. Installation procedure and product choice is the sole responsibility of the contractor and contractor assumes all liability.