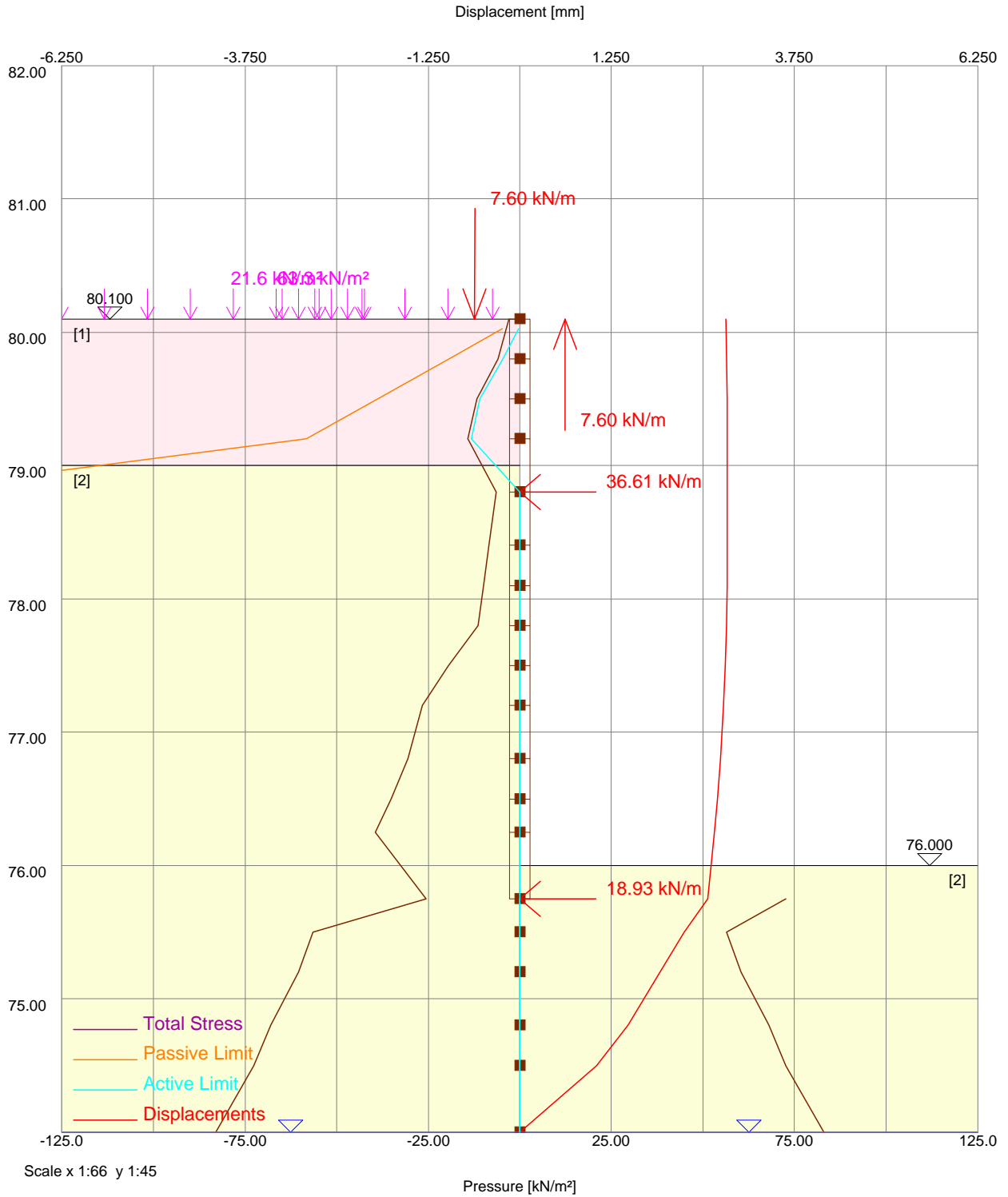


Job No.	Sheet No.	Rev.
Drg. Ref.		
Made by ALP	Date	Checked



STAGE 6 : Excavate to FL at +76

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

### INITIAL DATA

**Notes**  
Adaptation of original with adjacent #6 wall surcharge. #6 wall surcharge assumed from: 8m high wall; 0.22m thick brick; allow 9.5 kN/m each for floor and roof. File was called F2-ver C.

**Soil properties**

No.	Description	Unit	Wt	K0	Ka	Kp	Kac	Kpc	Kr	Earth pressure coefficients.
1	Made Ground		18.00	0.50	0.34	3.60	1.17	3.79	0.25	Calculated
2	Claygate - Un drained		20.00	1.00	1.00	1.00	2.45	2.45	1.00	Calculated
3	LC - Un drained		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	Undrained
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
1	25.00	0.90	0.00	0.00	0.50
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	
1	0	-	Left	80.10	21.60	1.00	0.30	9.70	1.00
2	0	-	Left	80.10	63.30	1.00	1.70	0.90	0.25

### Strut properties

No.	Stage	Node	Level	Prestress	Stiffness	Angle	Lever arm	
1	3	-	5	0.00	0.00	30000.00	0.00	0.00
2	5	-	14	0.00	0.00	30000.00	0.00	0.00
3	2	-	1	0.00	7.60	0.00	90.00	-0.50
4	2	-	1	0.00	7.60	0.00	-90.00	0.50

### STAGE 0 : INITIAL CONDITION

#### Geometry

Node	Level	Soil	Boundary	EI below node
1	80.10	1	1	10.00 10.00 291600.
2	79.80	1	1	10.00 10.00 291600.
3	79.50	1	1	10.00 10.00 291600.
4	79.20	1	1	10.00 10.00 291600.
5	78.80	2	2	10.00 10.00 291600.
6	78.40	2	2	10.00 10.00 291600.
7	78.10	2	2	10.00 10.00 291600.
8	77.80	2	2	10.00 10.00 291600.
9	77.50	2	2	10.00 10.00 291600.
10	77.20	2	2	10.00 10.00 291600.
11	76.80	2	2	10.00 10.00 291600.
12	76.50	2	2	10.00 10.00 291600.
13	76.25	2	2	10.00 10.00 291600.
* 14	75.75	2	2	10.00 10.00 0.0
15	75.50	2	2	10.00 10.00 0.0
16	75.20	2	2	10.00 10.00 0.0
17	74.80	2	2	10.00 10.00 0.0
18	74.50	2	2	10.00 10.00 0.0
19	74.00	2	2	10.00 10.00 0.0

\* Wall toe level: 75.75

#### Water data on LEFT side

No.	Level	Pressure	Unit
1	74.00	0.00	10.00

#### Water data on RIGHT side

No.	Level	Pressure	Unit
1	74.00	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/m<sup>2</sup>] : 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  
 Surcharge no. 2 applied at this stage

#### Calculation details

E Profiles assumed for calculation (generated):  
 On the LEFT: E at ground level = 24577. E at bottom node = 61285. kN/m<sup>2</sup>  
 On the RIGHT: E at ground level = 24577. E at bottom node = 61285. kN/m<sup>2</sup>  
 Iter no. max no. error. no. error no.  
 displ [mm] [mm] [kN/m<sup>2</sup>]  
 1 0.0 1 1.1742 3 2.53 1  
 2 1.2 3 0.0000 3 0.00 1  
 3 1.2 3 0.0261 1 7.72 2  
 4 1.2 3 0.0039 1 1.04 1  
 5 1.2 3 0.0000 1 0.00 1

Ground level left = 80.10 Ground level right = 80.10

Node	Level	Disp	Stress			Pore Pressure			Soil	Left	Right	Stress			Pore Pressure			BM	SF
			Vt	Ve	Pt	Pe	Pt	Pe				Pt	Pe						
1	80.10	1.05	1.48	1.48	4.03	4.03	0.00	1	1	1.35	1.35	4.03	4.03	0.00	0.00	0.00	0.00		
2	79.80	1.15	9.43	9.43	11.72	11.72	0.00	1	1	5.40	5.40	11.72	11.72	0.00	0.00	0.00	0.00		
3	79.50	1.17	21.24	21.24	15.98	15.98	0.00	1	1	10.80	10.80	15.98	15.98	0.00	0.00	0.00	0.00		
4	79.20	1.11	31.23	31.23	18.82	18.82	0.00	1	1	16.20	16.20	18.82	18.82	0.00	0.00	0.00	0.00		
5	78.80	0.95	43.55	(43.55)	34.15	(34.15)	(0.00)	2	2	23.80	(23.80)	34.15	(34.15)	(0.00)	0.00	0.00	0.00		
6	78.40	0.84	55.22	(55.22)	41.53	(41.53)	(0.00)	2	2	31.80	(31.80)	41.53	(41.53)	(0.00)	0.00	0.00	0.00		
7	78.10	0.79	63.34	(63.34)	47.02	(47.02)	(0.00)	2	2	37.80	(37.80)	47.02	(47.02)	(0.00)	0.00	0.00	0.00		
8	77.80	0.74	70.95	(70.95)	52.50	(52.50)	(0.00)	2	2	43.80	(43.80)	52.50	(52.50)	(0.00)	0.00	0.00	0.00		
9	77.50	0.70	78.11	(78.11)	58.00	(58.00)	(0.00)	2	2	49.80	(49.80)	58.00	(58.00)	(0.00)	0.00	0.00	0.00		





<b>Job No.</b>	<b>Sheet No.</b>	<b>Rev.</b>
<b>Drg. Ref.</b>		
<b>Made by ALP</b>	<b>Date</b>	<b>Checked</b>

Node Level Soil Boundary EI below node  
[m] Left Right Left Right [kNm2/m]

\* Wall toe level: 75.75

**Analysis details**

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

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

**Minimum equivalent fluid pressure parameters**

Material	Left		Right	
	a	yo	b	yo
	[kN/m <sup>2</sup> /m]	[m]	[kN/m <sup>2</sup> ]	[m]
Made	0.00	0.00	0.00	0.00
Ground				
Claygate	5.00	80.10	0.00	0.00
Undrained				
LC - Undrained	0.00	0.00	0.00	0.00

**RESULTS FOR STAGE 2 : Excavate to 2nd prop at +78.8**

**Surcharge or strut changes**

Strut no 3 inserted at this stage  
Strut no 4 inserted at this stage

**Calculation details**

E Profiles assumed for calculation (generated):  
On the LEFT: E at ground level = 24577. E at bottom node = 61285. kN/m<sup>2</sup>  
On the RIGHT: E at ground level = 45000. E at bottom node = 45000. kN/m<sup>2</sup>  
Minimum equivalent fluid pressure used in this stage.

Iter no.	Inc no.	Node no.	Disp [mm]	Node no.	Press [kN/m <sup>2</sup> ]	Node no.
1	0.0	1	1.7204	1	0.00	1
2	1.7	1	0.0646	1	11.97	1
3	1.8	1	0.0522	1	6.93	2
4	1.8	1	0.0400	1	4.78	3
5	1.9	1	0.0303	1	3.14	4
10	2.0	1	0.0024	1	0.35	4
12	2.0	1	0.0003	1	0.07	3

Ground level left = 80.10 Ground level right = 78.60

Node	Level [m]	Disp [mm]	Vt [kN/m <sup>2</sup> ]	Stress [kN/m <sup>2</sup> ]		Pore Pressure [kN/m <sup>2</sup> ]		Soil	Left	Right	Stress [kN/m <sup>2</sup> ]		Pore Pressure [kN/m <sup>2</sup> ]		BM [kNm/m]	SF [kN/m]	
				Ve	Pt	Ve	Pt				Pe	Pe					
1	80.10	1.96	1.48	1.48	0.46	0.46	0.00	a	1	0	0.00	0.00	0.00	0.00	0.00	0.00	
2	79.80	1.88	9.43	9.43	4.72	4.72	0.00	A	1	0	0.00	0.00	0.00	0.00	7.58	0.78	
3	79.50	1.80	21.24	21.24	11.03	11.03	0.00	A	1	0	0.00	0.00	0.00	0.00	7.13	3.14	
4	79.20	1.72	31.23	31.23	13.26	13.26	0.00	a	1	0	0.00	0.00	0.00	0.00	5.70	7.11	
5	78.80	1.62	43.55	43.55	7.09	7.09	0.00		2	0	0.00	0.00	0.00	0.00	1.92	10.85	
6	78.40	1.50	55.22	55.22	19.46	19.46	0.00		2	2	4.00	4.00	42.22	42.22	0.00	-2.98	8.28
7	78.10	1.42	63.34	63.34	28.00	28.00	0.00		2	2	10.00	10.00	40.26	40.26	0.00	-4.27	2.46
8	77.80	1.34	70.95	70.95	35.61	35.61	0.00		2	2	16.00	16.00	42.90	42.90	0.00	-4.46	-0.47
9	77.50	1.26	78.11	78.11	42.69	42.69	0.00		2	2	22.00	22.00	46.26	46.26	0.00	-3.99	-2.10
10	77.20	1.18	84.91	84.91	49.33	49.33	0.00		2	2	28.00	28.00	50.23	50.23	0.00	-3.20	-2.79
11	76.80	1.08	93.53	93.53	56.89	56.89	0.00		2	2	36.00	36.00	56.93	56.93	0.00	-2.02	-2.96
12	76.50	1.01	99.74	99.74	63.31	63.31	0.00		2	2	42.00	42.00	61.38	61.38	0.00	-1.13	-2.70
13	76.25	0.94	104.80	104.80	68.92	68.92	0.00		2	2	47.00	47.00	65.22	65.22	0.00	-0.52	-1.74
*14	75.75	0.82	114.68	114.68	77.74	77.74	0.00		2	2	57.00	57.00	74.95	74.95	0.00	0.00	0.00
15	75.50	0.76	119.53	119.53	81.06	81.06	0.00		2	2	62.00	62.00	81.06	81.06	0.00	0.00	0.00
16	75.20	0.67	125.30	125.30	86.61	86.61	0.00		2	2	68.00	68.00	86.61	86.61	0.00	0.00	0.00
17	74.80	0.52	132.92	132.92	94.36	94.36	0.00		2	2	76.00	76.00	94.36	94.36	0.00	0.00	0.00
18	74.50	0.37	138.60	138.60	99.85	99.85	0.00		2	2	82.00	82.00	99.85	99.85	0.00	0.00	0.00
19	74.00	0.00	148.03	148.03	109.67	109.67	0.00		2	2	92.00	92.00	109.67	109.67	0.00	0.00	0.00

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

\* Wall toe level: 75.75

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	1.96	-4.46	7.60	-2.96	10.85

Surcharge 1 present in this stage  
Surcharge 2 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]
3	1	7.60	0.00	-7.60	7.60
4	1	7.60	0.00	-7.60	7.60

**STAGE 3 : PROP AT +78.8**

**Analysis details**

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

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

**RESULTS FOR STAGE 3 : Prop at +78.8**

**Surcharge or strut changes**

Strut no 1 inserted at this stage

**Calculation details**

E Profiles assumed for calculation (generated):  
On the LEFT: E at ground level = 24577. E at bottom node = 61285. kN/m<sup>2</sup>  
On the RIGHT: E at ground level = 45000. E at bottom node = 45000. kN/m<sup>2</sup>

Iter no.	Inc no.	Node no.	Disp [mm]	Node no.	Press [kN/m <sup>2</sup> ]	Node no.
1	0.0	1	0.0000	1	0.00	1
2	0.0	1	0.0000	1	0.00	1
3	0.0	1	0.0000	1	0.00	1

Ground level left = 80.10 Ground level right = 78.60

Node	Level	Disp	Vt	Stress		Pore		Soil	Vt	Ve	Pt	Pore		BM	SF
				Ve	Pt	Pe	Pe								





8 Pilgrims Lane
6 PL Rear - SLS
Rear Deep Underpins

Drg. Ref.

Made by ALP

Date

Checked

Table with columns: Node, Level, Disp, Vt, Stress, Pt, Pe, Pore Pressure, Soil, Stress, Pt, Pore Pressure, BM, SF. Contains numerical data for nodes 11-19.

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

\* Wall toe level: 75.75

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

Table with columns: Displacements [mm], Moments [kNm/m], Shears [kN/m]. Shows min and max values.

STRUT FORCES

Table with columns: No., Node, Strut no., Horiz force, Moment, Max strut force. Shows data for nodes 1, 3, 4.

STAGE 5 : SEQUENCE INSTALLATION OF STRUCT BLINDING

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%

RESULTS FOR STAGE 5 : Sequence Installation of Struct Blinding

Surcharge or strut changes

Strut no 2 inserted at this stage

Calculation details

E Profiles assumed for calculation (generated):
On the LEFT: E at ground level = 24577. E at bottom node = 61285. kN/m^2
On the RIGHT: E at ground level = 45000. E at bottom node = 45000. kN/m^2

Table with columns: Iter, Inc Node, Disp Node, Press Node, no., error, no., error, no., displ [mm]. Shows iteration data for nodes 1, 2, 3.

Ground level left = 80.10 Ground level right = 77.00

Large table with columns: Node, Level, Disp, Vt, Stress, Pt, Pe, Pore Pressure, Soil, Stress, Pt, Pore Pressure, BM, SF. Contains numerical data for nodes 1-19.

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

\* Wall toe level: 75.75

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

Table with columns: Displacements [mm], Moments [kNm/m], Shears [kN/m]. Shows min and max values.

STRUT FORCES

Table with columns: No., Node, Strut no., Horiz force, Moment, Max strut force. Shows data for nodes 1, 2, 3, 4.

STAGE 6 : EXCAVATE TO FL AT +76

Geometry

Table with columns: Node, Level, Soil, Boundary, EI below node. Shows geometry data for nodes 1-4.



Table with Job No., Sheet No., Rev., Drg. Ref., Made by ALP, Date, and Checked.

Table with columns: Node Level, Soil, Boundary, EI below node. Rows 5-19.

\* Wall toe level: 75.75

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

Table with columns: Material, Left, Right. Rows for Made, Ground, Claygate, Undrained, LC.

RESULTS FOR STAGE 6 : Excavate to FL at +76

Calculation details
E Profiles assumed for calculation (generated):
On the LEFT: E at ground level = 24577. E at bottom node = 61285. kN/m^2

Minimum equivalent fluid pressure used in this stage.

Table with columns: Iter, Inc, Node, Disp, Node, Press, Node. Rows 1-9.

Ground level left = 80.10 Ground level right = 76.00

Large table with columns: Node, Level, Disp, Stress (Vt, Ve, Pt, Pe), Soil, Pore Pressure (Vt, Ve, Pt, Pe), BM, SF. Rows 1-19.

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

\* Wall toe level: 75.75

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.

Table with columns: Displacements [mm], Moments [kNm/m], Shears [kN/m]. Rows for Min, Max, and Surcharge.

Table with columns: No., Node, Strut force, Horiz force, Moment, Max strut force. Rows 1-4.

Table with columns: Node Level, Displacements [mm], Moments [kNm/m], Shears [kN/m]. Rows 1-19.