

WAVIN Stormwater Management



Structural Calculations are in accordance with CIRIA C680

Client: VKHP Consulting

Date:

30/07/2020

Project Reference:

S19069

Site Name: 40 Little Paddocks, Worthing

Designer:

Mark Henly

Installation Details		Unit Properties				
Height of Tank	0.400 m	AquaCell Type:	Core-R			
Cover Depth	0.500 m	UCS* Vertical (kN/m²)	669.3			
Depth to Base	0.900 m	UCS* Lateral (kN/m²)	123.4			
Depth to Ground Water	0.400 m	Deflection (1mm per kN/m²)				
Submerged Depth of Tank	0.400 m	Vertical	103.1			
Concrete Slab Depth	0.000 m	Lateral	16.6			
Depth to Slab	0.000 m	Creep Deflection	0.1023			
Design Life	60 Years	* Ultimate Compressive Strength				
Site Conditions (Topfill)		Partial Factors of Safety				
Soil Type			Ultimate limit state		Service Limit State	
Unit Weight of Soil	20 kN/m³		vertical	lateral	vertical	lateral
Shear Angle	24°	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	0.400 m					
Unit Weight of Soil	20 kN/m³	Uplift	Favourable		Unfavourable	
Shear Angle	24°		0.95		1.5	
Site Conditions (Concrete Slab)		Deflection Limits (Material Only):				
		Vertical	5 mm		25 mm	
Concrete Slab Depth	0.0 m	Lateral	10 mm		50 mm	
Concrete Weight	24 kN/m³					
Surcharge Loading						
Vehicle Type:	Drive on mower	Load Contact Area:				
Distributed Wheel Load	5 kN/m²	Length			0.150 m	
Concentrated Wheel Load	1.4 kN	Width			0.150 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)		20.600 kN/m²		Pass		
combination 2 (concentrated load)		17.889 kN/m²		Pass		
Vertical deflection						
Combination 1 (distributed load)		0.073 mm		Pass		
Combination 2 (concentrated load)		0.048 mm		Pass		
Lateral stability						
Layer Number	Unit Type					
Layer 1 (Top Layer)	AquaCell Core-R	13.476 kN/m²		Pass		
Lateral						
Lateral deflections		0.881 mm		Pass		
Uplift						
Uplift force (factored)		6.000 kN/m²		Pass		
Dead weight (factored)		8.550 kN/m²				
Creep						
Lifetime						
		60 Years				
Vertical Creep Deflection		4.166 mm		Lateral Creep Deflection		5.430 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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