

Gravity wall analysis

Dimensioning No. 1

Active pressure behind the structure - partial results

Layer No.	Thickness [m]	α [°]	ϕ_d [°]	c_d [kPa]	γ [kN/m ³]	δ_d [°]	K_a	Comment
1	0.54	0.00	15.00	5.00	20.50	15.00	0.643	
2	0.56	0.00	15.00	5.00	20.50	15.00	0.643	
3	0.40	0.00	15.00	5.00	10.50	15.00	0.643	
4	0.50	0.00	29.00	5.00	10.00	15.00	0.362	

Active pressure distribution behind the structure (without surcharge)

Layer No.	Start [m] End [m]	σ_z [kPa]	σ_w [kPa]	Pressure [kPa]	Hor. comp. [kPa]	Vert. comp. [kPa]
1	0.00	0.00	0.00	0.00	0.00	0.00
	0.54	10.97	0.00	0.00	0.00	0.00
2	0.54	10.97	0.00	0.00	0.00	0.00
	1.10	22.55	0.00	7.45	7.19	1.93
3	1.10	22.55	0.00	7.45	7.19	1.93
	1.50	26.75	4.00	10.15	9.80	2.63
4	1.50	26.75	4.00	4.13	3.99	1.07
	2.00	31.74	8.99	5.94	5.73	1.54

Water pressure distribution

Point No.	Depth [m]	Hor. comp. [kPa]	Vert. comp. [kPa]
1	0.00	0.00	0.00
2	0.54	0.00	0.00
3	1.10	0.00	0.00
4	1.50	4.00	0.00
5	2.00	8.99	0.00

Forces acting on construction - combination 1

Name	F_{hor} [kN/m]	App.Pt. Z [m]	F_{vert} [kN/m]	App.Pt. X [m]	Coeff. moment	Coeff. norm.force	Coeff. shear for.
Weight - wall	0.00	-0.90	32.17	0.54	1.000	1.350	1.000
Active pressure	7.86	-0.65	2.10	0.90	1.350	1.350	1.350
Water pressure	4.04	-0.30	0.00	0.90	1.300	1.000	1.300
Uplift pressure	0.00	-2.00	0.00	0.90	1.000	1.000	1.000

Active pressure behind the structure - partial results

Layer No.	Thickness [m]	α [°]	ϕ_d [°]	c_d [kPa]	γ [kN/m ³]	δ_d [°]	K_a	Comment
1	0.40	0.00	12.10	4.00	20.50	12.10	0.751	
2	0.70	0.00	12.10	4.00	20.50	12.10	0.751	
3	0.40	0.00	12.10	4.00	10.50	12.10	0.751	
4	0.50	0.00	23.91	4.00	10.00	12.37	0.452	

Active pressure distribution behind the structure (without surcharge)

Layer No.	Start [m] End [m]	σ_z [kPa]	σ_w [kPa]	Pressure [kPa]	Hor. comp. [kPa]	Vert. comp. [kPa]
1	0.00	0.00	0.00	0.00	0.00	0.00
	0.40	8.18	0.00	0.00	0.00	0.00

Layer No.	Start [m] End [m]	σ_z [kPa]	σ_w [kPa]	Pressure [kPa]	Hor. comp. [kPa]	Vert. comp. [kPa]
2	0.40	8.18	0.00	0.00	0.00	0.00
	1.10	22.55	0.00	10.79	10.55	2.26
3	1.10	22.55	0.00	10.79	10.55	2.26
	1.50	26.75	4.00	13.95	13.64	2.92
4	1.50	26.75	4.00	7.08	6.92	1.52
	2.00	31.74	8.99	9.34	9.12	2.00

Water pressure distribution

Point No.	Depth [m]	Hor. comp. [kPa]	Vert. comp. [kPa]
1	0.00	0.00	0.00
2	0.40	0.00	0.00
3	1.10	0.00	0.00
4	1.50	4.00	0.00
5	2.00	8.99	0.00

Forces acting on construction - combination 2

Name	F_{hor} [kN/m]	App.Pt. Z [m]	F_{vert} [kN/m]	App.Pt. X [m]	Coeff. moment	Coeff. norm.force	Coeff. shear for.
Weight - wall	0.00	-0.90	32.17	0.54	1.000	1.000	1.000
Active pressure	12.53	-0.68	2.71	0.90	1.000	1.000	1.000
Water pressure	4.04	-0.30	0.00	0.90	1.000	1.000	1.000
Uplift pressure	0.00	-2.00	0.00	0.90	1.000	1.000	1.000

Wall stem check

Cross-section depth $h = 0.90$ m

Shear : $V_{Ed} = 16.57$ kN/m < $V_{Rd} = 506.49$ kN/m

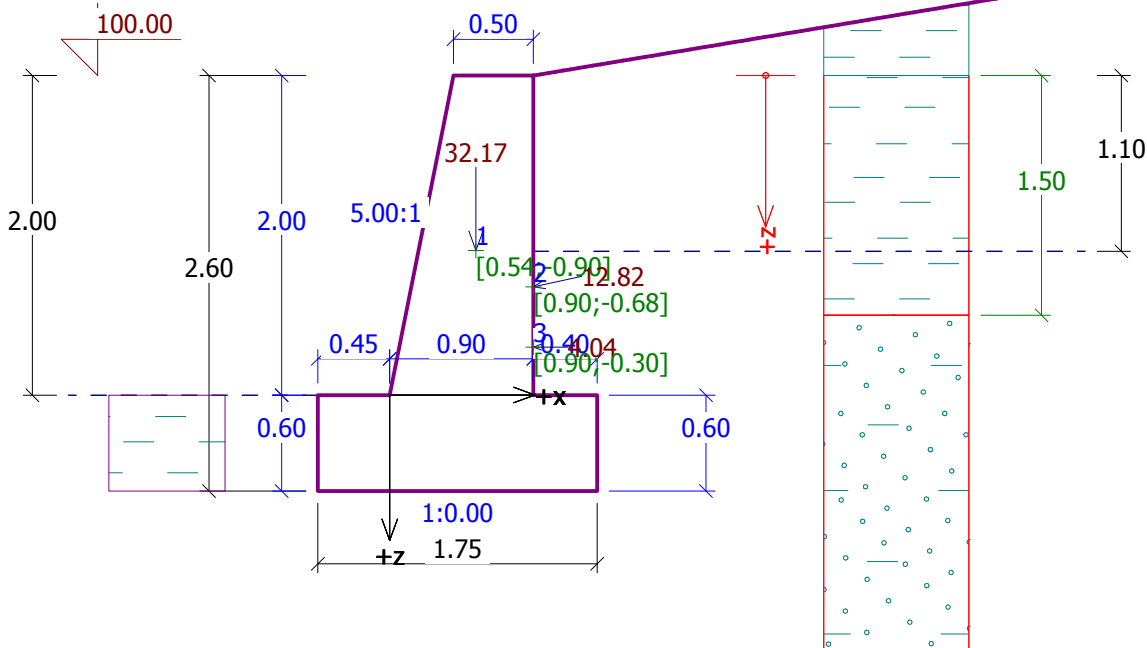
Pressure + Flexure : $M_{Ed} = 5.56$ kNm/m

$N_{Ed} = 34.88$ kN/m < $N_{Rd} = 6195.95$ kN/m

Wall bearing capacity at the joint is SATISFACTORY

Name : Méretezés

Stage : 1; Dimensioning : 1



Dimensioning No. 2

Active pressure behind the structure - partial results

Layer No.	Thickness [m]	α [°]	ϕ_d [°]	c_d [kPa]	γ [kN/m ³]	δ_d [°]	K_a	Comment
1	0.54	0.00	15.00	5.00	20.50	15.00	0.643	
2	0.46	0.00	15.00	5.00	20.50	15.00	0.643	

Active pressure distribution behind the structure (without surcharge)

Layer No.	Start [m]	End [m]	σ_z [kPa]	σ_w [kPa]	Pressure [kPa]	Hor. comp. [kPa]	Vert. comp. [kPa]
1	0.00	0.54	0.00	0.00	0.00	0.00	0.00
	0.54	1.00	10.97	0.00	0.00	0.00	0.00
2	0.54	1.00	10.97	0.00	0.00	0.00	0.00
	1.00	1.75	20.50	0.00	6.13	5.92	1.59

Water pressure distribution

Point No.	Depth [m]	Hor. comp. [kPa]	Vert. comp. [kPa]
1	0.00	0.00	0.00
2	0.54	0.00	0.00
3	1.00	0.00	0.00

Forces acting on construction - combination 1

Name	F_{hor} [kN/m]	App.Pt. Z [m]	F_{vert} [kN/m]	App.Pt. X [m]	Coeff. moment	Coeff. norm.force	Coeff. shear for.
Weight - wall	0.00	-0.47	13.80	0.40	1.000	1.350	1.000
Active pressure	1.38	-0.15	0.37	0.70	1.350	1.350	1.350
Water pressure	0.00	-1.00	0.00	0.70	1.000	1.000	1.000

Active pressure behind the structure - partial results

Layer No.	Thickness [m]	α [°]	ϕ_d [°]	c_d [kPa]	γ [kN/m ³]	δ_d [°]	K_a	Comment
1	0.40	0.00	12.10	4.00	20.50	12.10	0.751	
2	0.60	0.00	12.10	4.00	20.50	12.10	0.751	

Active pressure distribution behind the structure (without surcharge)

Layer No.	Start [m]	End [m]	σ_z [kPa]	σ_w [kPa]	Pressure [kPa]	Hor. comp. [kPa]	Vert. comp. [kPa]
1	0.00	0.40	0.00	0.00	0.00	0.00	0.00
	0.40	0.40	8.18	0.00	0.00	0.00	0.00
2	0.40	1.00	8.18	0.00	0.00	0.00	0.00
	1.00	1.00	20.50	0.00	9.25	9.05	1.94

Water pressure distribution

Point No.	Depth [m]	Hor. comp. [kPa]	Vert. comp. [kPa]
1	0.00	0.00	0.00
2	0.40	0.00	0.00
3	1.00	0.00	0.00

Forces acting on construction - combination 2

Name	F_{hor} [kN/m]	App.Pt. Z [m]	F_{vert} [kN/m]	App.Pt. X [m]	Coeff. moment	Coeff. norm.force	Coeff. shear for.
Weight - wall	0.00	-0.47	13.80	0.40	1.000	1.000	1.000
Active pressure	2.72	-0.20	0.58	0.70	1.000	1.000	1.000
Water pressure	0.00	-1.00	0.00	0.70	1.000	1.000	1.000

Wall check at the construction joint 1.00 m from the wall crest

Cross-section depth $h = 0.70$ m

Shear : $V_{Ed} = 2.72$ kN/m < $V_{Rd} = 389.87$ kN/m
 Pressure + Flexure : $M_{Ed} = -0.31$ kNm/m
 $N_{Ed} = 14.38$ kN/m < $N_{Rd} = 7004.87$ kN/m

Wall bearing capacity at the joint is SATISFACTORY

Dimensioning No. 3

Pressure at rest on front face of the structure - partial results

Layer No.	Thickness [m]	α [°]	ϕ_d [°]	c_d [kPa]	γ [kN/m ³]	K_r	Comment
1	0.60	0.00	15.00	5.00	10.50	0.429	

Pressure at rest distribution on front face of the structure

Layer No.	Start [m]	End [m]	σ_z [kPa]	σ_w [kPa]	Pressure [kPa]	Hor. comp. [kPa]	Vert. comp. [kPa]
1	0.00	0.60	0.00	0.00	0.00	0.00	0.00
	0.60	0.60	6.30	0.00	2.70	2.70	0.00

Active pressure behind the structure - partial results

Layer No.	Thickness [m]	α [°]	ϕ_d [°]	c_d [kPa]	γ [kN/m ³]	δ_d [°]	K_a	Comment
1	0.54	0.00	15.00	5.00	20.50	15.00	0.643	
2	0.56	0.00	15.00	5.00	20.50	15.00	0.643	

Layer No.	Thickness [m]	α [°]	ϕ_d [°]	c_d [kPa]	γ [kN/m ³]	δ_d [°]	K_a	Comment
3	0.01	0.00	15.00	5.00	10.50	15.00	0.643	
4	0.39	24.13	15.00	5.00	10.50	15.00	0.959	
5	0.50	24.13	29.00	5.00	10.00	29.00	0.708	
6	0.60	0.00	29.00	5.00	10.00	15.00	0.362	

Active pressure distribution behind the structure (without surcharge)

Layer No.	Start [m] End [m]	σ_z [kPa]	σ_w [kPa]	Pressure [kPa]	Hor. comp. [kPa]	Vert. comp. [kPa]
1	0.00	0.00	0.00	0.00	0.00	0.00
	0.54	10.97	0.00	0.00	0.00	0.00
2	0.54	10.97	0.00	0.00	0.00	0.00
	1.10	22.55	0.00	7.45	7.19	1.93
3	1.10	22.55	0.00	7.45	7.19	1.93
	1.11	22.62	0.07	7.49	7.24	1.94
4	1.11	22.62	0.07	15.68	12.17	9.90
	1.50	26.75	4.00	19.64	15.23	12.39
5	1.50	26.75	4.00	14.15	8.49	11.32
	2.00	31.75	9.00	17.69	10.61	14.15
6	2.00	31.75	9.00	5.94	5.74	1.54
	2.60	37.75	9.00	8.11	7.84	2.10

Water pressure distribution

Point No.	Depth [m]	Hor. comp. [kPa]	Vert. comp. [kPa]
1	0.00	0.00	0.00
2	0.54	0.00	0.00
3	1.10	0.00	0.00
4	1.11	0.07	0.00
5	1.50	4.00	0.00
6	2.00	9.00	0.00
7	2.60	9.00	0.00

Forces acting on construction - combination 1

Name	F_{hor} [kN/m]	App.Pt. Z [m]	F_{vert} [kN/m]	App.Pt. X [m]	Design coefficient
Weight - wall	0.00	-1.15	45.85	0.96	1.000
FF resistance	-0.81	-0.20	0.00	0.00	1.000
Weight - earth wedge	0.00	-0.90	1.80	1.48	1.000
Active pressure	16.31	-0.96	12.40	1.57	1.000
Water pressure	9.45	-0.56	0.00	1.35	1.000
Uplift pressure	0.00	-2.60	0.00	1.35	1.000

Pressure at rest on front face of the structure - partial results

Layer No.	Thickness [m]	α [°]	ϕ_d [°]	c_d [kPa]	γ [kN/m ³]	K_r	Comment
1	0.60	0.00	12.10	4.00	10.50	0.429	

Pressure at rest distribution on front face of the structure

Layer No.	Start [m] End [m]	σ_z [kPa]	σ_w [kPa]	Pressure [kPa]	Hor. comp. [kPa]	Vert. comp. [kPa]
1	0.00	0.00	0.00	0.00	0.00	0.00
	0.60	6.30	0.00	2.70	2.70	0.00

Active pressure behind the structure - partial results

Layer No.	Thickness [m]	α [°]	ϕ_d [°]	c_d [kPa]	γ [kN/m ³]	δ_d [°]	K_a	Comment
1	0.40	0.00	12.10	4.00	20.50	12.10	0.751	
2	0.70	0.00	12.10	4.00	20.50	12.10	0.751	
3	0.01	0.00	12.10	4.00	10.50	12.10	0.751	
4	0.39	24.13	12.10	4.00	10.50	12.10	1.064	
5	0.50	24.13	23.91	4.00	10.00	23.91	0.787	
6	0.60	0.00	23.91	4.00	10.00	12.37	0.452	

Active pressure distribution behind the structure (without surcharge)

Layer No.	Start [m] End [m]	σ_z [kPa]	σ_w [kPa]	Pressure [kPa]	Hor. comp. [kPa]	Vert. comp. [kPa]
1	0.00	0.00	0.00	0.00	0.00	0.00
	0.40	8.18	0.00	0.00	0.00	0.00
2	0.40	8.18	0.00	0.00	0.00	0.00
	1.10	22.55	0.00	10.79	10.55	2.26
3	1.10	22.55	0.00	10.79	10.55	2.26
	1.11	22.62	0.07	10.85	10.61	2.27
4	1.11	22.62	0.07	18.99	15.32	11.22
	1.50	26.75	4.00	23.38	18.86	13.82
5	1.50	26.75	4.00	16.91	11.30	12.57
	2.00	31.75	9.00	20.84	13.93	15.50
6	2.00	31.75	9.00	9.34	9.12	2.00
	2.60	37.75	9.00	12.05	11.77	2.58

Water pressure distribution

Point No.	Depth [m]	Hor. comp. [kPa]	Vert. comp. [kPa]
1	0.00	0.00	0.00
2	0.40	0.00	0.00
3	1.10	0.00	0.00
4	1.11	0.07	0.00
5	1.50	4.00	0.00
6	2.00	9.00	0.00
7	2.60	9.00	0.00

Forces acting on construction - combination 2

Name	F_{hor} [kN/m]	App.Pt. Z [m]	F_{vert} [kN/m]	App.Pt. X [m]	Design coefficient
Weight - wall	0.00	-1.15	45.85	0.96	1.000
FF resistance	-0.81	-0.20	0.00	0.00	1.000
Weight - earth wedge	0.00	-0.90	1.80	1.48	1.000
Active pressure	23.07	-0.97	14.12	1.57	1.000
Water pressure	9.45	-0.56	0.00	1.35	1.000
Uplift pressure	0.00	-2.60	0.00	1.35	1.000

Front wall jump check

Foundation thickness is greater than offset of the front wall jump. Reinforcement is not required.



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