

TenCate Geosynthetics Asia



The World Leader in Geosynthetics

Presenter's name

Date and location



Who Is TenCate Geosynthetics?

Global Industry Leader

THE WORLD LEADER IN GEOSYNTHETICS



TenCate Geosynthetics has more than 60 years of global leadership being at the forefront of the growth and development of geosynthetics and its applications in civil and environmental engineering. TenCate's manufacturing facilities are located across The United States, Europe and Asia with an extensive global distribution network to serve the rapid infrastructure growth and rising demand for geosynthetics worldwide. Within these infrastructure markets are solutions for engineered structures, erosion control, drainage and filtration, road and railway transportation, pavement rehabilitation, marine structures, inland waterways protection and environmental dewatering.

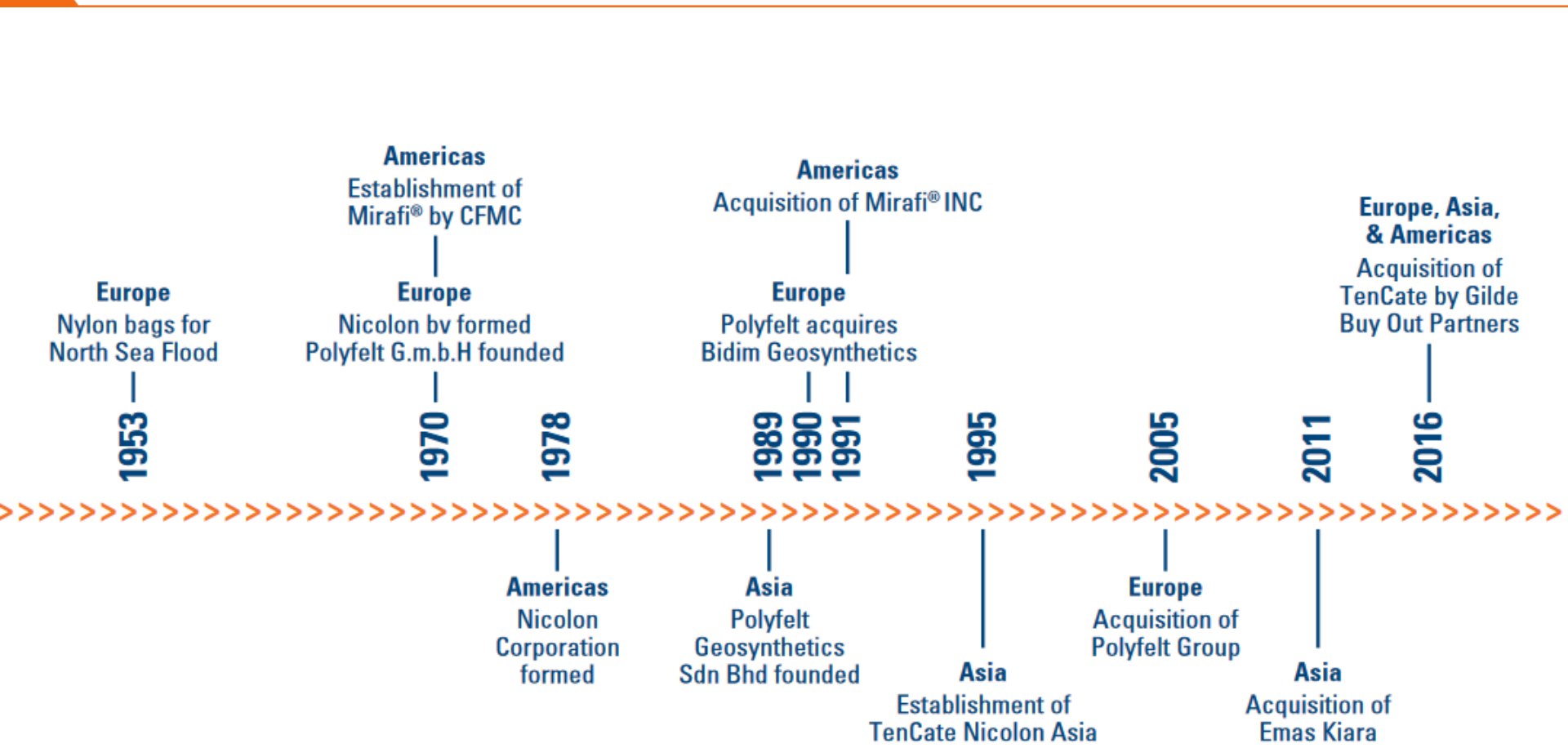
OUR VISION

To be the leading global provider of geosynthetic products and solutions that enhance the world's infrastructure, protect the environment and conserve natural resources.



Global Expansion of TenCate Geosynthetics

60 years of global geosynthetics leadership



TenCate Geosynthetics Brands

Global brands you can depend upon



Global Production Facilities

Act Global, Produce Local



Linz, Austria



Bezons, France



Hengelo, The Netherlands



Jefferson, Georgia, USA



Cornelia, Georgia, USA



Commerce, Georgia, USA



Shah Alam, Malaysia



Senawang, Malaysia



Zhuhai, China

Key Markets

TenCate Geosynthetics



Engineering Solutions

TenCate Geosynthetics



BASAL REINFORCEMENT



DRAINAGE / FILTRATION



SUBGRADE STABILIZATION



REINFORCED WALLS AND SLOPES



FOUNDATION CONSOLIDATION



PAVEMENT REHABILITATION



LINER PROTECTION



LINING



VENEER REINFORCEMENT

Engineering Solutions

TenCate Geosynthetics



MARINE STRUCTURES



WATERWAYS & IMPOUNDMENTS



TURBIDITY CONTROL



DEWATERING



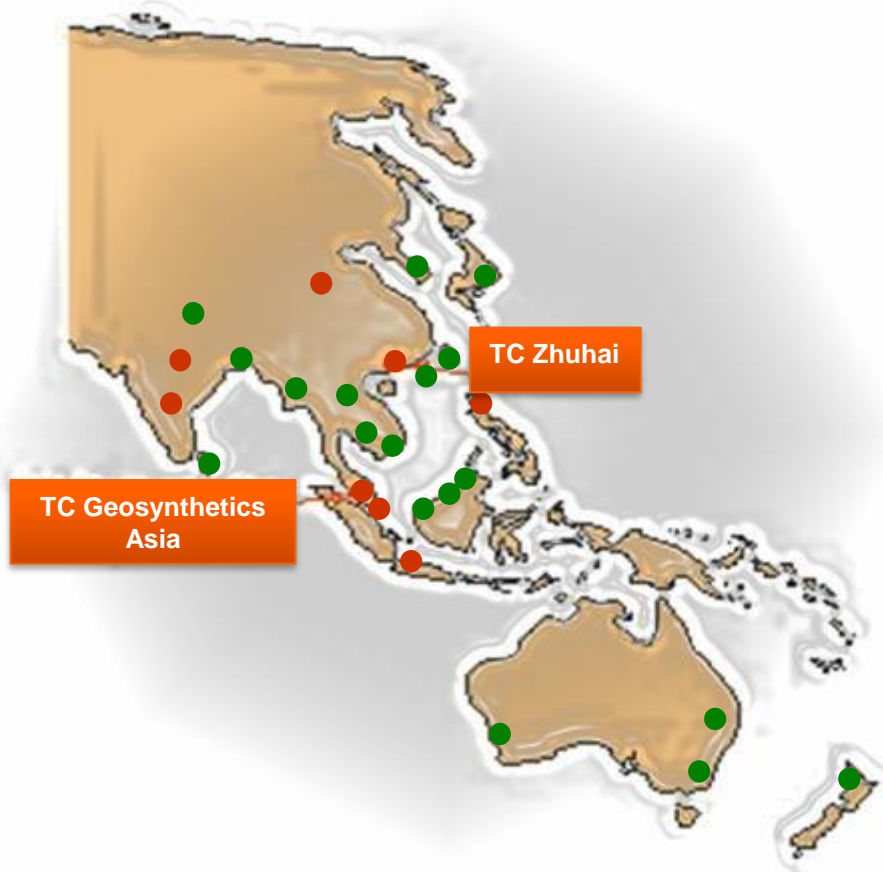
POND CAPPING



EROSION CONTROL

International Standard Manufacturing Quality Control & Assurance

ISO 9001:2015 Quality Management Systems



Distribution Network Area in Asia

Regional or Rep. office ●

Distributor ●



Geosynthetic Testing Laboratory

ISO/IEC 17025 Accredited Laboratory Test Facilities

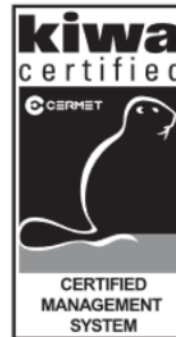
International recognition



The 1st specialist geosynthetic laboratory accredited in Asia



MS ISO/IEC 17025
TESTING
SAMM NO. 207



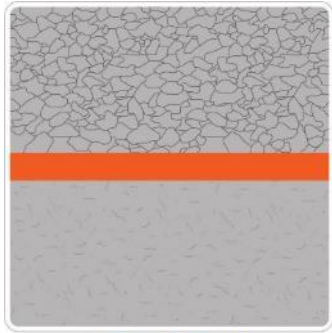
CERTIFIED
MANAGEMENT
SYSTEM

ISO9001 : 2015

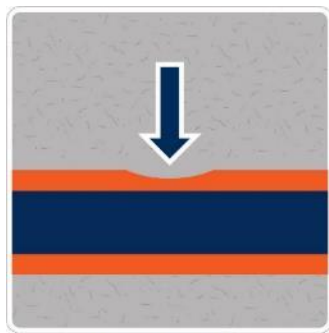


Accreditation #: GAI-LAP-45-02

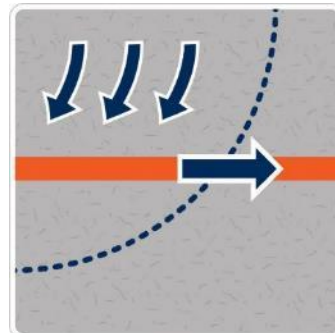
Geosynthetics Functions



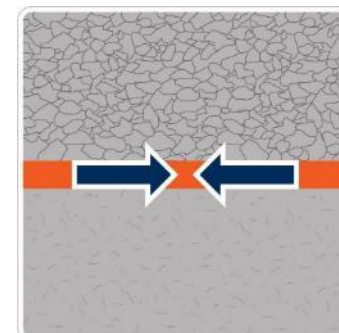
SEPARATION



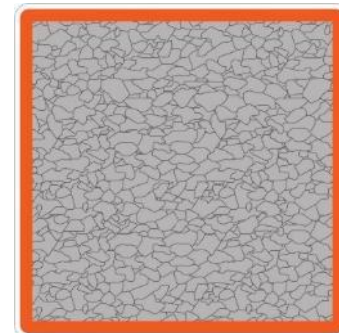
PROTECTION



SOIL
REINFORCEMENT



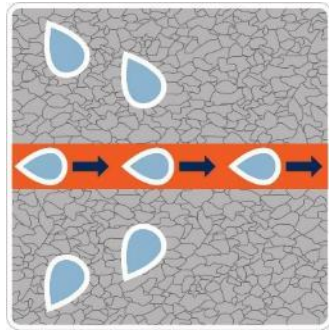
CONFINEMENT



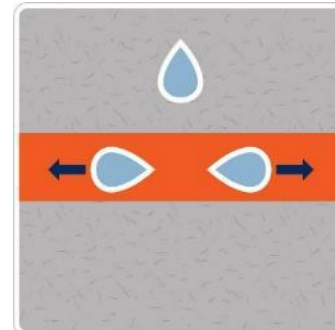
CONTAINMENT



FILTRATION



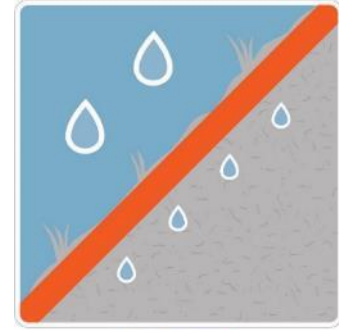
DRAINAGE



WICKING



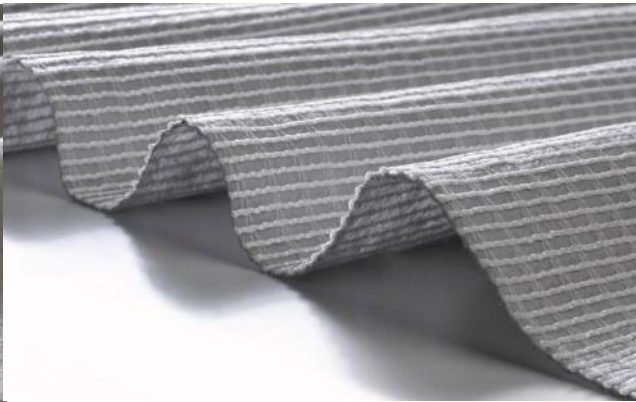
SEALING



EROSION
PROTECTION



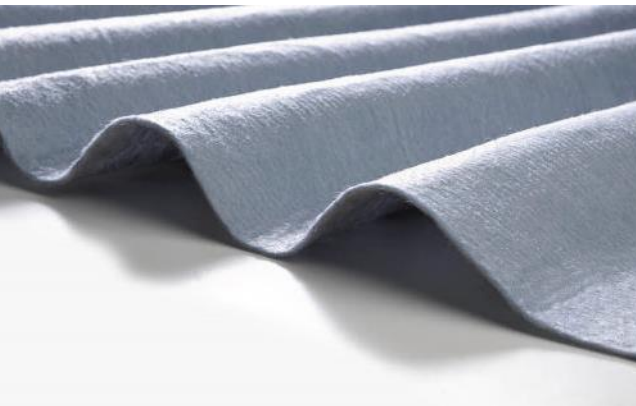
TS, KE & TS Heavy Duty Nonwoven



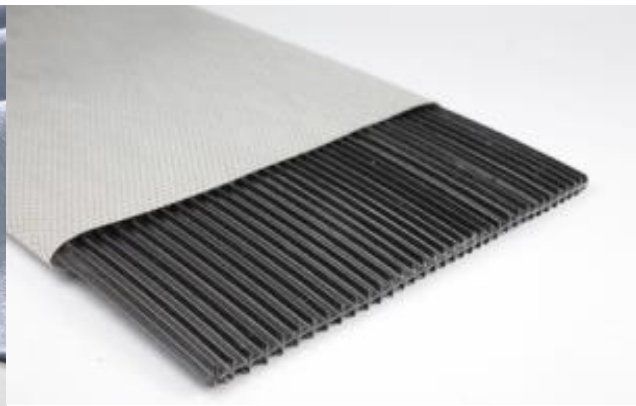
PEC Geocomposite



PGMG Paving Reinforcement



F Filtration Nonwoven



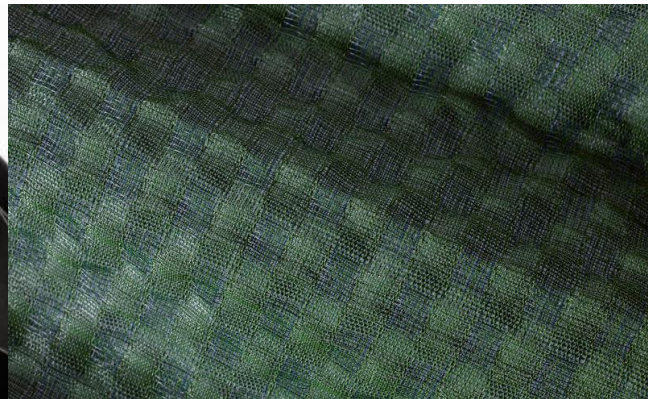
Alidrain® PVD



PGM Paving Fabric



Envirocell Geocell



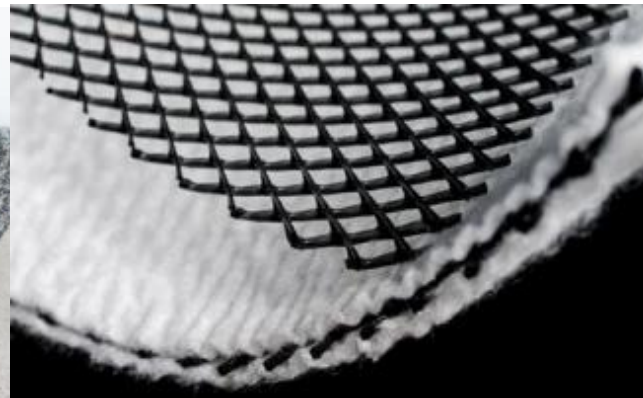
TM13C & Polymat HDPE Erosion Control Mat



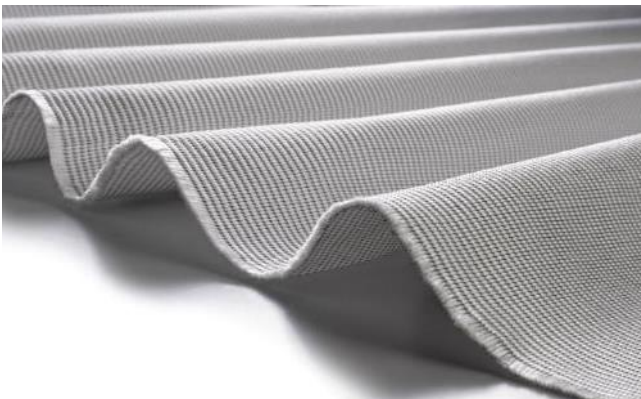
Envirofelt CF & CTRM



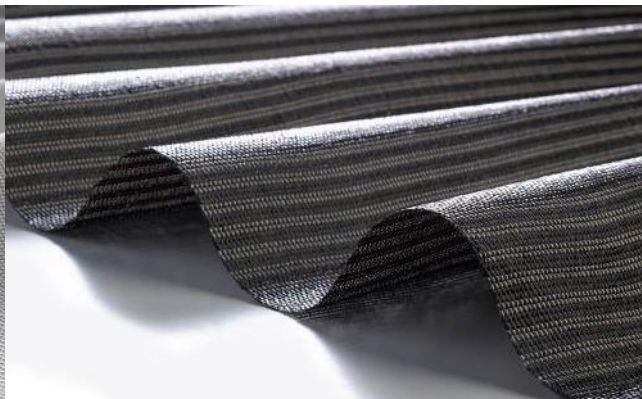
Enviro[®]mat GCL



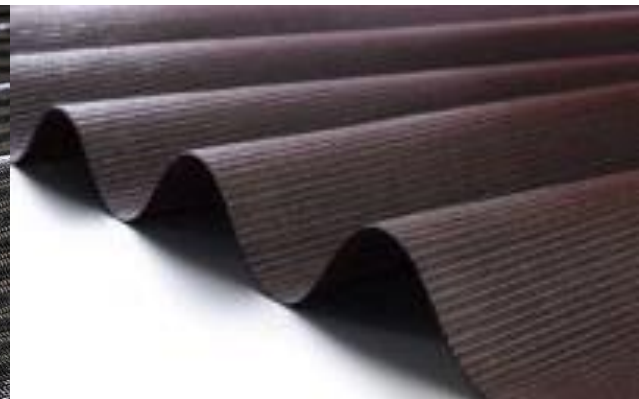
DC Drainage Composite



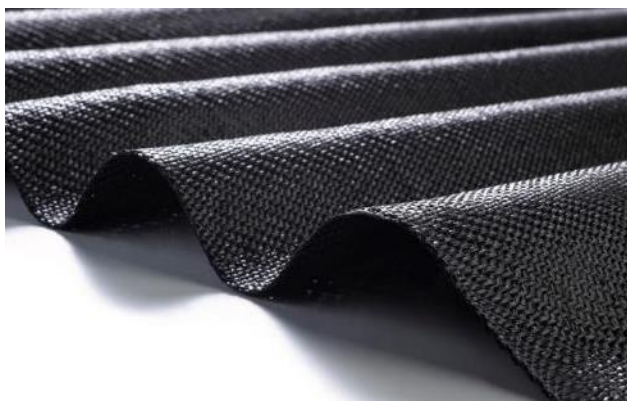
PET High Strength Woven



HPa Woven



RSi Woven



PP Woven



FW Woven



GX Geogrid



Geobag



Sand Filled Mattress



Concrete Mattress



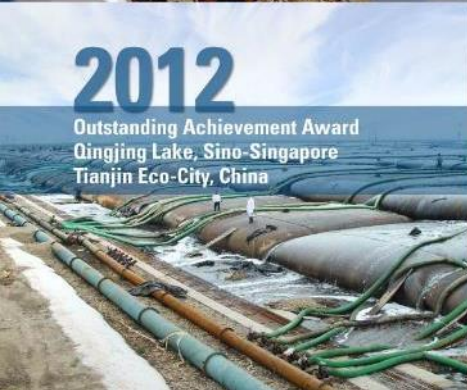
Geotube® Marine



Geotube® Dewatering



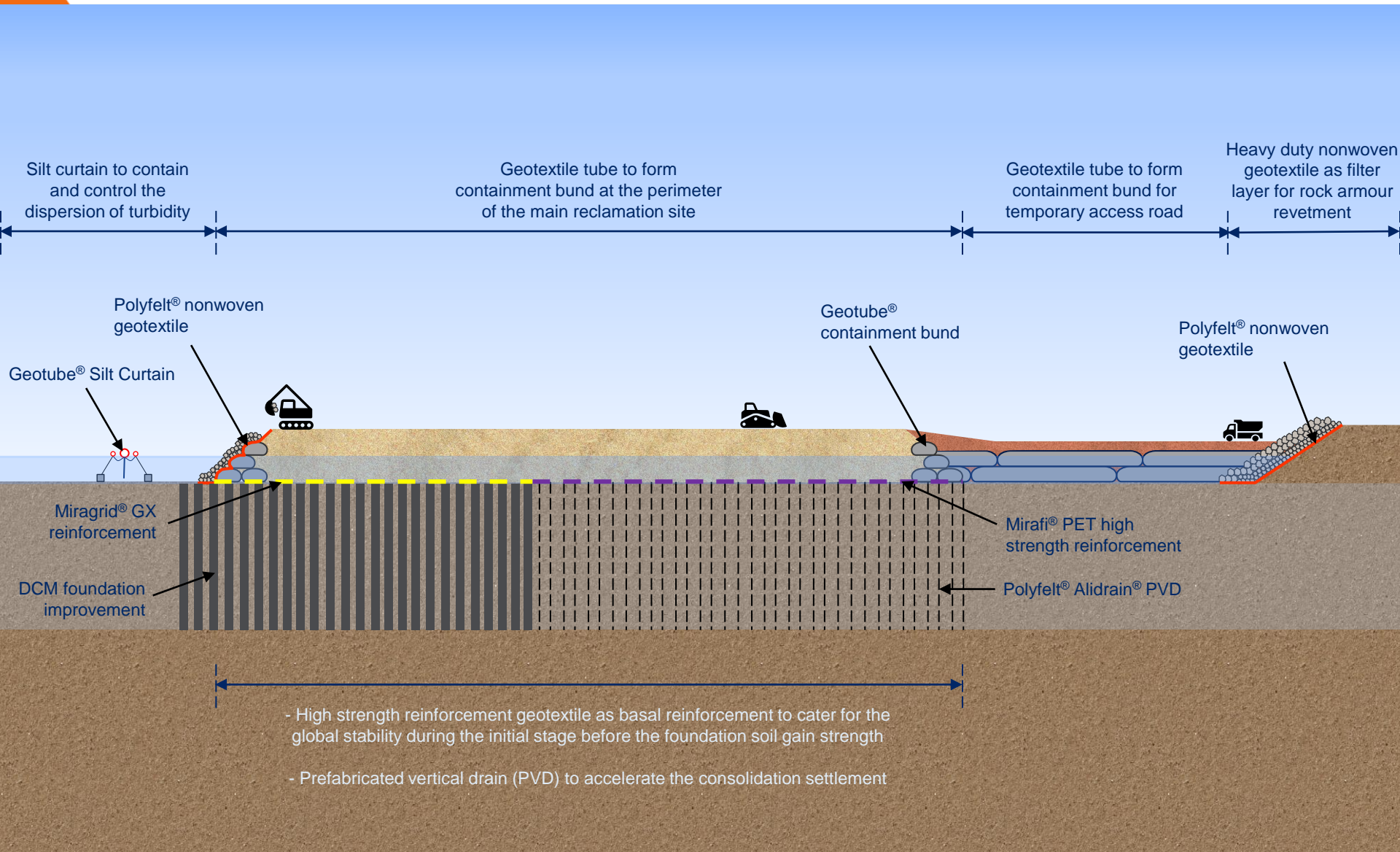
Silt Curtain



Potential Applications for Hong Kong Reclamation Project

Potential Applications

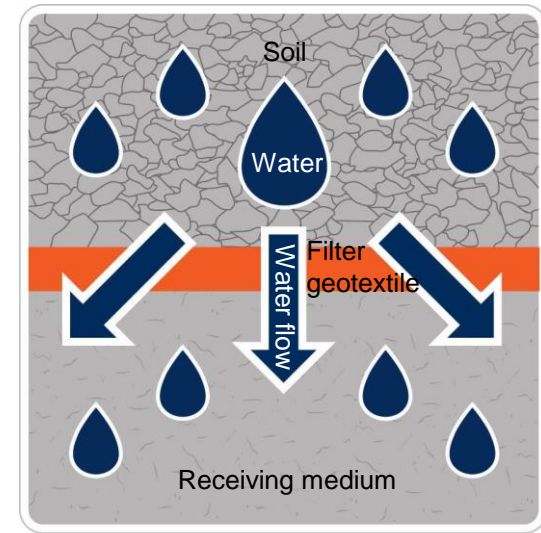
Overview of potential applications for future reclamation project



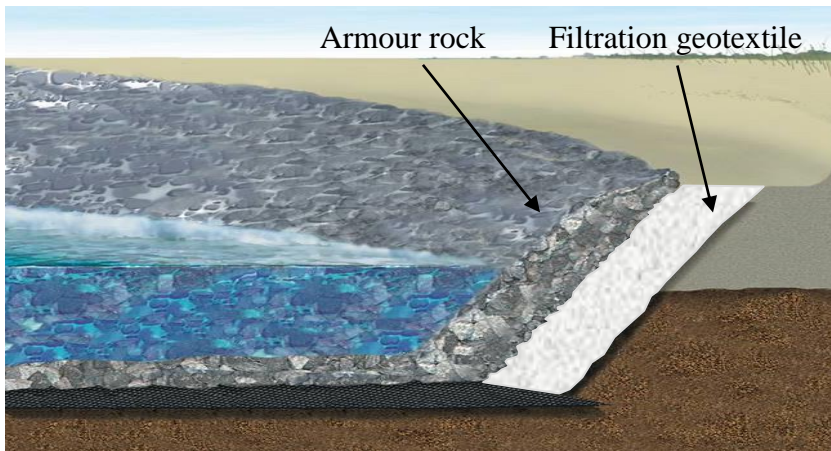
Potential Applications

Polyfelt® nonwoven geotextile as filter layer

- The geotextile acts similar to a sand filter by allowing water to move through the soil while retaining upstream soil particles.
- For example, geotextiles are used to prevent soils from migrating into drainage aggregate or pipes while maintaining flow through the system.
- Geotextiles are also used below rip rap and other armour materials in coastal and river bank protection systems to prevent soil erosion.



FILTRATION



Polyfelt® TS Nonwoven

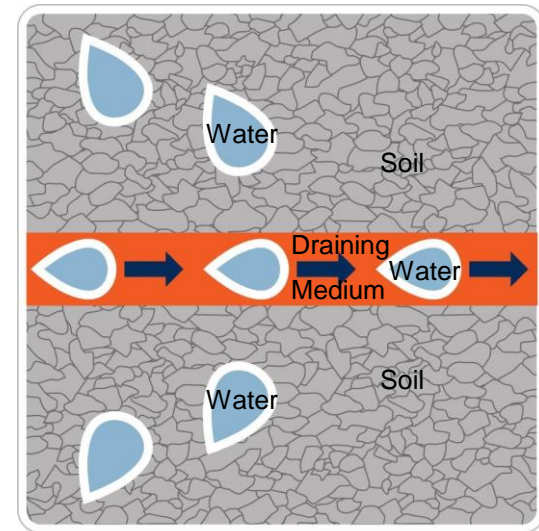


Polyfelt® F Filtration Nonwoven

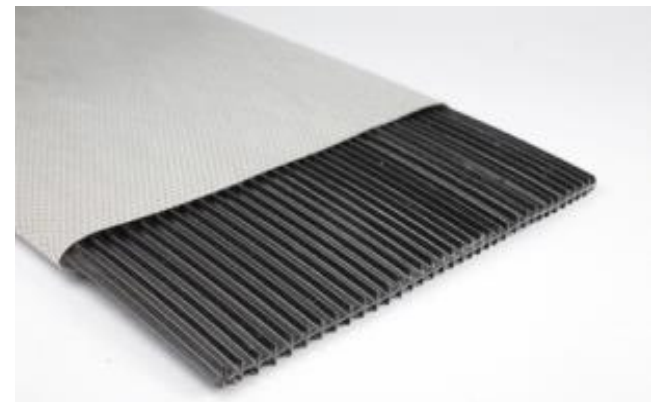
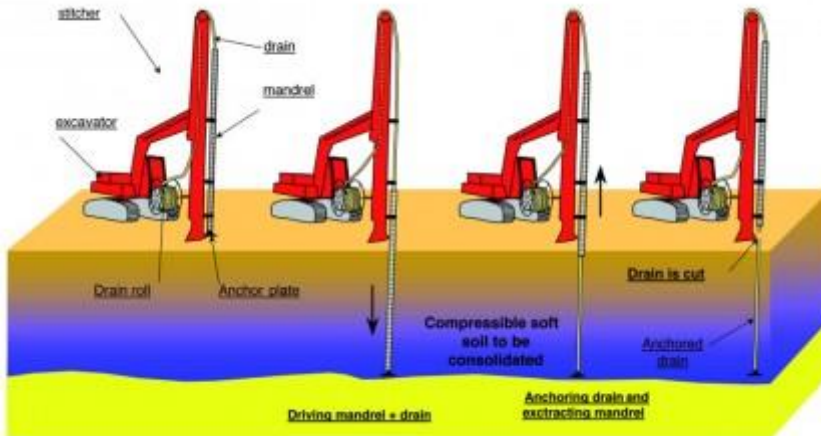
Potential Applications

Polyfelt® Alidrain® PVD for accelerated consolidation settlement

- The geosynthetic, usually a composite of geotextile filter and drainage core, acts as a drain to carry fluid flows through less permeable soils.
- PVDs have been used to accelerate consolidation of soft cohesive foundation soils below embankments and preload fills.



DRAINAGE



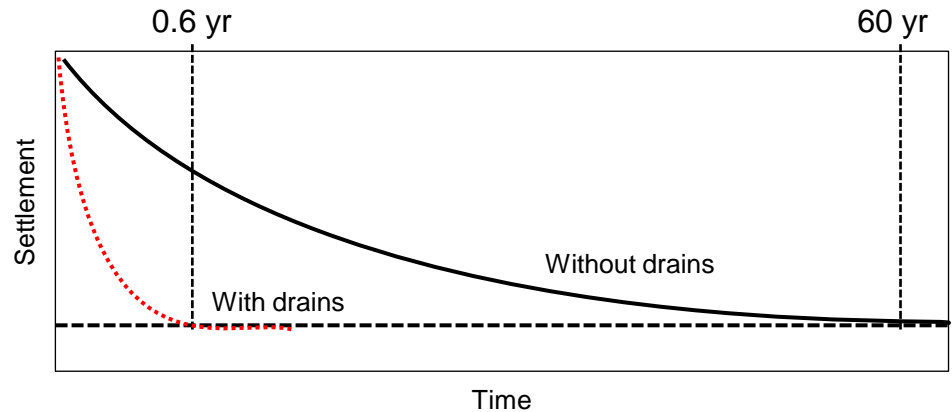
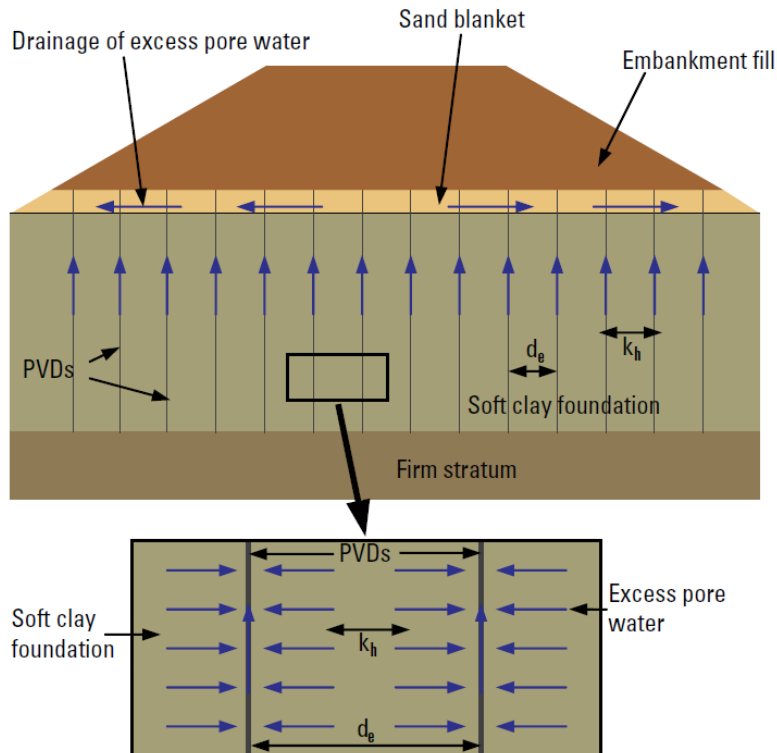
Polyfelt® Alidrain® PVD

Potential Applications

Polyfelt® Alidrain® PVD for accelerated consolidation settlement

Prefabricated Vertical drains (PVD's) may be inserted into the foundation to accelerate consolidation settlement of soft clay.

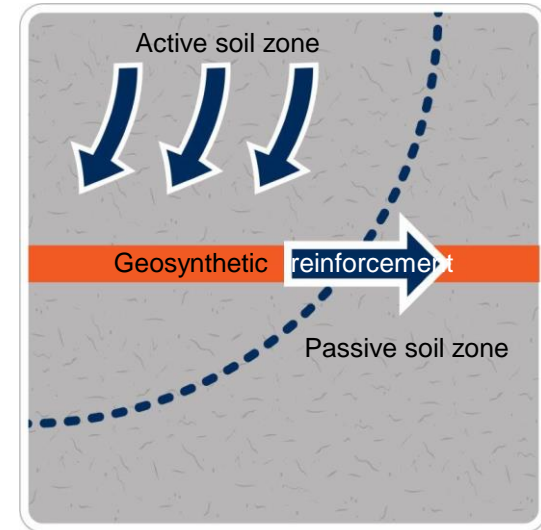
- Surcharging can help
- Reduce settlement times to 1 to 2 years
- PVD accelerates settlement, but do not reduce final settlement



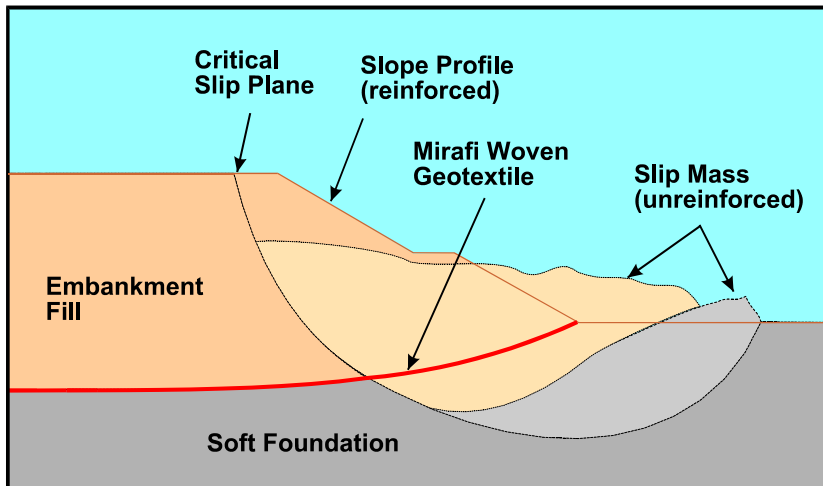
Potential Applications

Mirafi® PET / Miragrid® GX high strength reinforcement as basal reinforcement

- The geotextile acts as a **reinforcement element** within a soil mass or in combination with the soil to produce a composite that has **improved strength and deformation properties** over unreinforced soil.
- Reinforcement allows **roads and embankments** to be constructed over weak foundations.



SOIL REINFORCEMENT



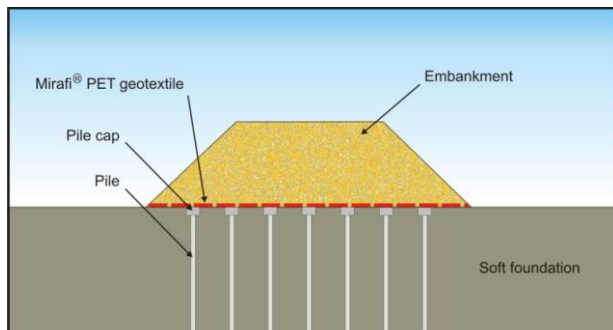
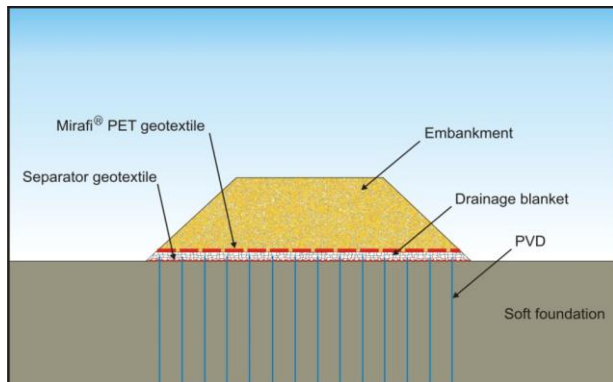
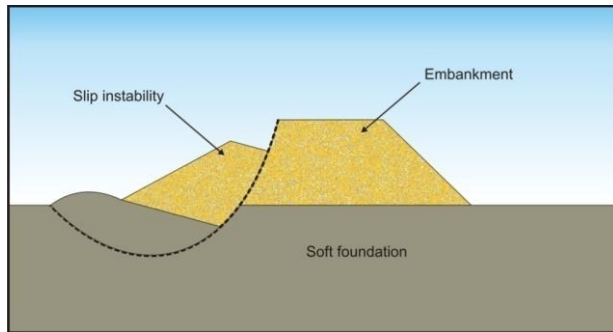
Mirafi® PET High Strength Woven



Miragrid® GX Geogrid

Potential Applications

Mirafi® PET / Miragrid® GX high strength reinforcement as basal reinforcement

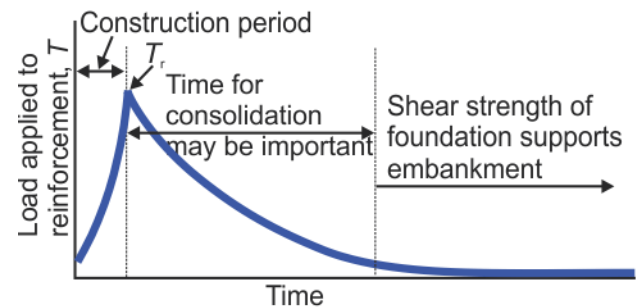
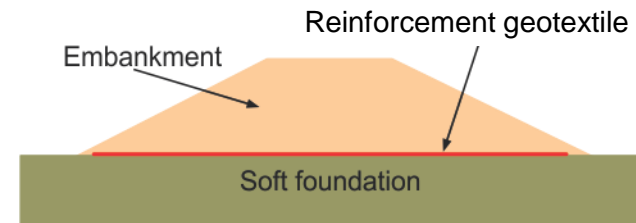


- As far as embankment construction is a concern, geosynthetic contributions to the embankment are as following:
 - i. High strength geotextile / geogrid to improve stability and bearing capacity.
 - ii. High strength geotextile / geogrid with Prefabricated vertical drains and surcharge to cater for stability and settlement problems **with an allowance for surcharging time.**
 - iii. High strength geotextile / geogrid with piles to **instantly** cater for stability and settlement problems.

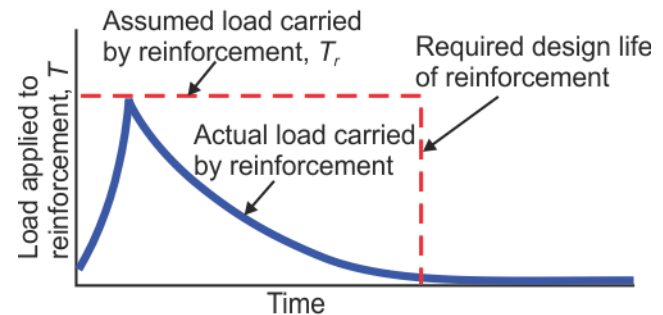
Potential Applications

Mirafi® PET / Miragrid® GX high strength reinforcement as basal reinforcement

- The tensile load in the reinforcement geotextile increases to a maximum at end of construction
- Then, as the foundation consolidates, the reinforcement carries less tensile load
- When the foundation has consolidated it carries all of the embankment load - the reinforcement is really no longer required
 - Temporary reinforcement application - 1 to 10 years
- To simplify the load regime over time it is common to assume a constant reinforcement design load over the time period it takes the foundation to consolidate
 - A safe, conservative assumption
 - A more rigorous design/analysis procedure may approximate more closely to actual load regime



a) Actual load regime carried by basal reinforcement over time

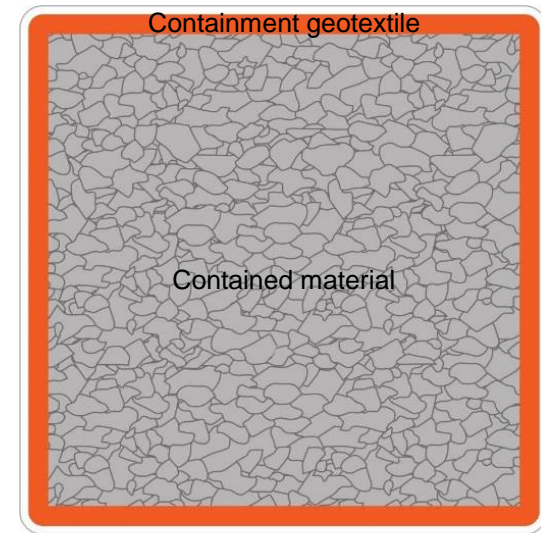


b) Simplified load regime carried by basal reinforcement for purposes of design

Potential Applications

Geotube® GT geotextile tube as containment bund

- The geotextile acts as a **containment medium to hold specific material** for a variety of purposes.
- For example, it can be used as containment units to fill sand or concrete for erosion protection works in rivers and seas.
- They come in the form of **bags, tubes or mattresses**.



CONTAINMENT

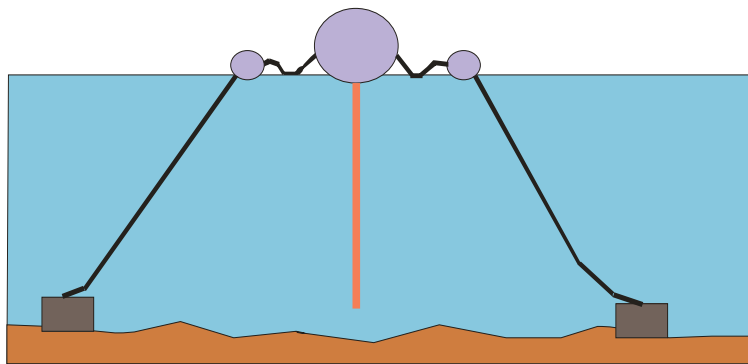


Geotube® GT geotextile tube

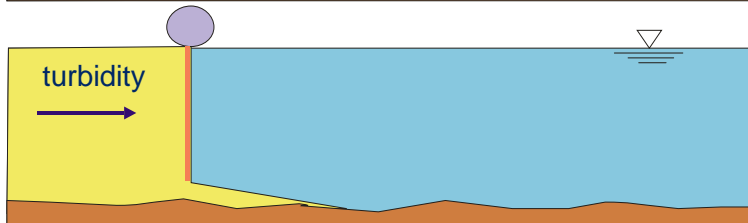
Potential Applications

Geotube® SC silt curtain to contain and control dispersion of turbidity

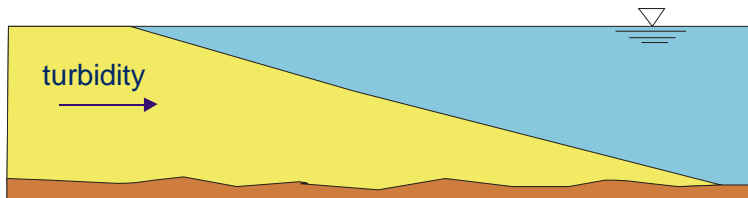
- A floatation silt curtain consists of a geosynthetic fabric that is suspended vertically in a body of water.
- It is designed specially to **contain and control the dispersion of turbidity and silt** in a water body related to marine construction, pile driving, site work and dredging activities.



Typical section of silt curtain system



With silt curtain



Without silt curtain

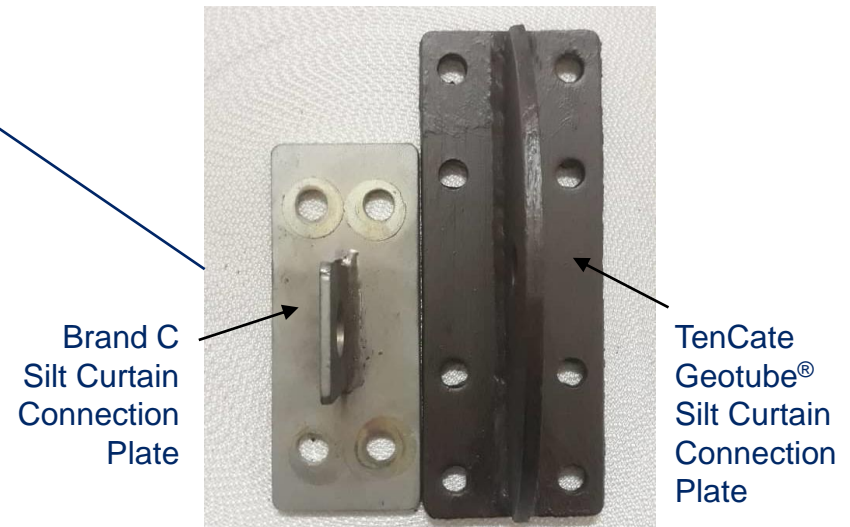
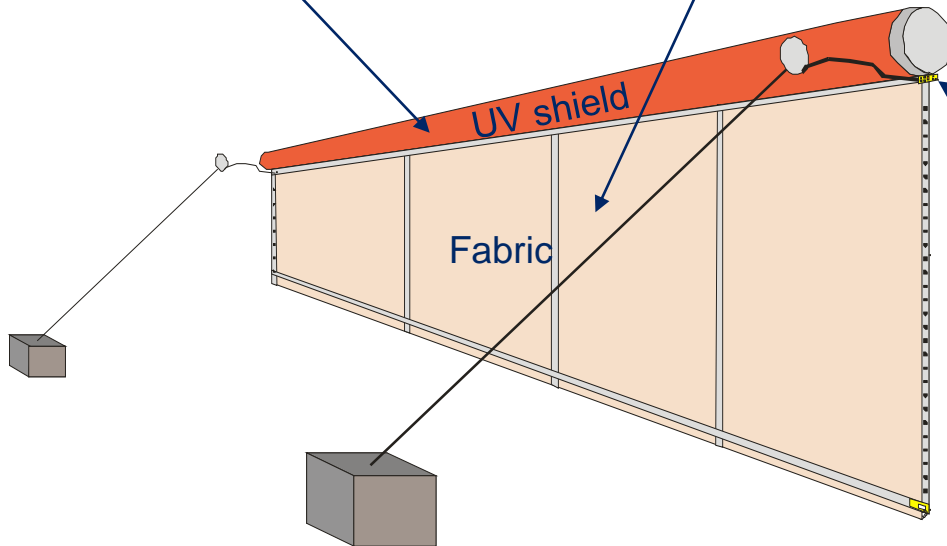
Potential Applications

Geotube® SC silt curtain to contain and control dispersion of turbidity

TenCate Geotube® Silt Curtain fabric are specially weaved to prevent parting when subjected to external load



UV Shield - Highly UV stabilized to maximize its long-term performance



General Case Studies

General Case Studies

Polyfelt® TS nonwoven geotextile for filtration (Tanjung Pelepas Port Development, Malaysia)

Due to high ground water table, ground floor slab is constructed with subsurface drainage system.

Polyfelt® TS50 used as filter geotextile.



General Case Studies

Polyfelt® TS nonwoven geotextile for separation (Liaoning Yingkou Coastal Highway, China)

Part of the Yingkou Coastal Highway in Liaoning is constructed over tidal flats.

Polyfelt® TS60 used as separation layer between embankment fill and subbase material.



General Case Studies

Polyfelt® TS heavy duty nonwoven geotextile under rock revetment (Pulau Ubin & Pulau Tekong Reclamation, Singapore)

Reclamation of 1,480 ha of land to enlarge Pulau Ubin and Pulau Tekong.

1.3 million m² of Polyfelt® TS006 used as filter geotextile under rock revetment to protect reclaimed land.



General Case Studies

Polyfelt® F-Filtration nonwoven geotextile as filter and separator(Setia Eco Glades, Cyberjaya, Malaysia)

A man made pond was proposed to be built for landscaping purpose of aesthetic view in luxury housing area at Cyberjaya.

Polyfelt® F-Filtration geotextile act as a filter and separator.



General Case Studies

Polyfelt® Alidrain® PVD for accelerated consolidation (Sumatera Toll Road)

Toll Kayu Agung – Palembang is a part of Mega Project Toll Trans Sumatera which connects Aceh Province in Northern Sumatera to Lampung in Southern Sumatera with total length 2.818 km.

3.4 million linear meter PVD AD230 were used and vacuum consolidation technique is adopted to accelerate progress and shorten the surcharging period of soft ground to 1.5 months.

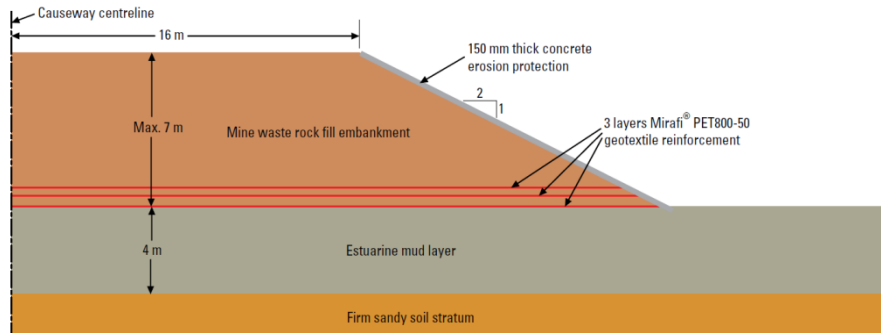


General Case Studies

Mirafi® PET reinforcement geotextile for basal reinforcement (Cape Preston Causeway Embankment, Australia)

The development of a magnetite iron ore mine in Western Australia requires the construction of a new deep water port to handle exports.

3 layers of Mirafi® PET800 used as basal reinforcement for embankment construction over very soft estuarine mud.



Typical cross section through the basal reinforced causeway

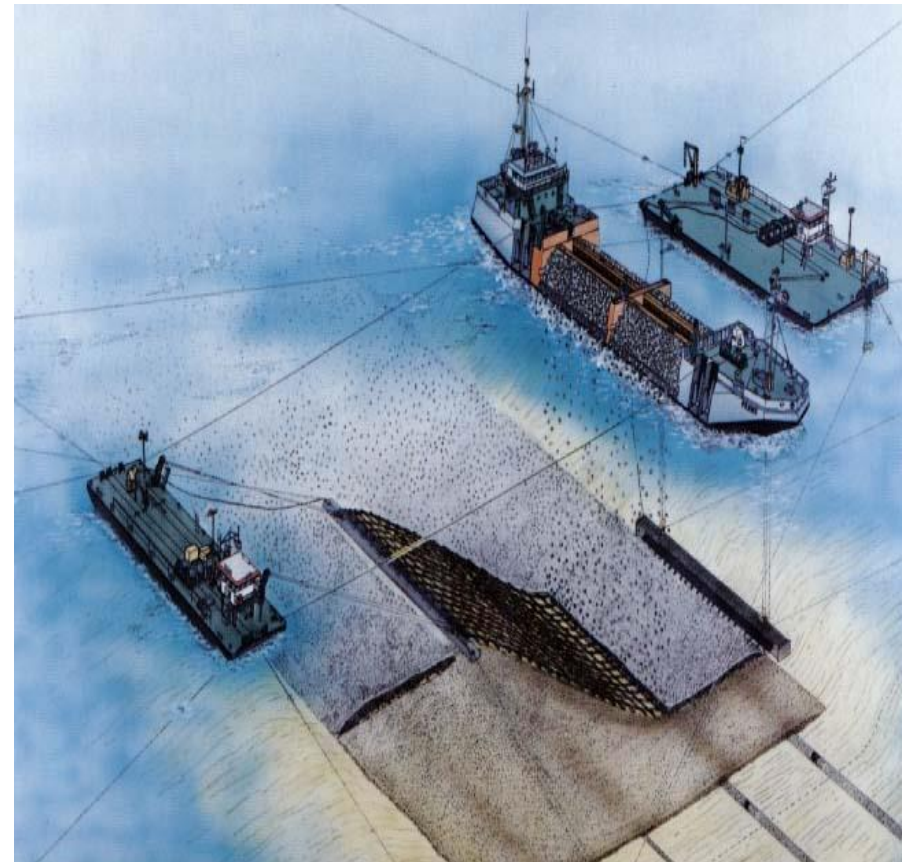
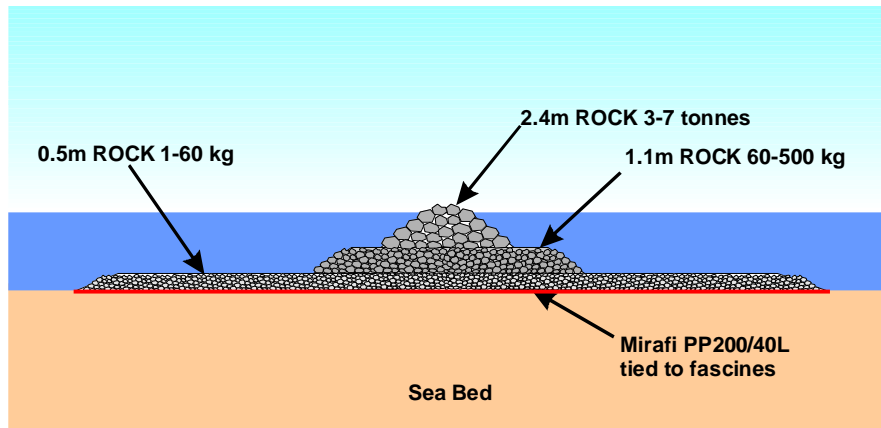


General Case Studies

Mirafi® FM woven geotextile as basal filter geotextile for breakwater (Kerteh Breakwater, Malaysia)

Three offshore breakwaters were constructed to protect the eroding beach front of the base camp complex housing Petronas and Exxon.

Mirafi® PP200L filter geotextile was used to form the basal fascine mattress of the breakwaters.

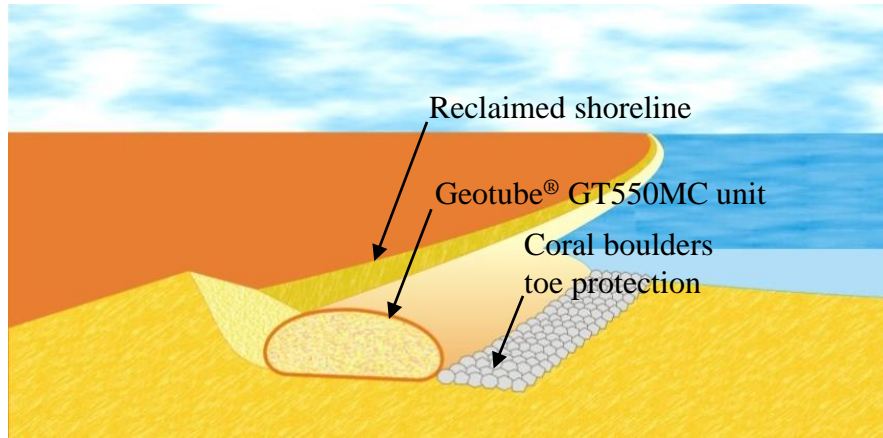


General Case Studies

Geotube® GT composite geotextile tube for coastline protection (Gan International Airport, Maldives)

Coastal erosion was threatening the safety of the end of the GIA runway. Its remoteness and lack of natural resources mean armour units need huge haulage distances and costs.

2 km of coastline protected with Geotube® GT550MC units of diameter of 3.4 m filled to 1.8 m high.

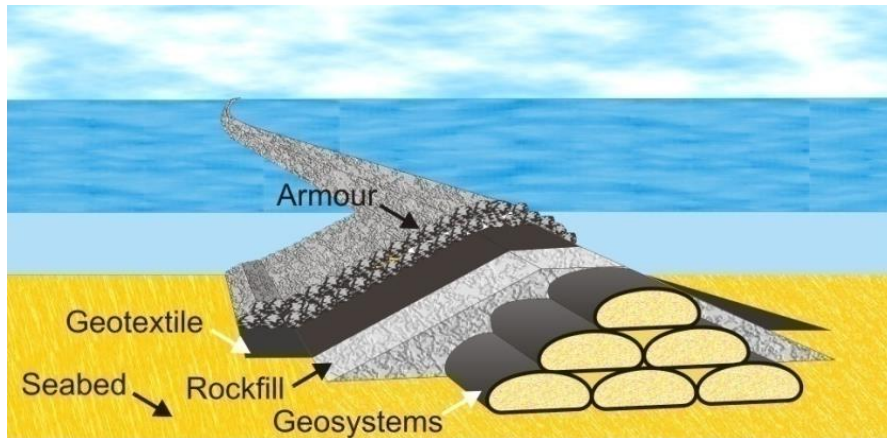


General Case Studies

Geotube® GT woven geotextile tube for rock core replacement (Stella Maris Marina, Equador)

Breakwater construction to protect the new marina and its entrance for yachts.

Geotube® GT1000M units of diameter of 4.3 m filled to 2 m high, stacked 3 levels to replace rockfill core in the breakwater construction.

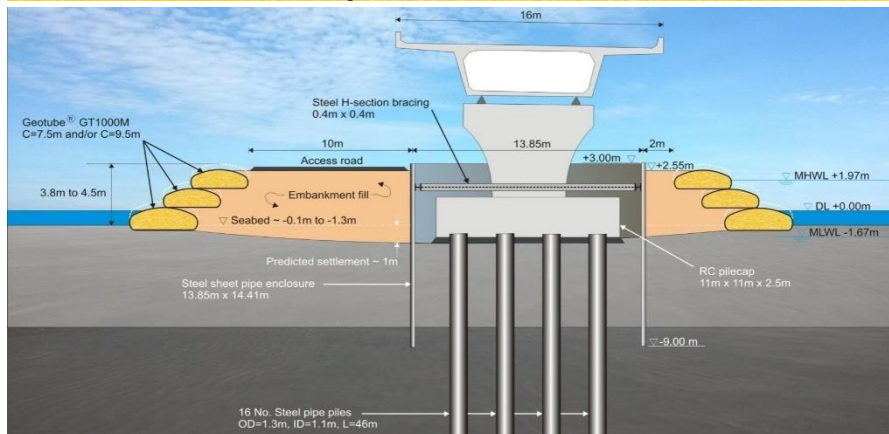
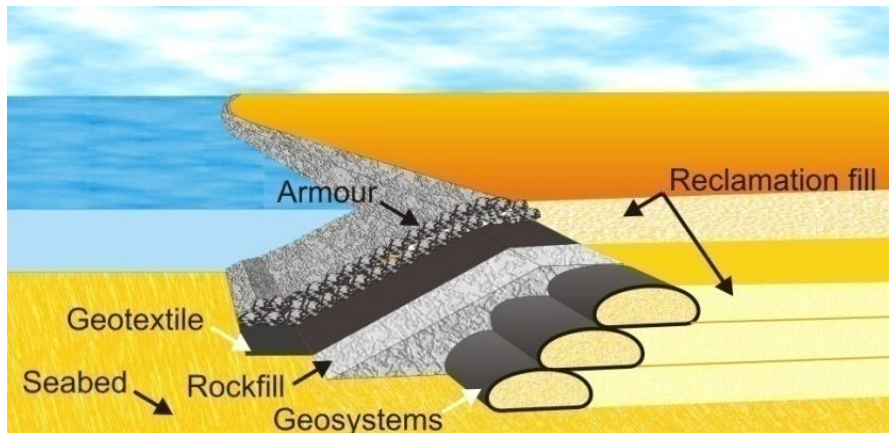


General Case Studies

Geotube® GT woven geotextile tube as temporary containment wall (Lach Huyen Bridge Project, Vietnam)

Temporary platform created for land-based construction of the bridge at the mudflat area.

Geotube® GT1000M units of diameter of 2.4m and/or 3.0m, stacked 3 levels to formed the containment wall of the construction platform.



General Case Studies

Geotube® GT containers for disposal of contaminated sediments (Kai Tak Channel Environmental Dredging, Hong Kong)

The Kai Tak Approach Channel contains contaminated sediments on the seabed.

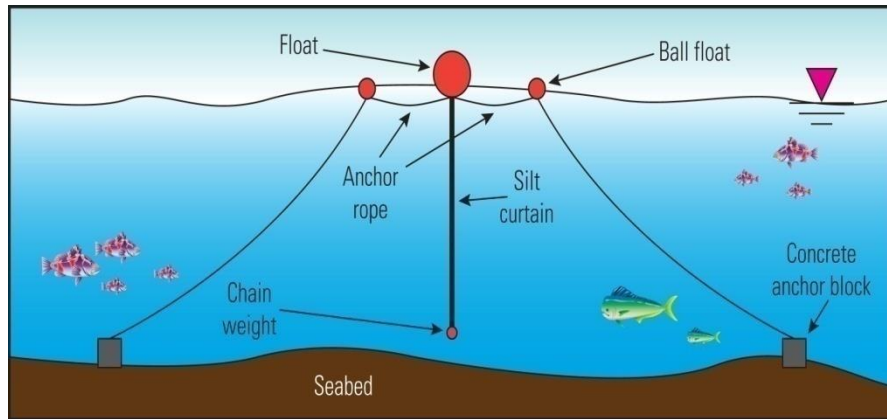
800 units of Geotube® GT1000M containers used for disposal of 120,000 m³ of Type 3 contaminated sediments at the East Sha Chau contaminated mud pits.



General Case Studies

Geotube® SC silt curtain for turbidity control (Jimah Power Plant Reclamation, Malaysia)

Geotube® SC silt curtain used for turbidity control during the land reclamation works.



THANK YOU



- **Contact us** to find out more

- **Join us** for a webinar

- **Connect with us**    

 www.tencategeo.asia

 info.asia@tencategeo.com

