asys

GEOTECHNICAL AND ENVIRONMENTALASSOCIATES LTD

Job No. Sheet No. J22076 Drg. Ref.

Made by GC Date Checked

Rev.



32-34 Avenue Road Phase 3 - Total Movement Drained conditions

	Job No.	Sł	neet No.	Rev.
Oasys	J22076			
32-34 Avenue Road	Drg. Ref.			
Installation and Excavation Movements	Made by	Date	Checked	Date
	GC	19-Apr-2022		
Titles				
Job No.: J2076 Job Title: 32-34 Avenue Road Sub-title: Installation and Excavation Movements Calculation Heading: Building Damage Assessment				
Initials: 00 Checker: Date Saved: 19-Apr-2022 Date Checked:				
Notes: File Name: J22076 - Combined.xdd File Path: G:\PROJECTS\2022\J22076 - 32-34 Avenue Road, NW8 6EU\GMA				
History				
Date Time By Notes 11-Apr2022 16:20 george New 11-Apr-2022 17:16 george Seorge 12-Apr-2022 11:47 george Seorge 12-Apr-2022 16:14 george Seorge 12-Apr-2022 17:13 george Seorge 13-Apr-2022 17:13 george Seorge 19-Apr-2022 10:01 george Seorge				
Displacement Lines				
Ref. Name x1 y1 z1 x2 y2 z2 Intervals Surface Interpolate Calculate type imported for displacements tunnels				
[m] [m] [m] [m] [m] [No.] 1 No 36 Wall A -12.40000 0.40000 -27.1000 -1.20000 38.40000 7 Surface Yes Yes				
No 36 Wall B -27.10000 38.40000 27.90000 38.40000 28.40000 2 Surface Yes Yes 4 No 36 Wall D -26.30000 6.00000 38.40000 9 Surface Yes Yes 5 No 36 Wall E -27.30000 15.20000 38.40000 2 Surface Yes Yes 6 No 36 Wall E -28.50000 25.0000 38.40000 2 Surface Yes Yes 7 No 36 Wall F -28.6000 25.0000 38.40000 7 Surface Yes Yes 8 No 36 Wall F -28.6000 25.0000 38.40000 7 Surface Yes Yes 9 No 36 Wall T -14.7000 24.50000 38.40000 7 Surface Yes Yes 10 No 36 Wall J -12.0000 38.40000 -13.9000 6.50000 38.40000 -28.5000 38.40000 -28.5000 Surface Yes Yes 11 No 36 Wall L -18.9000 6.30000 38.40000 <t< th=""><th></th><th></th><th></th><th></th></t<>				
Displacement Grids				
Ref. Name Extrusion: Base line Base line Base Base Base Base Ease Extrusion: Extrusion: Surface Calculate Direction start: X start: end: line				
1 Grid 1 Global X -30.00000 -30.00000 41.00000 - 60.00000 41.00000 40 80.00000 40 Surface Yes				
Polygonal Excavations				
Ref. 1 Excavation Name: Installation Surface level [m]: 41.000 Contribution: Positive Surface movement curves which are splied between surface and [m]: 31.000				
Corner x y Base Arc Stiffened Prev. Prev. Next Next Next Level Enabled Side: Side: Side: Side: Side: Side:				
Program XDisp Version 20.1.23.1 Copyright © Oasys 1997-2021 G:\PRQJECTS\2022\J22076 - 32-34 Avenue Road. NW8 6BU\GMA\J22076 - Combined.xdd		Prin	ted 19-Apr-2022	Page Time 10:04

Oasys		She	et No.	Rev.
		;		
32-34 Avenue Road	Drg. Ref.			
Installation and Excavation Movements Input Data	Made by GC	Date 19-Apr-2022	Checked	Date
is is <td< th=""><th></th><th></th><th></th><th></th></td<>				
stiffness wall in stiff clay (CIRIA C760 Fig. 6.15(b)) (CIRIA C760 Fig. 6.15(a)) Circular Excavations				
Vertical Ground Movement Curves				
Curve Name: Inst. of contiguous bored pile wall in stiff clay (CIRIA C760 Fig. 6.8(b)) Coordinates: [Distance from wall / wall depth or max, excavation depth (x), Depth / wall depth or max. excavation depth (y), Settlement / wall depth or max. excavation depth (z) (%)] [0.000, 0.000, 0.040] [2.000, 0.000]				
Curve Fitting Method:Polynomialx Order:1y Order:0Polynomial:z =-2.0E-2x + 4.0E-2Coeff. of Determination:1.0				
Curve Name: Exc. in front of high stiffness wall in stiff clay (CIRIA C760 Fig. 6.15(b)) Coordinates: [Distance from wall / wall depth or max. excavation depth (x), Depth / wall depth or max. excavation depth (y), Settlement / wall depth or max. excavation depth (z)(%)]				
[0.000,0.000,0.039][0.100,0.000,0.049][0.200,0.000,0.056][0.300,0.000,0.062] [0.400,0.000,0.057][0.500,0.000,0.070][0.600,0.072][0.700,0.000,0.073] [0.800,0.000,0.073][0.900,0.000,0.072][1.000,0.000](0.070][1.100,0.000,0.066] [1.200,0.000,0.055][1.300,0.000,0.071][1.400,0.000,0.058][1.500,0.000,0.054] [1.600,0.000,0.050][1.700,0.000,0.046][1.800,0.000,0.042][1.900,0.000,0.038]				
Program XDisp Version 20.1.23.1 Copyright © Oasys 1997-2021				Page 2

		Job No.	Sheet	No.	Rev.						
Oasy	2S	J22076									
32-34 Avenue Roa	d	Drg. Ref.									
Installation and Ex	cavation Movements	Made by GC	Date 19-Apr-2022	Checked	Date						
Side x1 y1 [m] [m]	x2 y2 G.M. Curve: Vertical G.M. Curve: Horizontal [m] [m]										
	[2.000,0.000,0.034] [2.100,0.000,0.030] [2.200,0.000,0.027] [2.300,0.000,0.023] [2.400,0.000,0.020] [2.500,0.000,0.017] [2.600,0.000,0.014] [2.700,0.000,0.012] [2.800,0.000,0.004] [3.300,0.000,0.004] [3.400,0.007] [3.100,0.000,0.005] [3.200,0.000,0.004] [3.300,0.000,0.004] [3.400,0.000,0.007] [3.500,0.000,0.002] [3.600,0.000,0.004] [3.700,0.000,0.002] [3.800,0.000,0.001] [3.900,0.000,0.001]										
Curve Fitting Method: x Order:	Polynomial 4										
y Order: Polynomial: z = Coeff. of Determination:	0 -2.6455E-3x ⁴ + 2.8495E-2x ³ - 1.0051E-1x ² + 1.0569E-1x + 3.8990E-2 9.9991E-1										
Horizontal Ground Movemen	l Curves										
Curve Name: Coordinates:	<pre>Inst. of contiguous bored pile wall in stiff clay (CTRIA C760 Fig. 6.8(a)) [Distance from wall / wall depth or max. excavation depth (x), Depth / wall depth or max. excavation depth (y), Horizontal movement / wall depth or max. excavation depth (z)(%)] [0.2000, 0.000, 0.401] [0.550, 0.000, 0.038] [0.100, 0.000, 0.036] [0.150, 0.000, 0.034] [0.2000, 0.000, 0.401] [0.550, 0.000, 0.038] [0.100, 0.000, 0.029] [0.350, 0.000, 0.034] [0.400, 0.000, 0.025] [0.450, 0.000, 0.038] [0.100, 0.000, 0.021] [0.500, 0.000, 0.025] [0.550, 0.000, 0.038] [0.700, 0.000, 0.101] [0.500, 0.000, 0.014] [0.550, 0.000, 0.038] [0.700, 0.000, 0.021] [1.200, 0.000, 0.014] [0.550, 0.000, 0.004] [1.350, 0.000, 0.016] [1.200, 0.000, 0.005] [1.550, 0.000, 0.004] [1.350, 0.000, 0.003] [1.400, 0.000, 0.005] [1.550, 0.000, 0.004] [1.350, 0.000, 0.003] [1.400, 0.000, 0.005] [1.550, 0.000, 0.004] [1.350, 0.000, 0.003] [1.400, 0.000, 0.005] [1.550, 0.000, 0.004] [1.350, 0.000, 0.003] [1.200, 0.000, 0.005] [1.550, 0.000, 0.004] [1.350, 0.000, 0.003] [1.400, 0.000, 0.005] [1.550, 0.000, 0.004] [1.350, 0.000, 0.003] [1.400, 0.000, 0.005] [1.550, 0.000, 0.004] [1.350, 0.000, 0.003] [1.400, 0.000, 0.005] [1.550, 0.000, 0.004] [1.350, 0.000, 0.003] [1.400, 0.000, 0.005] [1.550, 0.000, 0.004] [1.350, 0.000, 0.003] [1.400, 0.000, 0.005] [1.550, 0.000, 0.004] [1.350, 0.000, 0.003] [1.400, 0.000, 0.005] [1.550, 0.000, 0.004] [1.350, 0.000, 0.003] [1.400, 0.000, 0.005] [1.550, 0.000, 0.004] [1.350, 0.000, 0.003] [1.400, 0.000, 0.005] [1.550, 0.000, 0.004] [1.350, 0.000, 0.003] [1.400, 0.000, 0.005] [1.550, 0.000, 0.004] [1.350, 0.000, 0.003] [1.400, 0.000, 0.005] [1.550, 0.000, 0.005] [1.500, 0.000, 0.005] [1.500, 0.000, 0.005] [1.550, 0.000, 0.005] [1.500, 0.000, 0.005] [1.500, 0.000, 0.005] [1.550, 0.000, 0.005] [1.500, 0.000, 0.005] [1.500, 0.000, 0.005] [1.550, 0.000, 0.005] [1.500, 0.000, 0.005] [1.500, 0.000, 0.005] [1.550, 0.000, 0.005] [1.500, 0.000, 0.005] [1.500, 0.000, 0.005] [1.550, 0.000, 0.005] [1.500, 0.000, 0.005] [1.500, 0.000, 0.005] [1.5</pre>										
x Order: y Order:	10170000000 30000 0000000000000000000000										
Polynomial: z = Coeff. of Determination:	-4.2486E-3x" + 1.9096E-2x" - 4.6221E-2x + 4.0729E-2 1.0000										
Curve Name: Coordinates:	<pre>Exc. in front of high stiffness wall in stiff clay (CIRIA C760 Fig. 6.15(a)) (Distance from wall / wall depth or max. excavation depth (x), Depth / wall depth or max. excavation depth (y), Horizontal movement / wall depth or max. excavation depth (z)(%) (0.000.0.000,0.0150)(4.000.0.000)</pre>										
Curve Fitting Method: x Order: y Order: Polynomial: z = Coeff. of Determination:	[0.000,0.000,0.150][4.000,0.000] Curve Fitting Method: Polynomial x Order: 0 Polynomial: z = -3.75E-2x + 1.50E-1 Coeff. 0										
Damage Category Strains											
Ref. Name	0 (Negligible) 1 (Very Slight) 2 (Slight) 3 (Moderate) to to to to to										
1 Burland Strain Limit	1 (Very Slight) 2 (Slight) 3 (Moderate) 4 (Severe) 3 0.0 500.00E-6 750.00E-6 0.0015000										
Specific Buildings - Geometr	/										
Ref. Building Name Sub-Bu Na	lding Displacement Distance Distance Vertical Vertical Damage Category Poisson's E/G me Line Along Along Offsets from Displacement Strains Ratio Line: Line: Line for Start End Vertical Limit Monement Scaritivity										
	Calculations [m] [m] [m] [mm]										
1 No 36 Wall A No 36 2 No 36 Wall B No 36 3 No 36 Wall C No 36 4 No 36 Wall D No 36 5 No 36 Wall D No 36 6 No 36 Wall F No 36 7 No 36 Wall F No 36 9 No 36 Wall M No 36 9 No 36 Wall I No 36 11 No 36 Wall J No 36 11 No 36 Wall J No 36 12 No 36 Wall I No 36 13 1 RP Wall B 1 RP W 14 1 RP Wall B 1 RP W 15 1 RP Wall C 1 RP W 16 No 30 Wall A No 30 17 No 30 Wall B No 30 18 No 30 Wall B No 30	all A No 36 Wall B 0.00000 14.78600 0.0 0.10000 Burland Strain Limits 0.20000 2.6000 lall D No 36 Wall C 0.00000 1.60300 0.0 0.10000 Burland Strain Limits 0.20000 2.6000 lall D No 36 Wall C 0.00000 1.60300 0.0 0.10000 Burland Strain Limits 0.20000 2.6000 lall D No 36 Wall E 0.00000 1.50300 0.0 0.10000 Burland Strain Limits 0.20000 2.6000 lall F No 36 Wall E 0.00000 1.50300 0.0 0.10000 Burland Strain Limits 0.20000 2.6000 lall F No 36 Wall E 0.00000 1.4000 0.0 0.10000 Burland Strain Limits 0.20000 2.6000 lall G No 36 Wall G 0.00000 1.4000 0.0 0.10000 Burland Strain Limits 0.20000 2.6000 lall H No 36 Wall G 0.00000 1.4000 0.0 0.10000 Burland Strain Limits 0.20000 2.6000 lall K No 36 Wall G 0.00000 0.0 0.0000 UBurland Strain Limits 0.20000 2.6000 lall K No 36 Wall K 0.00000 0.0 0.100000 Burland Strain Limits 0.20000 2.6000										
20 No 30 Wall E No 30 21 No 30 Wall F No 30 21 No 30 Wall F No 30	All E No 30 Wall E 0.00000 10.00000 0.0 0.10000 burland Strain Limits 0.20000 2.6000 Iall E No 30 Wall F 0.00000 5.50000 0.0 0.10000 burland Strain Limits 0.20000 2.6000				Pago						

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23-24 Anome Read Implementation and Excention Movements Implementation And Excention And	<i>Oasys</i>		· · · · · · · · · · · · · · · · · · ·	J22076	
nput Dat Note Note Note Note Note Note Note Note	אי <mark>32-34 Avenue Road</mark> nstallation and Excavation Moי	lovements	Dr	rg. Ref.	Observation
International Bars Bars <th>Input Data</th> <th></th> <th>Mac GC</th> <th>Date Date 19-Apr-2022</th> <th>Спескеа</th>	Input Data		Mac GC	Date Date 19-Apr-2022	Спескеа
Specific Building - Bunding Plane plane building Building Plane Plan	Ref. Building Name Sub-Building Displacemen Name Line	mment Distance Distance Vertical Vertical Damage Category Along Along Offsets from Displacement Strains Line: Line: Line for Start End Vertical Limit	Poisson's E/G Ratio		
initiality Name	Specific Buildings - Bending Parameters				
Interpretend I	Ref. Building Name Sub-Building Height Defa Name)efault Hogging: Hogging: Bogging: Sagging: Sagging: Sagging:			
IND S5 Hall A C C C C C C 3 05 Kall 0 05 0	[7]	2nd Mom. Dist. of Dist. of 2nd Mom. Dist. of Dist. of of Area Bending N.A. from of Area Bending N.A. from (per unit Strain Edge of (per unit Strain Edge of width) from N.A. Beam in width) from N.A. Beam in Tension [m ²] [m] [m] [m ²] [m] [m]			
2 0.5 8 M.1 B 9.000 4.000 6.750 4.000 4.5000 4 0.5 8 M.1 B 0.000 5.000 6.750 4.000 4.5000 5 0.5 M.1 B 5 0.5 W.1 B 5 0.000 6.750 4.000 4.5000 5 0.5 M.1 B 5 0.000 Ves 243.00 9.0000 60.750 4.000 4.5000 6 5 M.1 B 5 M.1 B 5.0000 Ves 243.00 9.0000 60.750 4.5000 7 No 5 M.1 B 5.0000 Ves 243.00 9.0000 60.750 4.5000 7 No 5 M.1 No 5 M.1 No 5 M.1 No 7 4.5000 4.5000 4.5000 4.5000 4.5000 4.5000 4.5000 4.5000 4.5000 4.5000 4.5000 4.5000 4.5000 4.5000 4.5000 4.5000	1 No 36 Wall A No 36 Wall A 9.0000 Ye	Yes 243.00 9.0000 9.0000 60.750 4.5000 4.5000			
	3 No 36 Wall C No 36 Wall C 9.0000 Ye 4 No 36 Wall D No 36 Wall D 9.0000 Ye 5 No 36 Wall E No 36 Wall E 9.0000 Ye 6 No 36 Wall F No 36 Wall E 9.0000 Ye 7 No 36 Wall G No 36 Wall G 9.0000 Ye 9 No 36 Wall H No 36 Wall H 9.0000 Ye 9 No 36 Wall H No 36 Wall H 9.0000 Ye 10 No 36 Wall H No 36 Wall H 9.0000 Ye 11 No 36 Wall H No 36 Wall I 9.0000 Ye 12 No 70 Wall A No 36 Wall H 9.0000 Ye 13 No 70 Wall A No 36 Wall H 9.0000 Ye 14 I RP Wall B 1 RP Wall A 10.000 Ye 15 I RP Wall B 1 RP Wall B 10.000 Ye 16 No 30 Wall A No 30 Wall B 13.000 Ye 17 No 30 Wall C No 30 Wall A 13.000 Ye 18 No 30 Wall C No 30 Wall C 10.000 Ye 19 No 30 Wall C No 30 Wall C 10.000 Ye 20 No 30 Wall F No 30 Wall F 13.000 Ye 21 No 30 Wall F No 30 Wall F 13.000 Ye	Yes 243.00 9.0000 9.0000 60.750 4.5000 4.5000 Yes 233.13 10.000 10.000 83.33 5.0000 5.0000 Yes 333.33 10.000 10.000 83.333 5.0000 5.0000 Yes 333.33 10.000 10.000 83.333 5.0000 5.0000			









Oasvs	Job No.	Shee	t No.	Rev.	
32-34 Avenue Road	Drg. Ref.				
Building Damage Assessment	Made by GC	Date 19-Apr-2022	Checked	Date	
Specific Building Damage Results - Detail					

Ref.	-	Building: Ref.	Building: Name	Name	from Line for Vertical Movement Calculations	-		-	Ratio	Horizontal Strain	Tensile Strain	of Horizontal Displacement Curve	of Vertical Displacement Curve	Radius of Curvature	
					[m]		[m]	[m]	[%]	[%]	[%]			[m]	
0	Base Model	1	No 36 Wall A	No 36 Wall A	0.0	1	0.0	8.4496 None	0.0055218	0.042562	0.049068	-547.78E-6	540.50E-6	14994. 0	(Negligible)
		2	No 36 Wall B	No 36 Wall B	0.0 Al	ll vertical	displacemen	ts are less t	han the limit s	ensitivity.					
		3	No 36 Wall C	No 36 Wall C	0.0 Al	ll vertical	displacemen	ts are less t	han the limit s	ensitivity.					
		4	No 36 Wall D	No 36 Wall D	0.0 Al	ll vertical	displacemen	ts are less t	han the limit s	ensitivity.					
		5	No 36 Wall E	No 36 Wall E	0.0 Al	ll vertical	displacemen	ts are less t	han the limit s	ensitivity.					
		6	No 36 Wall F	No 36 Wall F	0.0 Al	ll vertical	displacemen	ts are less t	han the limit s	ensitivity.					
		7	No 36 Wall G	No 36 Wall G	0.0	1	8.5632	6.4218 None	0.0051724	0.020719	0.025741	-249.86E-6	-310.80E-6	18719. 0	(Negligible)
		8	No 36 Wall H	No 36 Wall H	0.0	1	0.0	7.7410 None	0.0022634	-0.0081564	0.0019881	132.59E-6	-218.61E-6	28574. 0	(Negligible)
		9	No 36 Wall I	No 36 Wall I	0.0	1	0.0	6.1400 None	0.0034287	0.040194	0.043409	-544.18E-6	502.15E-6	21337. 0	(Negligible)
		10	No 36 Wall J	No 36 Wall J	0.0	1	0.0	9.8610 None	49.703E-6	466.58E-6	530.61E-6	-4.6658E-6	-33.236E-6	2.1820E+6 0	(Negligible)
		11	No 36 Wall K	No 36 Wall K	0.0	1	0.0	5.8300 None	0.0032193	0.042898	0.045795	-547.26E-6	-533.00E-6	21508. 0	(Negligible)
		12	No 36 Wall L	No 36 Wall L	0.0	1	0.0	6.5370 None	29.461E-6	639.18E-6	668.16E-6	-6.4114E-6	-61.953E-6	2.5576E+6 0	(Negligible)
		13	1 RP Wall A	1 RP Wall A	0.0	1	0.0	10.000 None	955.16E-6	-178.61E-6	990.95E-6	7.0975E-6	-54.634E-6	71621. 0	(Negligible)
						2	10.000	18.000 None	0.0	0.0	35.763E-9	0.0	0.0	- 0	(Negligible)
						3	28.000	8.0000 None	538.11E-6	-302.25E-6	375.69E-6	6.3678E-6	30.226E-6	64165. 0	(Negligible)
		14	1 RP Wall B	1 RP Wall B	0.0	1	0.0	1.2862 None	0.0	0.0031910	0.0031910	-31.909E-6	189.69E-6	202920.0	(Negligible)
						2	1.2862	2.7138 None	42.456E-6	839.27E-6	856.70E-6	-31.909E-6	191.88E-6	36672.0	(Negligible)
		15	1 RP Wall C	1 RP Wall C	0.0	1	0.0	2.0370 None	1.7211E-6	0.0071919	0.0071924	-73.245E-6	196.63E-6	1.9224E+6 0	(Negligible)
						2	2.0370	1.9630 None	0.0	0.0	35.763E-9	0.0	197.30E-6	42276.0	(Negligible)
		16	No 30 Wall A	No 30 Wall A	0.0	1	0.0	15.000 None	0.0	0.0	35.763E-9	0.0	0.0	- 0	(Negligible)
		17	No 30 Wall B	No 30 Wall B	0.0	1	0.0	4.2329 None	0.0019103	0.060458	0.061390	-631.63E-6	608.28E-6	14954.1	(Very Slight)
						2	4.2329	0.96712 None	0.0	0.056966	0.056966	-569.33E-6	604.17E-6	117060. 1	(Very Slight)
		18	No 30 Wall C	No 30 Wall C	0.0	1	0.0	10.071 None	0.0070628	0.043444	0.052128	-560.67E-6	584.39E-6	8284.4 1	(Very Slight)
						2	10.071	0.22838 None	0.0	0.037500	0.037500	-374.86E-6	39.204E-6	48888. 0	(Negligible)
		19	No 30 Wall D	No 30 Wall D	0.0	1	0.0	15.000 None	0.0	0.0	35.763E-9	0.0	0.0	- 0	(Negligible)
		20	No 30 Wall E	No 30 Wall E	0.0	1	0.0	0.36924 None	0.0	0.037500	0.037500	-374.86E-6	-39.064E-6	25477.0	(Negligible)
						2	0.36924	9.6308 None	0.0068257	0.043128	0.051298	-558.76E-6	-576.65E-6	8005.0 1	(Very Slight)
		21	No 30 Wall F	No 30 Wall F	0.0	1	0.0	1.3220 None	118.00E-6	0.056907	0.056925	-578.26E-6	-608.80E-6	80672.1	(Very Slight)
						2	1.3220	4.1780 None	0.0018617	0.060479	0.061376	-631.04E-6	-608.80E-6	15227.1	(Very Slight)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.



Geotechnical & Environmental Associates

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