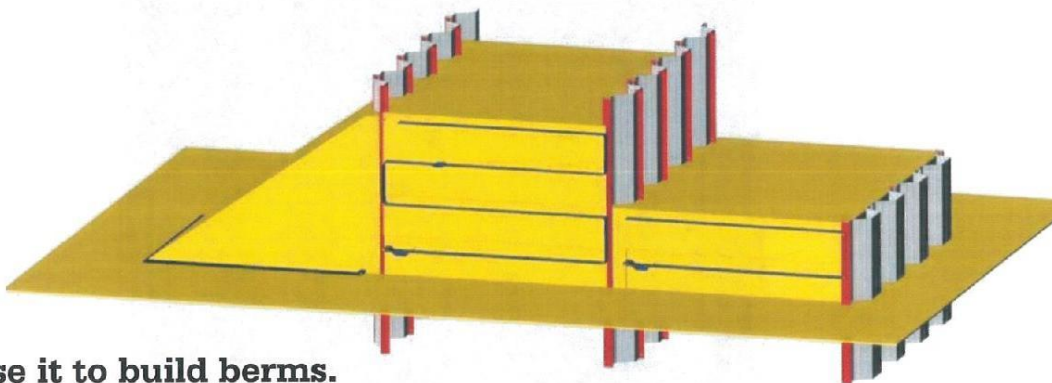




APEES MARLAN PTY LTD

AQUATERRA SYSTEM

**Sheet pile walls tie to themselves
with Tensar Grid.**



Use it to build berms.

Or shoulder walls.



Asia and Pacific Distributor for





INTRODUCTION

When constructed the AquaTerra system provides a reinforced earth retaining system with a multitude of both marine and land applications. Utilising traditional looking profiles, the unique materials and Gridspine give the AquaTerra system numerous advantages over traditional materials and construction techniques.

Used throughout the world, the AquaTerra system is new to Australia and Australian Engineers, for construction of earth filled embankments and retaining walls.

Whilst some have used vinyl sheeting, composite sheeting has very different and superior properties, new to Australia and designers who specify sheeting.

Currently, APEES Marlan are the only Australian company using designers who are world experts in the application of composite sheet piling and in-particular the AquaTerra system.

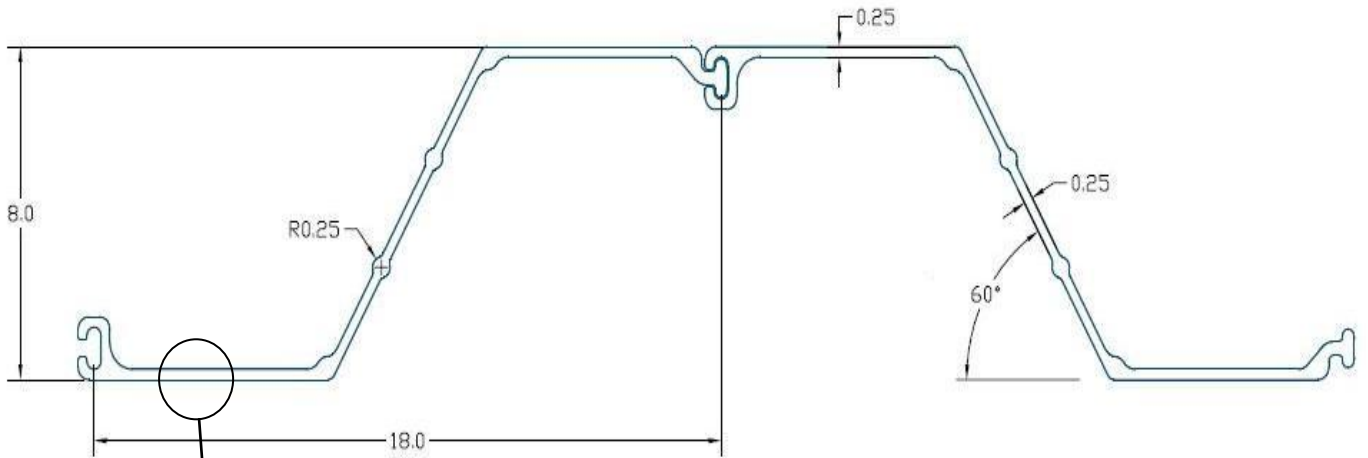
The AquaTerra System is unique for the following reasons:

- Allows you to embed the fascia system, that is, the composite sheet piling, to depths that are required to create more secure structures in weak or saturated soils.
- The global stability and piping issues of design can be addressed by embedment depth using composite sheeting.
- It is 100% synthetic, no metal parts means infinite service life.
- Can be used in marine environments where other products cannot.
- Significantly smaller footprints to traditional earthen berm levee systems.
- The use of geogrid materials allows the use of native soils, reducing the need for expensive foreign material.
- Geogrid allows the designer to specify a lighter gauge sheet piling, potentially saving hundreds of thousands of dollars on a project.
- Composite sheet piling is lightweight, reducing transportation and machinery installation costs, whilst also increasing installation speed which reduces project construction time.

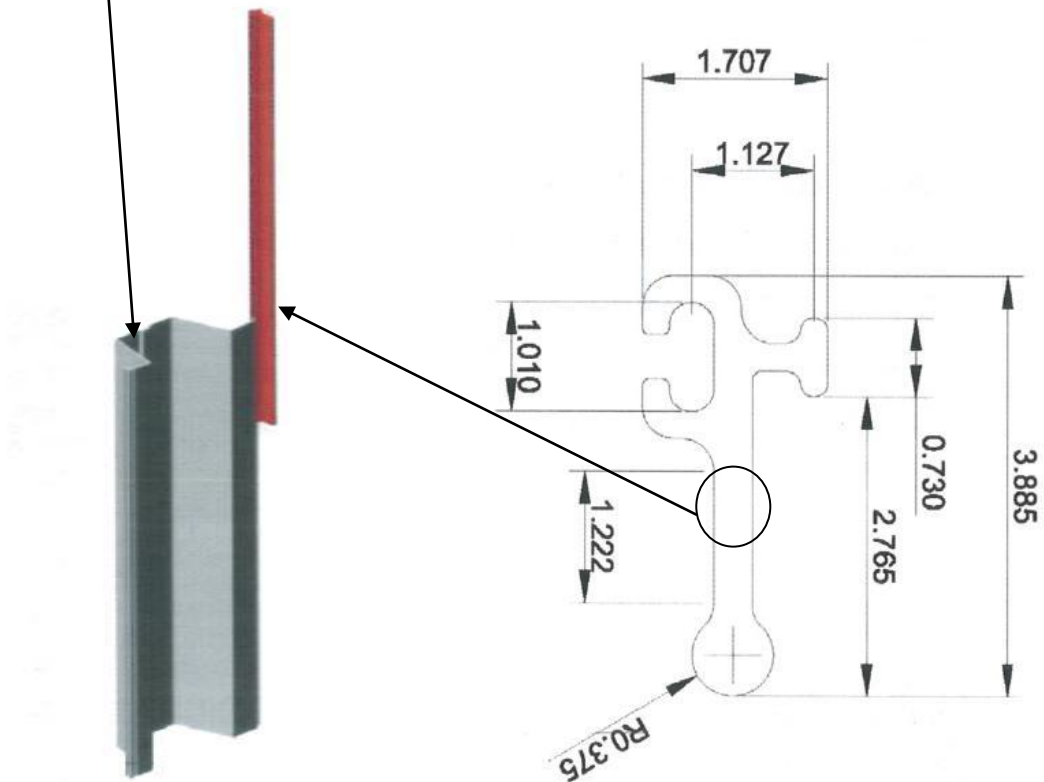


THE AQUATERRA SYSTEM COMPONENTS

The typical composite sheeting

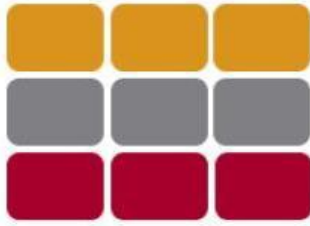


The Spine



In both illustrations dimensions are in inches.

The Geogrid and Bodkin by Tensar

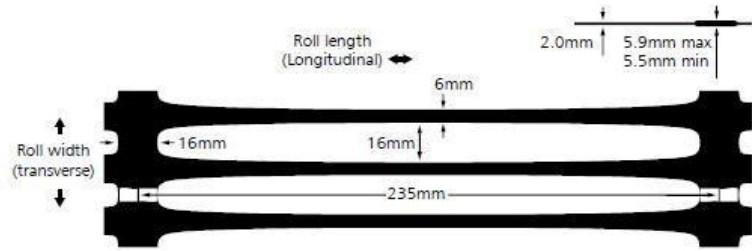


Tensar technical note
TN/120RE-20 °Cspec/14.12.07

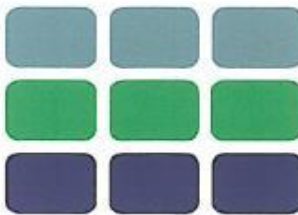
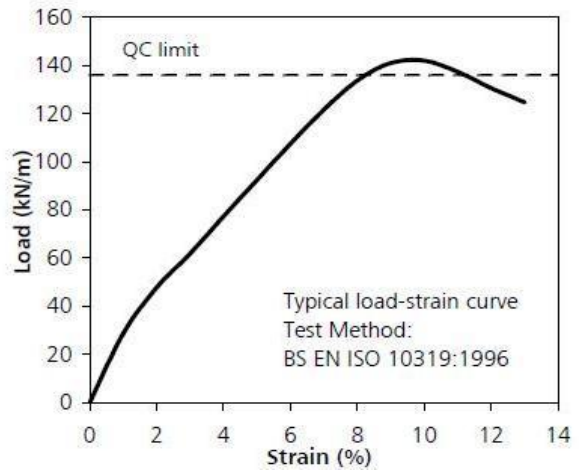
Tensar 120RE Geogrid
Product Specification



Tensar 120RE geogrid is used for reinforcement of soils in construction of structures such as retaining walls, bridge abutments, steep slopes, slip repairs and geocell mattresses.



Tensar 120RE Geogrid		
Polymer (1)		HDPE
Minimum carbon black (2)	%	2
Roll width	m	1.0 & 1.3
Roll length	m	50
Unit weight	kg/m ²	0.94
Roll weight	kg	48 & 62
Quality control strength		
T _{ult} (3)	kN/m	136.0
Load at 2% strain (3)	kN/m	38.0
Load at 5% strain (3)	kN/m	75.5
Approx strain at T _{ult}	%	11.5
Junction strength (4)	%	100
Long term creep rupture strength ULS (5)		
P _c or T _{cr} for 20° C (6)	kN/m	56.2



Tensar technical note TN/Bodkin/28.10.03

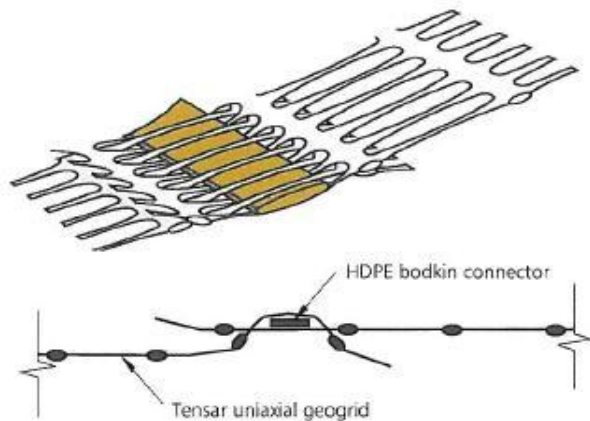
Polymer bodkins for connecting
Tensar uniaxial geogrids
Product Specification

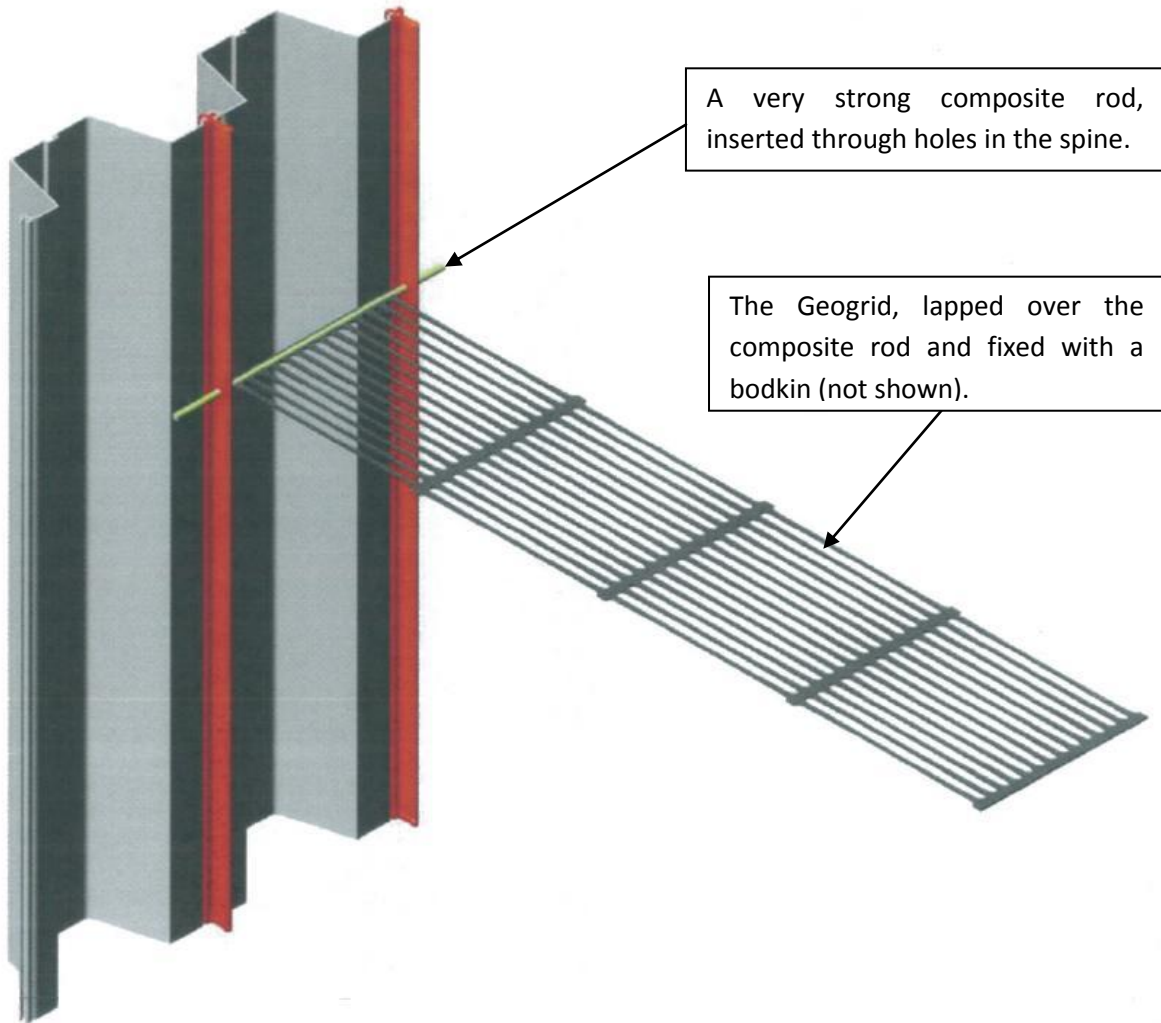


Tensar polymer bodkins are used to connect Tensar SR and RE uniaxial geogrids in the longitudinal roll direction.

Tensar polymer bodkins are nominally 40mm x 6mm or 80mm x 8mm in cross-section and are manufactured from a grade of high density polyethylene (HDPE) with properties as given below.

Tensar polymer bodkins		
Yield strength (1)	MPa	22
Elongation at break (1)	%	250
Carbon black (2)	%	2

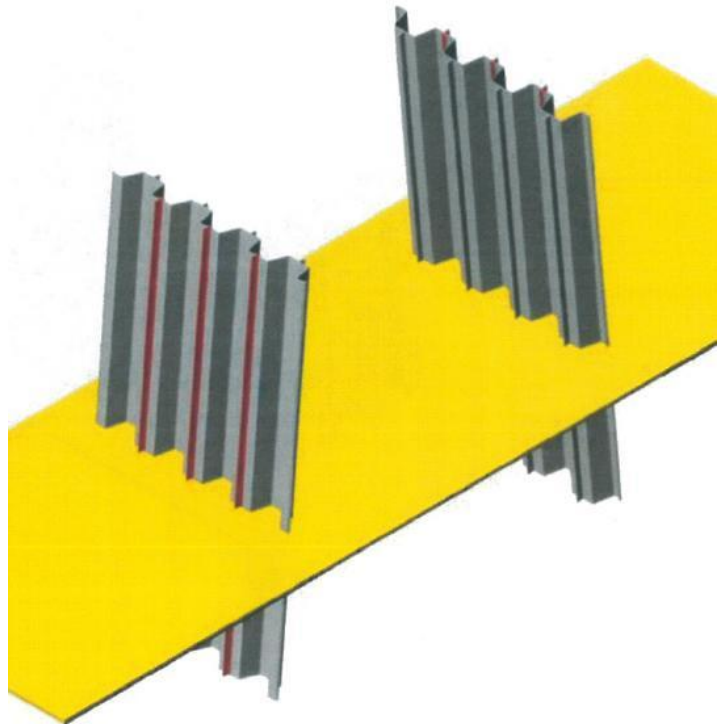




INSTALLING THE AQUATERRA SYSTEM

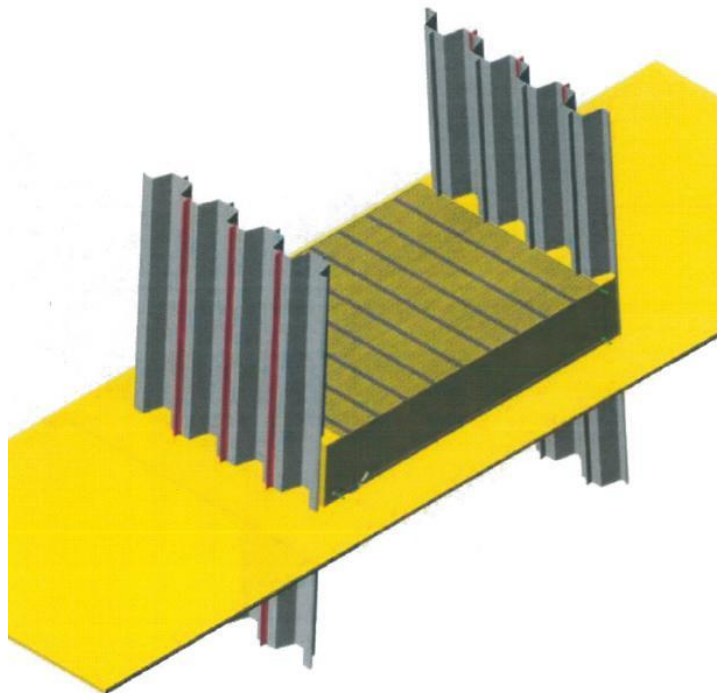
Step 1:

Drive Composite sheet piling and spine to depth as designed.



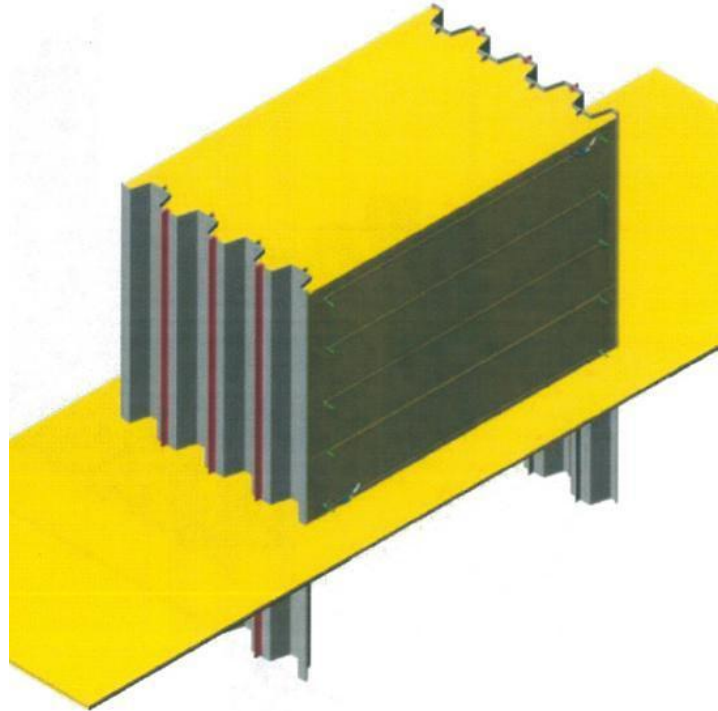
Step 2:

Drill the spine and insert the strong composite rods as per the design. Place the geogrid on the ground and over the composite rod. Lap the geogrid using the bodkins. Place and compact the next layer of earthen material.

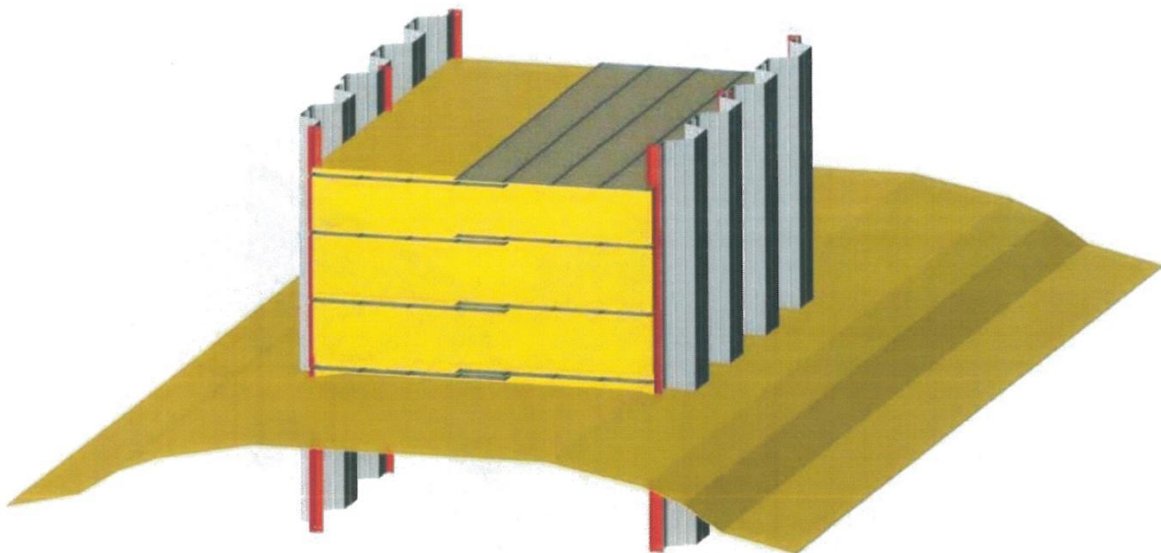


Step 3:

Continue the earthen fill and laying geogrid behind the composite sheet wall until the design finish level is achieved. The face of the composite sheet can be painted or a false facade can be attached to it to suit Architectural requirements. The top of the wall can be finished as a pathway or roadway with desired pavement, a suitable composite handrail system would also be installed.



The width of the wall may allow the design to have separate geogrids extending from the two parallel composite sheet piling walls as indicated below.





APEES MARLAN PTY LTD
AQUATERRA SYSTEM

This document should be read in conjunction with Fibre Composite Materials Performance Criteria.

For more information on the AquaTerra System and Fibre Reinforced Polymer products, please visit our website:

www.apeesmarlan.com

PRODUCTS ARE PROVIDED BY



www.apeesmarlan.com

An Australian Company, incorporated in Victoria and Distributors of the full range of Fibre Reinforced Polymer products of Creative Pultrusions Inc., a Pennsylvania corporation, throughout Asia and the Pacific.



CREATIVE PULTRUSIONS, INC.