

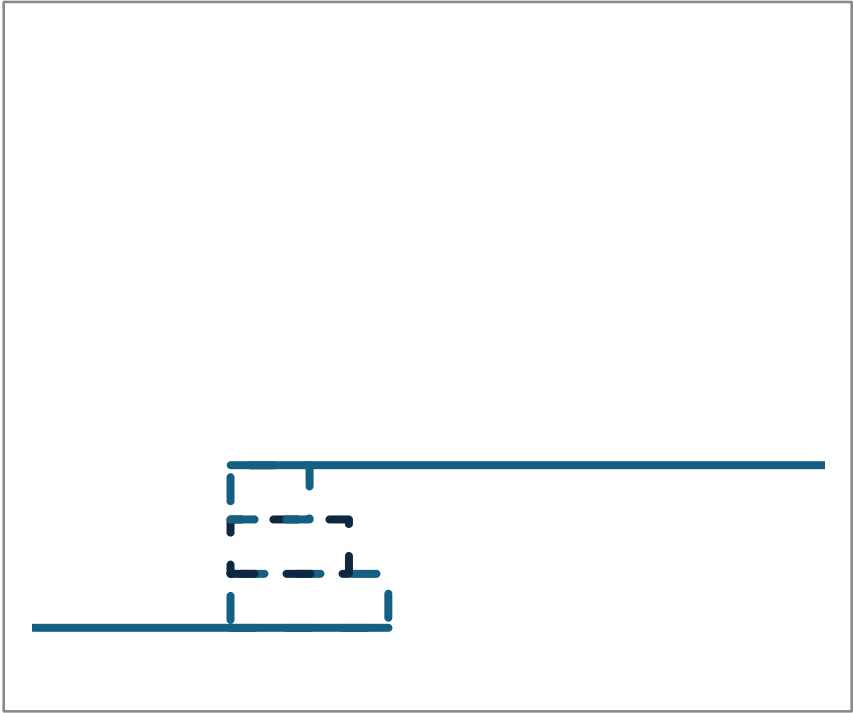
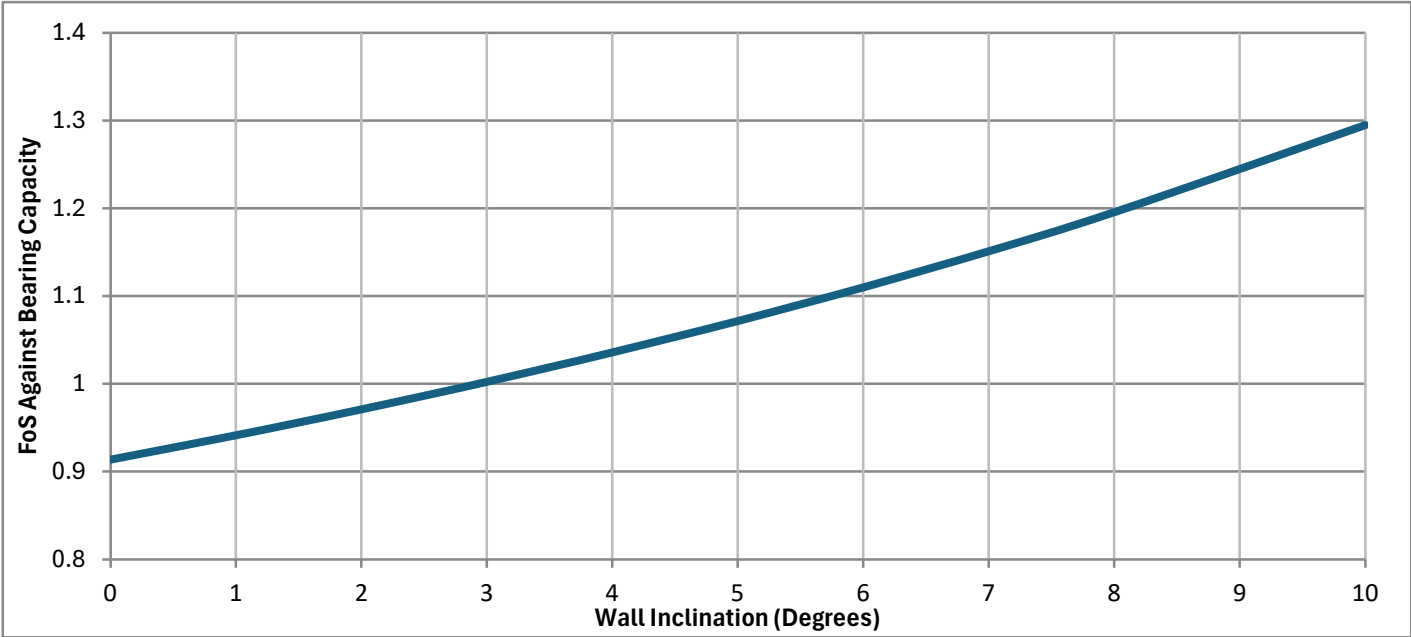
MJ Civil Engineering	Project:			By: MAJ
	Calculation:	Gabion Wall Design - 3m Retaining		
	Sheet Number:	1	Date: 13/07/2025	Rev: A
				Approved: JAJ

<u>Gabion Wall Geometry</u>			
Gabion Level 1	Width	2	m
	Height	1	m
Gabion Level 2	Width	1.5	m
	Height	1	m
	Step Between Level 1 & 2	0	m
Gabion Level 3	Width	1	m
	Height	1	m
	Step Between Level 2 & 3	0	m
Gabion Level 4	Width	0	m
	Height	0	m
	Step Between Level 3 & 4	0	m
Gabion Level 5	Width		m
	Height		m
	Step Between Level 4 & 5		m
Gabion Level 6	Width		m
	Height		m
	Step Between Level 5 & 6		m
Gabion Level 7	Width		m
	Height		m
	Step Between Level 6 & 7		m
Gabion Level 8	Width		m
	Height		m
	Step Between Level 7 & 8		m
Gabion Level 9	Width		m
	Height		m
	Step Between Level 8 & 9		m
Wall Inclination		6	Degrees
Slope of Retained Material		0	Degrees

<u>Other Details</u>			
Unit Weight of Gabions		18.00	kN/m ³
Friction Angle Between Gabions		35	Degrees
Loading - Variable Surcharge		5.00	kN/m ²
Soil Characteristic Effective Shearing Resistance Angle		34	Degrees
Soil Characteristic Saturated Density		18.00	kN/m ³
Coefficient for Wall Friction		0.75	
Wall Friction Angle		35	Degrees
Characteristic Base Friction Angle		34	Degrees
Bearing Capacity of Underlying Soil		100	kN/m ²

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	Sheet Number:			Approved:		
	2			Date:13/07/2025 Rev: A JAJ		
Results						
Pressures @ Base						
Total Unfactored Overturning Force				27.84		kN/m
Total Unfactored Restoring Force				155.91		kN/m
Eccentricity				0.09		Reaction Within Middle Third of Base
Pressure at Toe				90.07		kN/m ²
Pressure at Heel				51.01		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		45.96kN	Overturning Resistance		133.64kN	
Factor of Safety		2.91	Allowable FoS		1.00	Pass
Sliding Force		35.85kN	Sliding Resistance		84.94kN	
Factor of Safety		2.37	Allowable FoS		1.00	Pass
Check Overturning & Sliding Between Courses 1 & 2						
Overturning Moment		15.45kN	Overturning Resistance		55.6kN	
Factor of Safety		3.60	Allowable FoS		1.00	Pass
Sliding Force		17.18kN	Sliding Resistance		47.69kN	
Factor of Safety		2.78	Allowable FoS		1.00	Pass
Check Overturning & Sliding Between Courses 2 & 3						
Overturning Moment		2.55kN	Overturning Resistance		15.29kN	
Factor of Safety		6.00	Allowable FoS		1.00	Pass
Sliding Force		7.78kN	Sliding Resistance		25.74kN	
Factor of Safety		3.66	Allowable FoS		1.00	Pass
Check Overturning & Sliding Between Courses 3 & 4						
Overturning Moment			Overturning Resistance			
Factor of Safety			Allowable FoS		1.00	
Sliding Force			Sliding Resistance			
Factor of Safety			Allowable FoS		1.00	
Check Overturning & Sliding Between Courses 4 & 5						
Overturning Moment			Overturning Resistance			
Factor of Safety			Allowable FoS		1.00	
Sliding Force			Sliding Resistance			
Factor of Safety			Allowable FoS		1.00	
Check Overturning & Sliding Between Courses 5 & 6						
Overturning Moment			Overturning Resistance			
Factor of Safety			Allowable FoS		1.00	
Sliding Force			Sliding Resistance			
Factor of Safety			Allowable FoS		1.00	
Check Overturning & Sliding Between Courses 6 & 7						
Overturning Moment			Overturning Resistance			
Factor of Safety			Allowable FoS		1.00	
Sliding Force			Sliding Resistance			
Factor of Safety			Allowable FoS		1.00	
Check Overturning & Sliding Between Courses 7 & 8						
Overturning Moment			Overturning Resistance			
Factor of Safety			Allowable FoS		1.00	
Sliding Force			Sliding Resistance			
Factor of Safety			Allowable FoS		1.00	
Check Overturning & Sliding Between Courses 8 & 9						
Overturning Moment			Overturning Resistance			
Factor of Safety			Allowable FoS		1.00	
Sliding Force			Sliding Resistance			
Factor of Safety			Allowable FoS		1.00	

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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		42.74kN	Overturning Resistance	135.78kN		
Factor of Safety		3.18	Allowable FoS	1.00	Pass	
Sliding Force		31.73kN	Sliding Resistance	68.53kN		
Factor of Safety		2.16	Allowable FoS	1.00	Pass	
Check Overturning & Sliding Between Courses 1 & 2						
Overturning Moment		14.55kN	Overturning Resistance	56.3kN		
Factor of Safety		3.87	Allowable FoS	1.00	Pass	
Sliding Force		22.44kN	Sliding Resistance	66.59kN		
Factor of Safety		2.50	Allowable FoS	1.00	Pass	
Check Overturning & Sliding Between Courses 2 & 3						
Overturning Moment		2.49kN	Overturning Resistance	15.37kN		
Factor of Safety		6.18	Allowable FoS	1.00	Pass	
Sliding Force		7.43kN	Sliding Resistance	25.85kN		
Factor of Safety		3.16	Allowable FoS	1.00	Pass	
Check Overturning & Sliding Between Courses 3 & 4						
Overturning Moment			Overturning Resistance			
Factor of Safety			Allowable FoS	1.00		
Sliding Force			Sliding Resistance			
Factor of Safety			Allowable FoS	1.00		
Check Overturning & Sliding Between Courses 4 & 5						
Overturning Moment			Overturning Resistance			
Factor of Safety			Allowable FoS	1.00		
Sliding Force			Sliding Resistance			
Factor of Safety			Allowable FoS	1.00		
Check Overturning & Sliding Between Courses 5 & 6						
Overturning Moment			Overturning Resistance			
Factor of Safety			Allowable FoS	1.00		
Sliding Force			Sliding Resistance			
Factor of Safety			Allowable FoS	1.00		
Check Overturning & Sliding Between Courses 6 & 7						
Overturning Moment			Overturning Resistance			
Factor of Safety			Allowable FoS	1.00		
Sliding Force			Sliding Resistance			
Factor of Safety			Allowable FoS	1.00		
Check Overturning & Sliding Between Courses 7 & 8						
Overturning Moment			Overturning Resistance			
Factor of Safety			Allowable FoS	1.00		
Sliding Force			Sliding Resistance			
Factor of Safety			Allowable FoS	1.00		
Check Overturning & Sliding Between Courses 8 & 9						
Overturning Moment			Overturning Resistance			
Factor of Safety			Allowable FoS	1.00		
Sliding Force			Sliding Resistance			
Factor of Safety			Allowable FoS	1.00		



Results Sumamry

Eccentricity

Reaction within Middle Third of Base

Bearing Capacity FoS

1.11

Combintion 1	Overturning	Sliding
Whole Structure	2.91	2.37
Between Levels 1 & 2	3.60	2.78
Between Levels 2 & 3	6.00	3.66

Combintion 2	Overturning	Sliding
Whole Structure	3.18	2.16
Between Levels 1 & 2	3.87	2.50
Between Levels 2 & 3	6.18	3.16