

	Project:	143A High Street, Glyn-Neath SA11 5AP		By:	
	Calculation:	Gravity Wall Design Upper Wall		Approved:	
	Sheet Number:	1	Date:	11/05/2023	AJN

Gravity Wall Geometry & Details

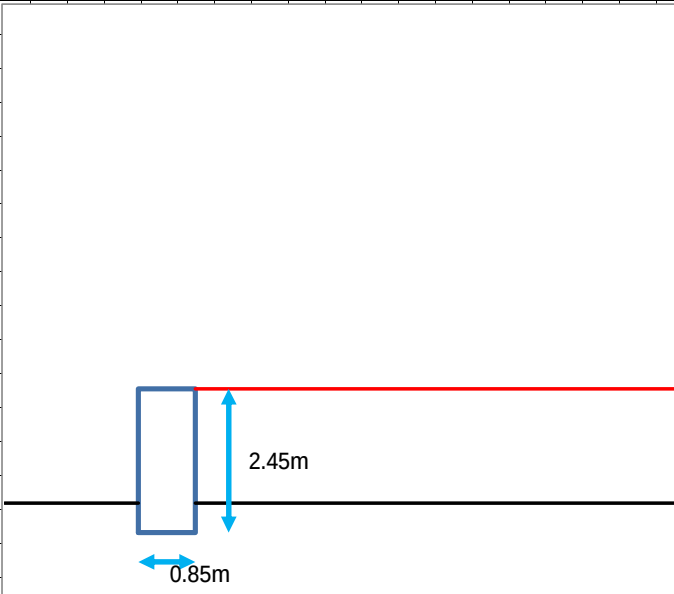
Total Height of Gravity Wall	2.45	m
Width of Base	0.85	m
Height of Base	1.00	m
Width of Wall Top	0.85	m
Depth of Base Below Ground	0.50	m
Wall Friction Angle	25.00	Degrees
Concrete Unit Weight	24.00	kN/m ⁴

Ground Details

Retained Fill Unit Weight	18.00	kN/m ³
Underlying Soil Unit Weight	18.00	kN/m ³
Retained Fill Shearing Resistance	35.00	Degrees
Underlying Soil Shearing Resistance	35.00	Degrees
Allowable Ground Bearing Pressure	200	kN/m ²

Loading Details

Applied Surcharge	10.00	kN/m ²
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The diagram shows a cross-section of a gravity wall. The wall is represented by a blue rectangle with a height of 2.45m and a base width of 0.85m. A horizontal red line represents the ground surface at the top of the wall. A horizontal black line represents the ground level below the wall base. The wall is shown extending from the ground level down to a depth of 0.50m below ground.

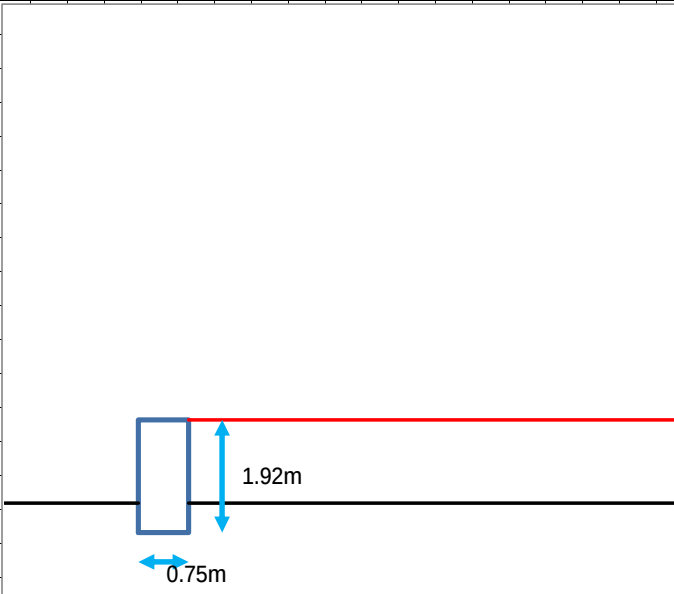
	Project: 143A High Street - Glyn-Neath		By: AJN	
	Calculation: Gravity Wall Design Upper Wall			
			Approved:	
	Sheet Number:	2	Date:	11/05/2023
Results				
Bearing Pressure				
Total Unfactored Overturning Force		11.00	kN/m	
Total Unfactored Restoring Force		16.91	kN/m	
Eccentricity		0.30	Outside Central Third of Base	
Pressure at Toe		179.58	kN/m ²	
Pressure at Heel		-65.26	kN/m ²	
Factor of Safety		1.11		
Allowable Factor of Safety		1.00	Pass	
Design Approach 1				
Partial Factors on Actions - Section A.3.1 - Combination 1				
Action Factor Set - A1				
Permanent unfavourable action		1.35		
Permanent favourable action		1.00		
Variable unfavourable action		1.50		
Variable favourable action		0.00		
Partial factors for soil parameters - Section A.3.2 - Combination 1				
Soil Factor Set - M1				
Angle of Shearing Resistance		1.00		
Weight Density		1.00		
Whole Structure				
Overturning Moment	12.76kN	Overturning Resistance	16.91kN	
Factor of Safety	1.32	Allowable FoS	1.00	Pass
Sliding Force	16.45kN	Sliding Resistance	27.85kN	
Factor of Safety	1.69	Allowable FoS	1.00	Pass
Design Approach 1				
Partial Factors on Actions - Section A.3.1 - Combination 2				
Action Factor Set - A2				
Permanent unfavourable action		1.00		
Permanent favourable action		1.00		
Variable unfavourable action		1.30		
Variable favourable action		0.00		
Partial factors for soil parameters - Section A.3.2 - Combination 2				
Soil Factor Set - M2				
Angle of Shearing Resistance		1.25		
Weight Density		1.00		
Whole Structure				
Overturning Moment	13.43kN	Overturning Resistance	16.91kN	
Factor of Safety	1.26	Allowable FoS	1.00	Pass
Sliding Force	17.04kN	Sliding Resistance	22.28kN	
Factor of Safety	1.31	Allowable FoS	1.00	Pass

	Project:	143A High Street Glyn-Neath SA11 5AP		By:	
	Calculation:	Gravity Wall Design - Lower Wall		Approved:	
	Sheet Number:	1	Date:	11/05/2023	AJN

<u>Gravity Wall Geometry & Details</u>		
Total Height of Gravity Wall	1.92	m
Width of Base	0.75	m
Height of Base	1.00	m
Width of Wall Top	0.75	m
Depth of Base Below Ground	0.50	m
Wall Friction Angle	25.00	Degrees
Concrete Unit Weight	24.00	kN/m ⁴

<u>Ground Details</u>		
Retained Fill Unit Weight	18.00	kN/m ³
Underlying Soil Unit Weight	18.00	kN/m ³
Retained Fill Shearing Resistance	35.00	Degrees
Underlying Soil Shearing Resistance	35.00	Degrees
Allowable Ground Bearing Pressure	200	kN/m ²

<u>Loading Details</u>		
Applied Surcharge	10.00	kN/m ²



Your Logo / Company Details Here	Project:		143A High Street, Glyn Neath SA11 5AP										By:	
	Calculation:		Gravity Wall Design											
													Approved:	
	Sheet Number:		2		Date:									

Results													
Bearing Pressure													
Total Unfactored Overturning Force										5.89		kN/m	
Total Unfactored Restoring Force										9.59		kN/m	
Eccentricity										0.26		Outside Central Third of Base	
Pressure at Toe										130.06		kN/m ²	
Pressure at Heel										-45.34		kN/m ²	
Factor of Safety										1.54			
Allowable Factor of Safety										1.00		Pass	
Design Approach 1													
Partial Factors on Actions - Section A.3.1 - Combination 1													
Action Factor Set - A1													
Permanent unfavourable action										1.35			
Permanent favourable action										1.00			
Variable unfavourable action										1.50			
Variable favourable action										0.00			
Partial factors for soil parameters - Section A.3.2 - Combination 1													
Soil Factor Set - M1													
Angle of Shearing Resistance										1.00			
Weight Density										1.00			
Whole Structure													
Overturning Moment					5.82kN		Overturning Resistance					9.59kN	
Factor of Safety					1.65		Allowable FoS					1.00 Pass	
Sliding Force					9.98kN		Sliding Resistance					17.9kN	
Factor of Safety					1.79		Allowable FoS					1.00 Pass	
Design Approach 1													
Partial Factors on Actions - Section A.3.1 - Combination 2													
Action Factor Set - A2													
Permanent unfavourable action										1.00			
Permanent favourable action										1.00			
Variable unfavourable action										1.30			
Variable favourable action										0.00			
Partial factors for soil parameters - Section A.3.2 - Combination 2													
Soil Factor Set - M2													
Angle of Shearing Resistance										1.25			
Weight Density										1.00			
Whole Structure													
Overturning Moment					6.21kN		Overturning Resistance					9.59kN	
Factor of Safety					1.54		Allowable FoS					1.00 Pass	
Sliding Force					10.47kN		Sliding Resistance					14.32kN	
Factor of Safety					1.37		Allowable FoS					1.00 Pass	