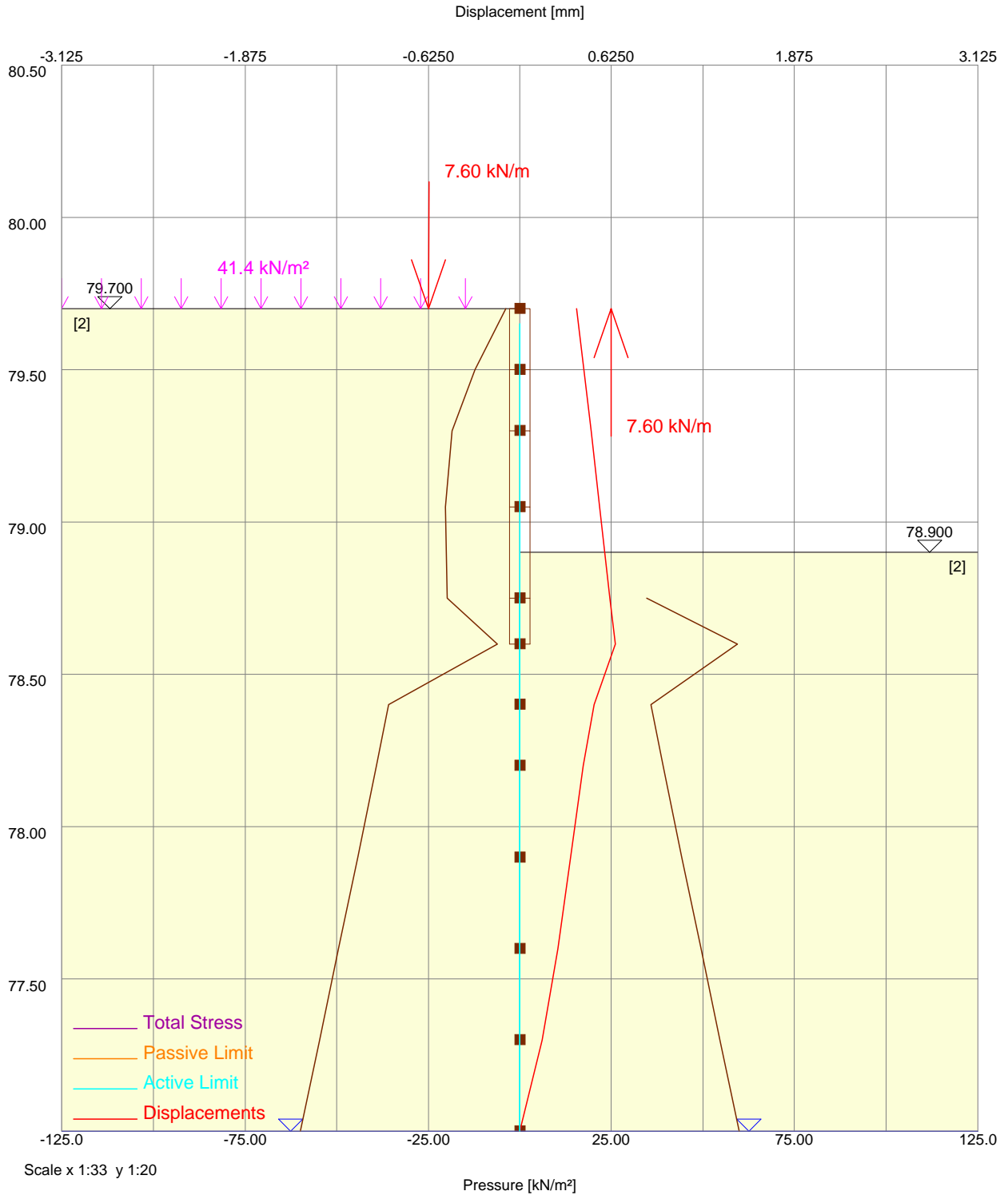


Job No.	Sheet No.	Rev.
Drg. Ref.		
Made by ALP	Date	Checked





Job No.	Sheet No.	Rev.
Drg. Ref.		
Made by	Date	Checked
ALP		

INITIAL DATA

Notes
File was called F1- verB.

Soil properties

No.	Description	Unit	Wt	K0	Ka	Kp	Kac	Kpc	Kr	Earth pressure coefficients.
		[kN/m ³]								Calculated
1	Made Ground	18.00	0.50	0.34	3.60	1.17	3.79	0.25		Calculated
2	Claygate - Undrained	20.00	1.00	1.00	1.00	2.45	2.45	1.00		Calculated
3	LC - Undrained	20.00	1.00	1.00	1.00	2.45	2.45	1.00		Calculated

No.	c0	y0	Gradient of c	E0	Gradient of E	Drained/Undrained
	[kN/m ²]	[m]	[kN/m ² /m]	[kN/m ²]	[kN/m ² /m]	
1	0.00	79.00	0.00	20000.	0.00	Drained
2	60.00	79.00	0.00	45000.	0.00	Undrained
3	100.00	74.00	0.00	75000.	0.00	Undrained

Parameters used to calculate Earth pressure coefficients

No.	Phi	Delta/Phi	Beta	Cw/C
	[°]	Ratio	[°]	Ratio
1	25.00	0.90	0.00	0.00
2	0.00	0.00	0.00	0.50
3	0.00	0.00	0.00	0.50

Surcharge properties

No.	Stage	Side	Level	Pressure	Partial Factor	Offset	Width	Ks
			[m]	[kN/m ²]		[m]	[m]	
1	0	-	Left	79.70	41.40	1.00	0.30	9.70

Strut properties

No.	Stage	Node	Level	Prestress	Stiffness	Angle	Lever arm
			[m]	[kN/m]	[kN/m/m]	[°]	[m]
1	2	-	1	0.00	7.60	0.00	90.00
2	2	-	1	0.00	7.60	0.00	-90.00

STAGE 0 : INITIAL CONDITION

Geometry

Node	Level	Soil	Boundary	EI below node
	[m]	Left	Right	[kNm ² /m]
1	79.70	2	2	10.00
2	79.50	2	2	10.00
3	79.30	2	2	10.00
4	79.05	2	2	10.00
5	78.75	2	2	10.00
* 6	78.60	2	2	10.00
7	78.40	2	2	10.00
8	78.20	2	2	10.00
9	77.90	2	2	10.00
10	77.60	2	2	10.00
11	77.30	2	2	10.00
12	77.00	2	2	10.00

* Wall toe level: 78.60

Water data on LEFT side

No.	Level	Pressure	Unit
	[m]	[kN/m ²]	[kN/m ³]
1	77.00	0.00	10.00

Water data on RIGHT side

No.	Level	Pressure	Unit
	[m]	[kN/m ²]	[kN/m ³]
1	77.00	0.00	10.00

Analysis details

SAFE model with redistribution
and with friction at wall/soil interface

	Left	Right
E profile Generated		
Boundary distances [m] :	10.00	10.00

Convergence control parameters

Maximum number of iterations : 900
Tolerance for displacement convergence [mm] : 0.01
Tolerance for pressure convergence [kN/m²] : 0.10
Damping coefficient : 1.00
Maximum incremental displacement [m] : 1.00

RESULTS FOR STAGE 0 : Initial condition

Surcharge or strut changes

Surcharge no. 1 applied at this stage

Calculation details

E Profiles assumed for calculation (generated):
On the LEFT: E at ground level = 45000. E at bottom node = 45000. kN/m²
On the RIGHT: E at ground level = 45000. E at bottom node = 45000. kN/m²

Iter	Inc	Node	Disp	Node	Press	Node
no.	max	no.	error.	no.	error	no.
	displ					
	[mm]		[mm]		[kN/m ²]	
1	0.0	1	0.8270	4	0.00	1
2	0.8	4	0.0000	4	0.00	1
3	0.8	4	0.0000	4	0.00	1

Ground level left = 79.70 Ground level right = 79.70

Node	Level	Disp	Stress			Pore Pressure			Soil	Vt	Stress			Pore Pressure			EM	SF
			Vt	Ve	Pt	Pe	Vt	Ve			Pt	Pe						
1	79.70	0.67	1.08	(1.08)	5.18	(5.18)	(0.00)	2	2	1.00	(1.00)	5.18	(5.18)	(0.00)	0.00	0.00		
2	79.50	0.75	7.3	(7.33)	17.30	(17.30)	(0.00)	2	2	4.00	(4.00)	17.30	(17.30)	(0.00)	0.00	0.00		
3	79.30	0.81	19.79	(19.79)	25.49	(25.49)	(0.00)	2	2	8.00	(8.00)	25.49	(25.49)	(0.00)	0.00	0.00		
4	79.05	0.83	32.97	(32.97)	31.31	(31.31)	(0.00)	2	2	13.00	(13.00)	31.31	(31.31)	(0.00)	0.00	0.00		
5	78.75	0.81	44.75	(44.75)	36.96	(36.96)	(0.00)	2	2	19.00	(19.00)	36.96	(36.96)	(0.00)	0.00	0.00		
6	78.60	0.79	49.67	(49.67)	39.66	(39.66)	(0.00)	2	2	22.00	(22.00)	39.66	(39.66)	(0.00)	0.00	0.00		
7	78.40	0.74	58.61	(58.61)	43.21	(43.21)	(0.00)	2	2	26.00	(26.00)	43.21	(43.21)	(0.00)	0.00	0.00		
8	78.20	0.69	61.07	(61.07)	46.74	(46.74)	(0.00)	2	2	30.00	(30.00)	46.74	(46.74)	(0.00)	0.00	0.00		
9	77.90	0.58	68.67	(68.67)	52.02	(52.02)	(0.00)	2	2	36.00	(36.00)	52.02	(52.02)	(0.00)	0.00	0.00		
10	77.60	0.45	75.82	(75.82)	57.30	(57.30)	(0.00)	2	2	42.00	(42.00)	57.30	(57.30)	(0.00)	0.00	0.00		
11	77.30	0.27	82.65	(82.65)	62.59	(62.59)	(0.00)	2	2	48.00	(48.00)	62.59	(62.59)	(0.00)	0.00	0.00		
12	77.00	0.00	89.27	(89.27)	67.90	(67.90)	(0.00)	2	2	54.00	(54.00)	67.90	(67.90)	(0.00)	0.00	0.00		

NOTE: Displacements from STAGE 0 are disregarded in later stages

Vt, Ve : vertical total and effective stress
Pt, Pe : horizontal total and effective stress

Surcharge 1 present in this stage



Job No.	Sheet No.	Rev.
Drg. Ref.		
Made by	Date	Checked
ALP		

Node	Level	Disp	Stress			Soil	Stress			Pore	EM	SF
			Vt	Ve	Pt		Vt	Ve	Pt			
[m]	[mm]	[kN/m ²]	[kN/m ²]	[kN/m ²]	[kN/m ²]	Left	Right	[kN/m ²]	[kN/m ²]	[kN/m ²]	[kNm/m]	[kN/m]

STAGE 1 : W-I-P UNDERPIN

Geometry

Node Level	Soil	Boundary	EI below node	
[m]	Left	Right	Left	Right
1 79.70	2	2	10.00	10.00
2 79.50	2	2	10.00	10.00
3 79.30	2	2	10.00	10.00
4 79.05	2	2	10.00	10.00
5 78.75	2	2	10.00	10.00
* 6 78.60	2	2	10.00	10.00
7 78.40	2	2	10.00	10.00
8 78.20	2	2	10.00	10.00
9 77.90	2	2	10.00	10.00
10 77.60	2	2	10.00	10.00
11 77.30	2	2	10.00	10.00
12 77.00	2	2	10.00	10.00

* Wall toe level: 78.60

RESULTS FOR STAGE 1 : W-I-P Underpin

Calculation details

E Profiles assumed for calculation (generated):
 On the LEFT: E at ground level = 45000. E at bottom node = 45000. kN/m²
 On the RIGHT: E at ground level = 45000. E at bottom node = 45000. kN/m²

Iter	Inc	Node	Disp	Node	Press	Node
no.	max	no.	error.	no.	error	no.
displ						
			[mm]	[kN/m ²]		
1	0.0	1	0.0000	6	0.00	1
2	0.0	6	0.0000	6	0.00	1
3	0.0	6	0.0000	6	0.00	1

Ground level left = 79.70 Ground level right = 79.70

Node	Level	Disp	Stress			Soil	Stress			Pore	EM	SF	
			Vt	Ve	Pt		Vt	Ve	Pt				
[m]	[mm]	[kN/m ²]	[kN/m ²]	[kN/m ²]	[kN/m ²]	Left	Right	[kN/m ²]	[kN/m ²]	[kN/m ²]	[kNm/m]	[kN/m]	
1	79.70	0.00	1.08	(1.08)	5.18	(5.18)	(0.00)	1.00	(1.00)	5.18	(5.18)	(0.00)	0.00
2	79.50	0.00	7.33	(7.33)	17.30	(17.30)	(0.00)	4.00	(4.00)	17.30	(17.30)	(0.00)	0.00
3	79.30	0.00	19.79	(19.79)	25.49	(25.49)	(0.00)	8.00	(8.00)	25.49	(25.49)	(0.00)	0.00
4	79.05	0.00	32.97	(32.97)	31.31	(31.31)	(0.00)	13.00	(13.00)	31.31	(31.31)	(0.00)	0.00
5	78.75	0.00	44.75	(44.75)	36.96	(36.96)	(0.00)	19.00	(19.00)	36.96	(36.96)	(0.00)	0.00
* 6	78.60	0.00	49.67	(49.67)	39.66	(39.66)	(0.00)	22.00	(22.00)	39.66	(39.66)	(0.00)	0.00
7	78.40	0.00	55.61	(55.61)	43.21	(43.21)	(0.00)	26.00	(26.00)	43.21	(43.21)	(0.00)	0.00
8	78.20	0.00	61.07	(61.07)	46.74	(46.74)	(0.00)	30.00	(30.00)	46.74	(46.74)	(0.00)	0.00
9	77.90	0.00	68.67	(68.67)	52.02	(52.02)	(0.00)	36.00	(36.00)	52.02	(52.02)	(0.00)	0.00
10	77.60	0.00	75.82	(75.82)	57.30	(57.30)	(0.00)	42.00	(42.00)	57.30	(57.30)	(0.00)	0.00
11	77.30	0.00	82.65	(82.65)	62.59	(62.59)	(0.00)	48.00	(48.00)	62.59	(62.59)	(0.00)	0.00
12	77.00	0.00	89.27	(89.27)	67.90	(67.90)	(0.00)	54.00	(54.00)	67.90	(67.90)	(0.00)	0.00

Vt, Ve : vertical total and effective stress
 Pt, Pe : horizontal total and effective stress

* Wall toe level: 78.60

Note: for undrained materials with user-defined pore pressures, the total stresses are correct, but the pore pressures are the nominal values given by the user. For these cases, tabulated pore pressures and effective stresses are usually unrealistic, and are shown in brackets.

WARNING - Residual moment > 1% of peak moment in wall

EXTREME values so far

Displacements [mm]	Moments [kNm/m]	Shears [kN/m]
Min	Max	Min
0.00	0.00	0.00
0.00	0.00	0.00

Surcharge 1 present in this stage

STAGE 2 : EXCAVATE TO FL

Geometry

Node Level	Soil	Boundary	EI below node	
[m]	Left	Right	Left	Right
1 79.70	2	0	10.00	10.00
2 79.50	2	0	10.00	10.00
3 79.30	2	0	10.00	10.00
4 79.05	2	0	10.00	10.00
5 78.75	2	2	10.00	10.00
* 6 78.60	2	2	10.00	10.00
7 78.40	2	2	10.00	10.00
8 78.20	2	2	10.00	10.00
9 77.90	2	2	10.00	10.00
10 77.60	2	2	10.00	10.00
11 77.30	2	2	10.00	10.00
12 77.00	2	2	10.00	10.00

* Wall toe level: 78.60

Analysis details

SAFE model with redistribution
 and with friction at wall/soil interface

	Left	Right
E profile Generated		
Boundary distances [m] :	10.00	10.00
Wall relaxation	0%	

Minimum equivalent fluid pressure parameters

Material	Left		Right	
	a	b	a	b
[kN/m ² /m]	[m]	[kN/m ²]	[kN/m ² /m]	[m]
Made	0.00	0.00	0.00	0.00
Ground				
Claygate	5.00	79.70	0.00	0.00
Undrained				
LC	0.00	0.00	0.00	0.00
Undrained				

RESULTS FOR STAGE 2 : Excavate to FL

Surcharge or strut changes

Strut no 1 inserted at this stage
 Strut no 2 inserted at this stage

Calculation details

E Profiles assumed for calculation (generated):
 On the LEFT: E at ground level = 45000. E at bottom node = 45000. kN/m²
 On the RIGHT: E at ground level = 45000. E at bottom node = 45000. kN/m²
 Minimum equivalent fluid pressure used in this stage.

Iter	Inc	Node	Disp	Node	Press	Node
no.	max	no.	error.	no.	error	no.
displ						
			[mm]	[kN/m ²]		
1	0.0	1	0.6523	6	0.00	1
2	0.7	6	0.0000	6	0.00	1
3	0.7	6	0.0000	6	0.00	1



Job No.	Sheet No.	Rev.
Drg. Ref.		
Made by	Date	Checked
ALP		

Iter Inc Node Disp Node Press Node
no. max no. error. no. error no.
displ
[mm] [mm] [kN/m²]

Ground level left = 79.70 Ground level right = 78.90

Node	Level	Disp [mm]	Stress			Pore			Soil			Stress			Pore			EM	SF
			Vt	Ve	Pt	Pe	Pressure	Left	Right	Vt	Ve	Pt	Pe	Pressure					
1	79.70	0.39	1.08	(1.08)	3.87	(3.87)	(0.00)												
2	79.50	0.44	7.33	(7.33)	12.29	(12.29)	(0.00)	2	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.52	1.62	
3	79.30	0.49	19.79	(19.79)	18.61	(18.61)	(0.00)	2	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.95	4.94	
4	79.05	0.55	32.97	(32.97)	20.43	(20.43)	(0.00)	2	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.20	9.84	
5	78.75	0.62	44.75	(44.75)	19.92	(19.92)	(0.00)	2	2	3.00	(3.00)	34.69	(34.69)	(0.00)	(0.00)	(0.00)	1.40	10.99	
*6	78.60	0.65	49.67	(49.67)	6.15	(6.15)	(0.00)	2	2	6.00	(6.00)	59.46	(59.46)	(0.00)	(0.00)	(0.00)	0.00	0.00	
7	78.40	0.51	55.61	(55.61)	35.93	(35.93)	(0.00)	2	2	10.00	(10.00)	35.93	(35.93)	(0.00)	(0.00)	(0.00)	0.00	0.00	
8	78.20	0.44	61.07	(61.07)	39.19	(39.19)	(0.00)	2	2	14.00	(14.00)	39.19	(39.19)	(0.00)	(0.00)	(0.00)	0.00	0.00	
9	77.90	0.35	68.67	(68.67)	44.34	(44.34)	(0.00)	2	2	20.00	(20.00)	44.34	(44.34)	(0.00)	(0.00)	(0.00)	0.00	0.00	
10	77.60	0.26	75.82	(75.82)	49.52	(49.52)	(0.00)	2	2	26.00	(26.00)	49.52	(49.52)	(0.00)	(0.00)	(0.00)	0.00	0.00	
11	77.30	0.15	82.65	(82.65)	54.67	(54.67)	(0.00)	2	2	32.00	(32.00)	54.67	(54.67)	(0.00)	(0.00)	(0.00)	0.00	0.00	
12	77.00	0.00	89.27	(89.27)	59.90	(59.90)	(0.00)	2	2	38.00	(38.00)	59.90	(59.90)	(0.00)	(0.00)	(0.00)	0.00	0.00	

Vt, Ve : vertical total and effective stress
Pt, Pe : horizontal total and effective stress

* Wall toe level: 78.60

Note: for undrained materials with user-defined pore pressures, the total stresses are correct, but the pore pressures are the nominal values given by the user. For these cases, tabulated pore pressures and effective stresses are usually unrealistic, and are shown in brackets.

EXTREME values so far

Displacements [mm]		Moments [kNm/m]		Shears [kN/m]	
Min	Max	Min	Max	Min	Max
0.00	0.65	0.00	7.60	0.00	10.99

Surcharge 1 present in this stage

STRUT FORCES

No.	Node no.	Strut force	Horiz force	Moment	Max strut force
		[kN/m]	[kN/m]	[kNm/m]	[kN/m]
1	1	7.60	0.00	-7.60	7.60
2	1	7.60	0.00	-7.60	7.60

Results Envelope

Node	Level	Displacements [mm]		Moments [kNm/m]		Shears [kN/m]	
		Min	Max	Min	Max	Min	Max
1	79.70	0.00	0.39	0.00	7.60	0.00	0.00
2	79.50	0.00	0.44	0.00	7.52	0.00	1.62
3	79.30	0.00	0.49	0.00	6.95	0.00	4.94
4	79.05	0.00	0.55	0.00	5.20	0.00	9.84
5	78.75	0.00	0.62	0.00	1.40	0.00	10.99
6	78.60	0.00	0.65	0.00	0.00	0.00	0.00
7	78.40	0.00	0.51	0.00	0.00	0.00	0.00
8	78.20	0.00	0.44	0.00	0.00	0.00	0.00
9	77.90	0.00	0.35	0.00	0.00	0.00	0.00
10	77.60	0.00	0.26	0.00	0.00	0.00	0.00
11	77.30	0.00	0.15	0.00	0.00	0.00	0.00
12	77.00	0.00	0.00	0.00	0.00	0.00	0.00