PORT OF DURBAN

ISLAND VIEW SEAWALLS UPGRADE

TENDER NUMBER: XXX

VOLUME III: CONTRACT DOCUMENT

PART E: GENERIC SPECIFICATIONS

E1: GEOTEXTILE

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E1 GEOTEXTILE SPECIFICATION

1. GEOTEXTILE MATERIAL

The geotextile must be a nonwoven, continuous filament, needle-punched polyester material. It shall be manufactured under a quality management system that is third party certified to ISO 9001:2008 standards.

Geotextile filaments must be rot-proof, chemically stable and shall have low water absorbency. Filaments must resist delamination and maintain their relative dimensional stability in the geotextile.

Geotextiles must be free of flaws that may have an adverse effect on the physical and mechanical properties of the fabric.

The geotextile shall conform to the properties given in Table 1 below.

TABLE 1:

GEOTEXTILE PROPERTIES

Property		**Units**	**Value**	**Test Method**
Thickness	Under 2 kPa	mm	6.4	SANS 9863-1:13 / ISO 9863-1:05
Tensile Strength (200mm wide strip)	Weaker Direction	Typical kN/m	56	*SANS 1525:13 / ISO 10319:08
		MARV kN/m	50	
	Elongation	%	50 - 70	
Static Puncture Strength	CBR	Typical kN	11.7	*SANS 12236:13 / ISO 12236:06
		MARV kN	11	
Puncture Resistance	Diameter of hole (max)	mm	3	SANS 13433:13 / ISO 13433:06
Trapezoidal Tear Strength	Weaker Direction	Typical N	2100	ASTM D4533
		MARV N	1950	
Grab Strength	Weaker Direction	Typical N	4700	ASTM D4632
		MARV N	3700	
	Elongation	%	50 - 80	
UV Stability	70% strength retained after 1000 hours			ASTM D4355
Normal Through Flow	At 50mm head	l/s/m^2	20	SANS 11058:13 / ISO 11058:10
In-plane Through Flow	Flow Rate (per m width)	l/hr	130	ISO 12958:10

Property		Units	Value	Test Method
Permeability	At 50mm head	m/s x 10^{-3}	2.6	SANS 11058:13 / ISO 11058:10
Pore Size	O95 W	µm	< 75	SANS 12956:13 / ISO 12956:10

*Ten specimens per test according to SANS 9862:13 / ISO 9862:05 "Sampling and Preparation of Specimens"

MARV: Minimum average roll values

The *Contractor* shall submit to the *Engineer* certified test results and statements of quality that show without exception that the proposed geotextile meets the requirement of the specification.

2. DELIVERY AND HANDLING

All geotextile shall be wrapped in tight, UV stabilised and moisture resistant plastic wrapping to prevent any damage prior to installation.

All geotextile shall be stored to prevent damage by impact and UV degradation and the method of storage must be in accordance with any recommendations set by the manufacturer.

Geotextile shall not be exposed to temperatures in excess of those recommended by the manufacturer or 60 °C, whichever is less. Outdoor storage shall not be for periods that exceed the manufacturer's recommendations or 2 months, whichever is less. Geotextiles shall not be exposed to direct sunlight prior to installation for more than 14 days.

3. EXECUTION

The geotextile filters shall be laid on prepared surfaces in accordance with the manufacturer's recommendations. On sloping surfaces, the fabric shall be laid with its longitudinal axis down the slope. The geotextile shall be installed in the positions and to the lines and levels described on the drawings. Folds shall be avoided to obtain the best contact between the geotextile and the material beneath to be filtered. Material that may be in contact with the geotextile shall not have protrusions which are likely to damage the geotextile during installation or in service. Construction equipment shall not operate directly on the geotextile.

Any sheet of geotextile damaged or torn during installation shall be removed from the works and replaced at no additional cost to the *Employer*.

Overlapping widths between adjacent sheets/rolls shall be adapted to compensate the risk of soil uncovering during its installation or during armour stone placement. Filter fabric shall be laid with minimum 1000 mm overlaps or as directed by the *Engineer*.

Where fabric is laid under water and visibility is poor, i.e. the fabric cannot be seen clearly from the surface, the overlaps shall be increased to 2000 mm, unless the *Contractor* has other means of guaranteeing the minimum 1000 mm overlap.