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CADS Piled Wall Suite Version 5.31 Design of embedded retaining walls and cofferdams	Project 2023-2352 File Name dovehouse close 2.pws
PROPOSED NEW 6.5m CONTIGUOUS PILED RETAINING WALL LAND ADJ 11 DOVEHOUSE CLOSE M45 7PE - NEW PLATEAU	Engineer JPR Date 19/07/2023

Pile geometry

Pile top Level 0 m
 Pile Length 13 m
 Pile toe level -13 m
 Active ground slope 0 Degrees (To horizontal)

Soils and ground water initial data (Soils data given for active and passive sides)

Initial Ground Water level -20

Top Level m	Description	Bulk Dens kN/m3	Sat' Dens kN/m3	Young Mod kN/m2	Young Inc. kN/m3	Cu C' kN/m2	C Inc. kN/m3	Phi Deg	Wall Shear Ratio	Ka Kp	Kac Kpc
.00	SAND	16.00	19.00	24000	0			33 33	.50 .50	.26 5.16	

Construction sequence

Stage Ref	Stage Type	Level or Angle m/deg.	Load kN/(m)	Offset m	Width m	Length m
1	Active surcharge	0.00	10.0	.0		
2 A	Passive side excavation	-6.50				

Code of practice

Code of practice or reference document	CIRIA R104 Burland and Potts Permanent Works
Application of pressures for stability	FOS on available passive
FOS on moments (stability check)	2.00
ULS factor on Tan(Phi) values	1.00
ULS fFactor on drained cohesion values	1.00
ULS factor on undrained cohesion values	1.00
ULS factor on active soil pressures	1.00
ULS factor on passive soil pressures	1.00
ULS factor on active water pressures	1.00
ULS factor on passive water pressures	1.00
ULS factor on loads applied to the soil	1.00
ULS factor on loads applied to the wall	1.00
FOS on embedment (stability check)	1.00
Correction factor on cantilever embedment	1.20

Wall analysis detail options

Nominal Phi for load distribution	30.0 Degrees
Depth of water filled tension cracks	.0 m
Density of water	10.0 kN/m3
Minimum equivalent fluid density	5.0 kN/m3
Depth of passive softened soil	1.0 m
Continuity model for wall analysis	Pins at second and lower props

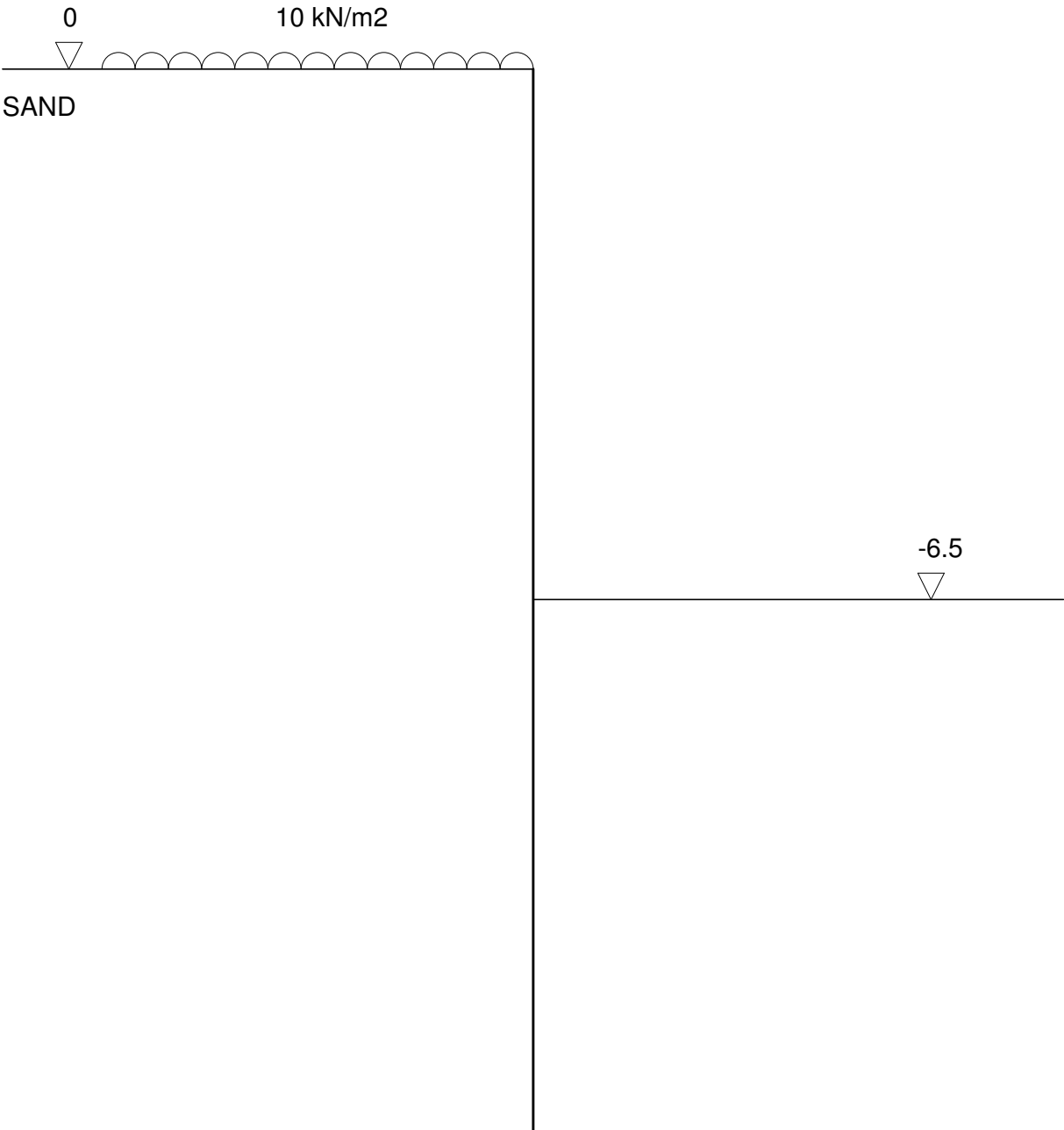
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Deflection parameters

Wall moment of inertia 55510 cm⁴/m
Wall Youngs modulus 210000000 kN/m²

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Stage ref. **2**
Stage type **Passive side excavation**

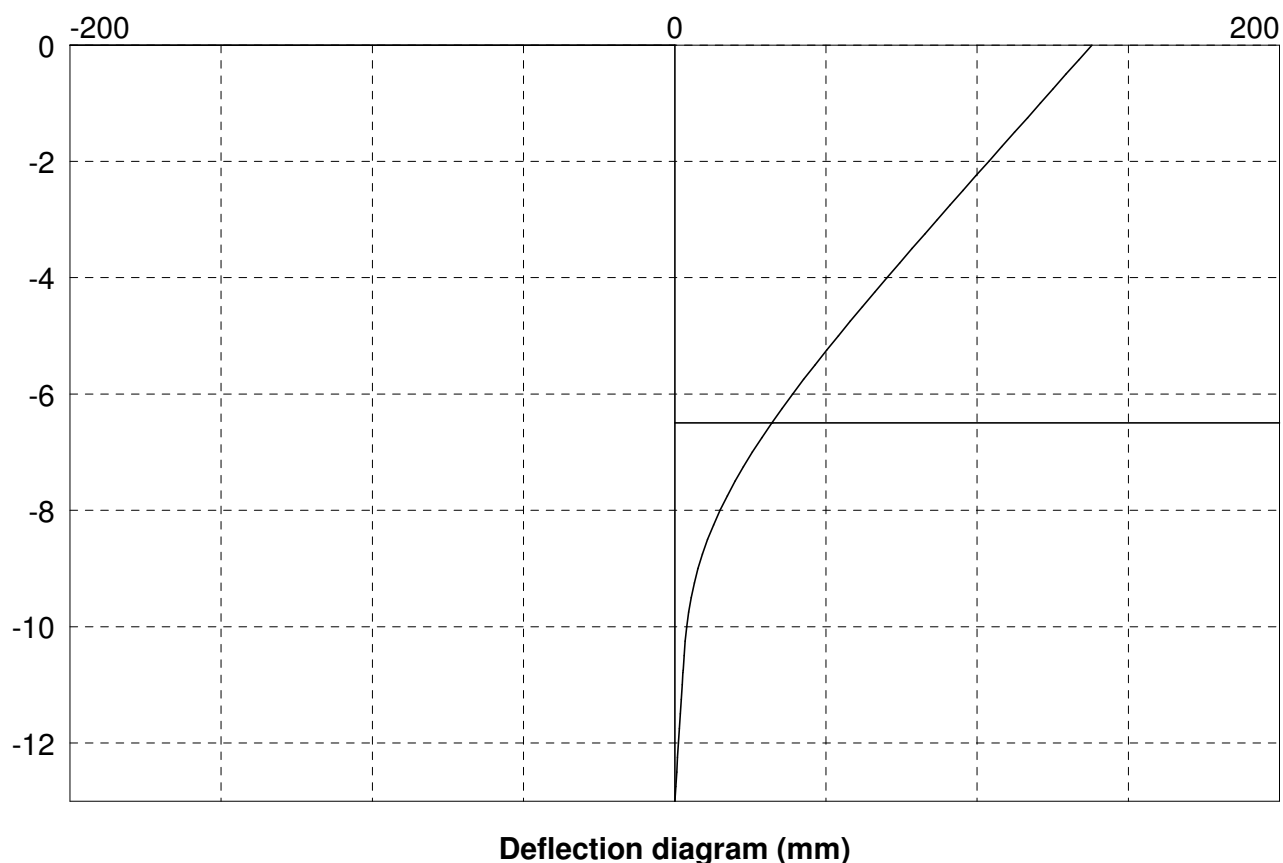
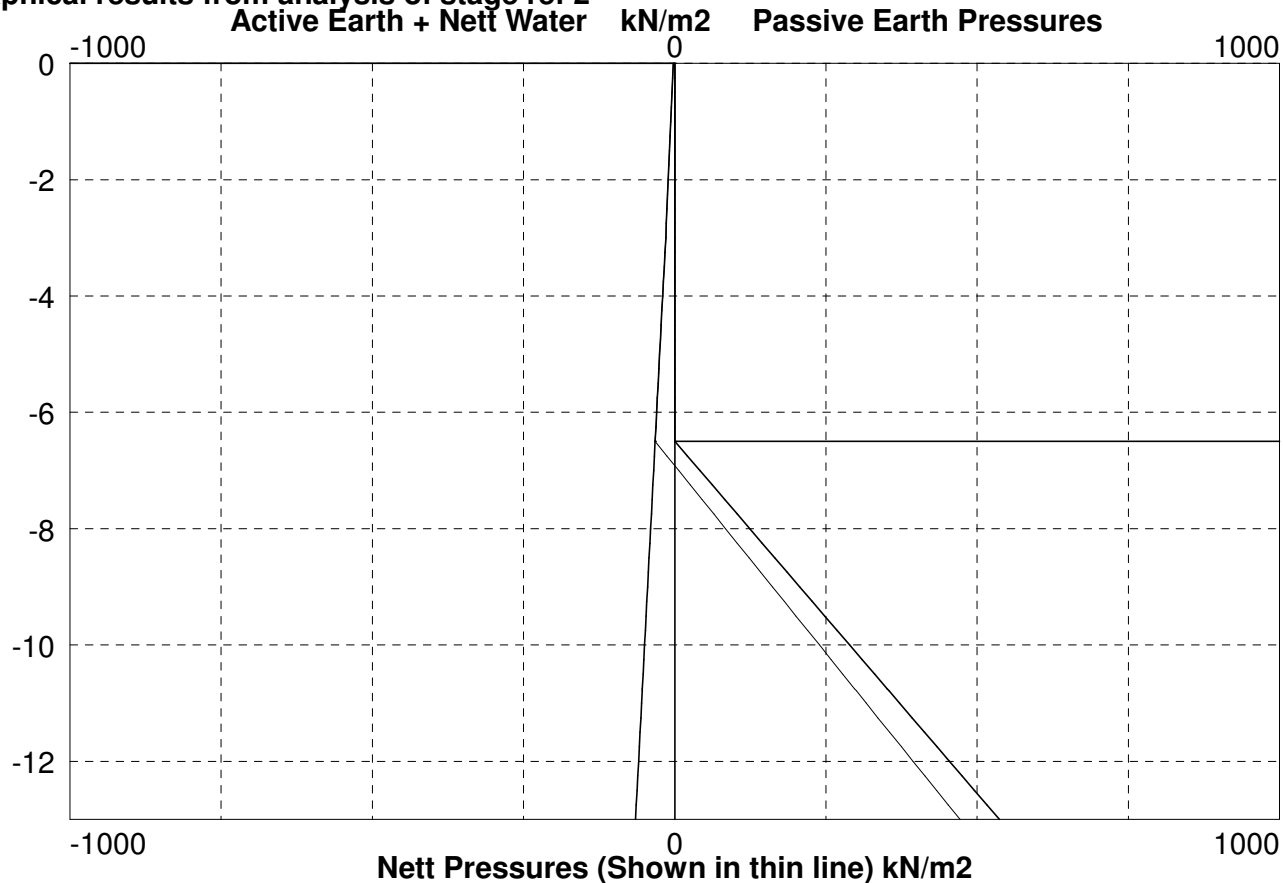


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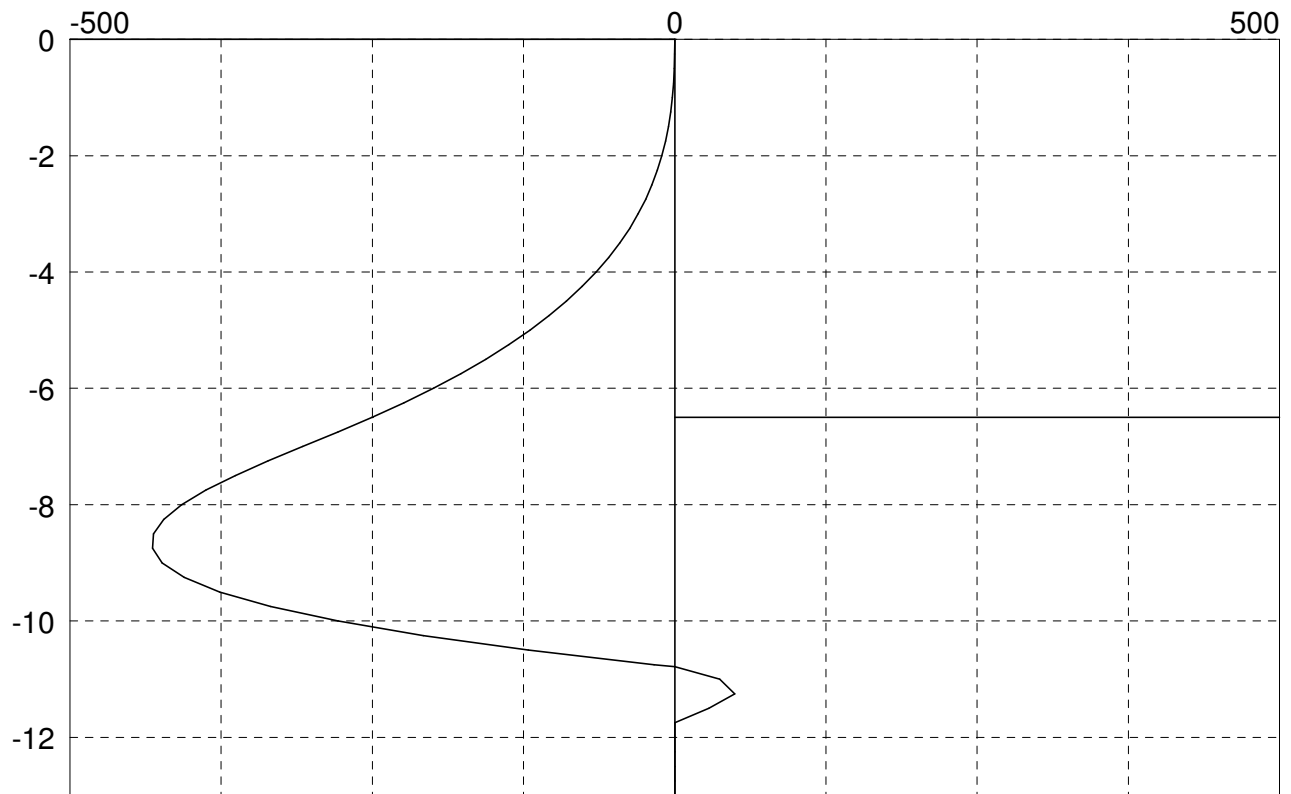
Tabular results from analysis of stage ref 2

Calc Level m	Active Vert kN/m2	Active Earth kN/m2	Active Water kN/m2	Pas' Vert kN/m2	Pas' Earth kN/m2	Pas' Water kN/m2	Total Nett kN/m2	Bend. Moment kNm/m	Shear Force kN/m	Defl't mm	Prop Force kN/m	FOS
.00	10.0	2.6	.0	.0	.0	.0	2.6	0	0	137.9		.00
-1.00	26.0	6.7	.0	.0	.0	.0	6.7	2.0	-4.7	120.9		.00
-2.00	42.0	10.9	.0	.0	.0	.0	10.9	10.7	-13.5	103.8		.00
-3.00	58.0	15.0	.0	.0	.0	.0	15.0	30.3	-26.4	86.9		.00
m -4.00	74.0	20.0	.0	.0	.0	.0	20.0	65.0	-43.9	70.2		.00
m -5.00	90.0	25.0	.0	.0	.0	.0	25.0	119.8	-66.4	54.1		.00
m -6.00	106.0	30.0	.0	.0	.0	.0	30.0	199.5	-93.9	39.0		.00
m -6.50	114.0	32.5	.0	.0	.0	.0	32.5	250.1	-109.5	32.1		.00
m -6.50	114.0	32.5	.0	.0	.0	.0	32.5	250.4	-109.5	32.1		.00
m -7.00	122.0	35.0	.0	8.0	41.3	.0	-6.3	307.6	-116.1	25.7		.00
m -8.00	138.0	40.0	.0	24.0	123.9	.0	-83.9	407.6	-71.0	15.0		.06
m -9.00	154.0	45.0	.0	40.0	206.4	.0	-161.4	423.8	51.6	7.7		.21
m -10.00	170.0	50.0	.0	56.0	289.0	.0	-239.0	278.5	251.8	4.0		.45
m -10.79	182.6	53.9	.0	68.6	354.0	.0	-300.1	0	464.2	2.7		.69
m -11.00	186.0	55.0	.0	72.0	371.6	.0	-316.6	-37.0	349.5	2.4		.77
m -12.00	202.0	60.0	.0	88.0	454.1	.0	-394.1	0	0	1.2		1.14
m -13.00	218.0	65.0	.0	104.0	536.7	.0	-471.7	0	0	0		1.56

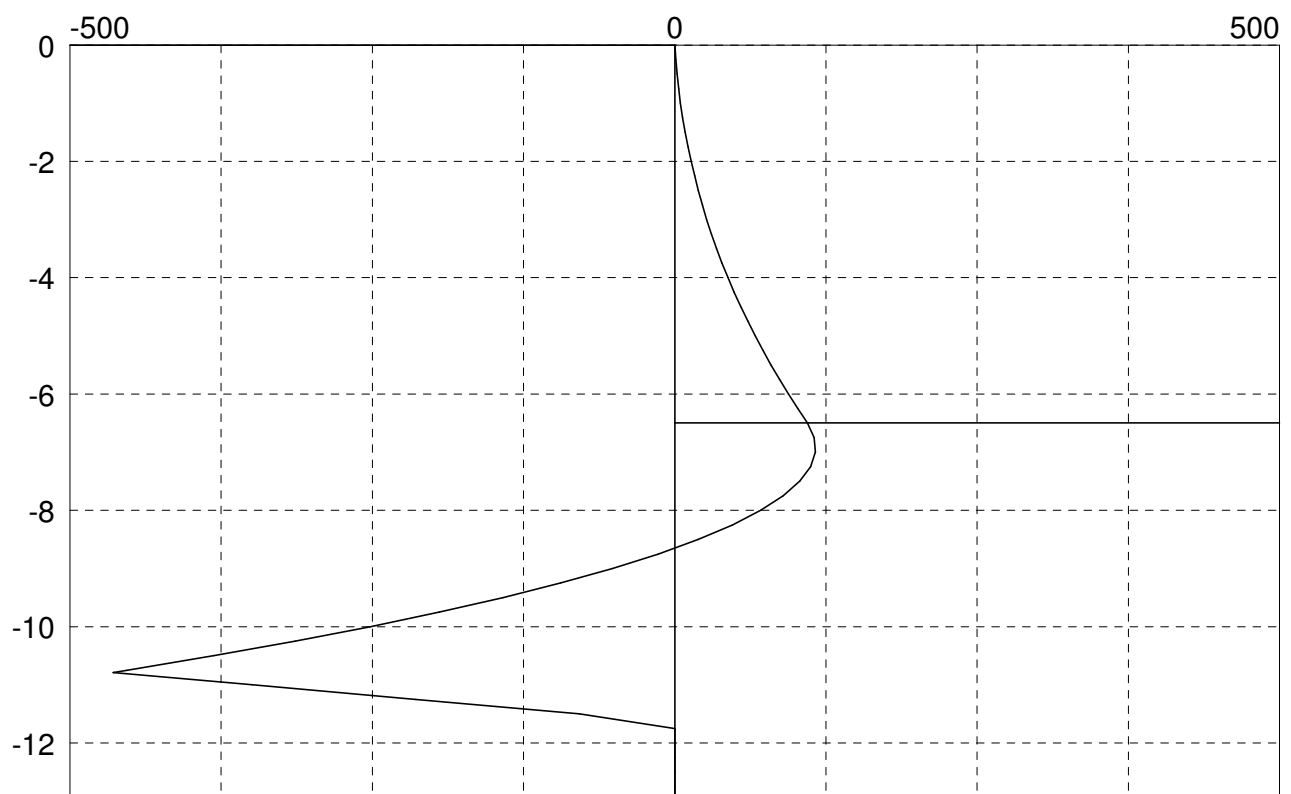
Graphical results from analysis of stage ref 2



Graphical results from analysis of stage ref 2 continued



Bending Moment Diagram (kNm/m)



Shear Force Diagram (kN/m)

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Structural design of wall

Wall section properties

Sheet pile section ref AZ26

Wall material properties

Yield stress of steel	355 N/mm2
Bending Stress Ratio	1.55
Allowable bending stress	229 N/mm2
Allowable shear stress	137 N/mm2

Wall structural design checks

Check description	Required or Limit	Provided or Actual	Units
Max. bending moment Design stress check	431	595	kNm/m
Min. section modulus Design stress check	1885	2600	cm3/m
Maximum shear force Design stress check	464	1132	kN/m