

WAVIN Stormwater Management

AquaCell

Structural Calculations are in accordance with CIRIA C680

Client: ABMH Ltd

Date:

24/06/2017

Project Reference:

S14667/A

Site Name: CRL Littlehampton

Designer:

Mark Henly

Installation Details		Unit Properties				
Height of Tank	0.800 m	AquaCell Type:	Prime			
Cover Depth	0.530 m	UCS* Vertical (kN/m²)	456			
Depth to Base	1.330 m	UCS* Lateral (kN/m²)	70			
Depth to Ground Water	10.000 m	Deflection (1 mm per kN/m²)				
Submerged Depth of Tank	0.000 m	Vertical	64			
Concrete Slab Depth	0.000 m	Lateral	11			
Depth to Slab	0.000 m	Creep Deflection	0.1697			
Design Life	50 Years	* Ultimate Compressive Strength				
Site Conditions (Topfill)		Partial Factors of Safety				
Soil Type			Ultimate limit state		Service Limit State	
Unit Weight of Soil	19.60 kN/m³		vertical	lateral	vertical	lateral
Shear Angle	26°	Permanent load	1.4	1.35	1	1
Ground Slope	0°	Live load	1.6	1.5	1	1
Site Conditions (Sidefill)		Material factors:				
Fill Type		of Safety	2.75	2.75	1.5	1.5
Sidefill Height	0.800 m	Uplift	Favourable		Unfavourable	
Unit Weight of Soil	19.60 kN/m³		0.95		1.5	
Shear Angle	26°	Deflection Limits (Material Only):				
Site Conditions (Concrete Slab)		Vertical	5 mm			
Concrete Slab Depth	0.0 m	Lateral	10 mm			
Concrete Weight	24 kN/m³					
Surcharge Loading						
Vehicle Type:	Vehicles up to 30,000kg	Load Contact Area:				
Distributed Wheel Load	10 kN/m²	Length	0.400 m			
Concentrated Wheel Load	50.0 kN	Width	0.200 m			
Load Spread Angle	26.6°	Concrete Slab Load Angle (1:1.5, H/L)	56.30°			
Load Calculation Results						
Vertical loading (incl. safety)						
combination 1 (distributed load)		30.543 kN/m²	Pass			
combination 2 (concentrated load)		132.15 kN/m²	Pass			
Vertical deflection						
Combination 1 (distributed load)		0.234 mm	Pass			
Combination 2 (concentrated load)		1.723 mm	Pass			
Lateral stability						
<u>Layer Number</u>	<u>Unit Type</u>					
Layer 1 (Top Layer)	AquaCell Prime	13.399 kN/m²	Pass			
Layer 2	AquaCell Prime	17.532 kN/m²	Pass			
Lateral						
Lateral deflections		1.712 mm	Pass			
Uplift						
Uplift force (factored)		0.000 kN/m²	Pass			
Dead weight (factored)		9.869 kN/m²				
Creep						
lifetime		50 Years				
Creep Deflection		5.871 mm				

Calculations are based on CIRIA C680 and are for guidance only. All calculations are subject to verification by a suitably qualified Geotechnical and/or Structural Engineer.

Assumptions made are:

- Shear planes or other weaknesses are not present within the structure of the soil.
- Ground surface is horizontal



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