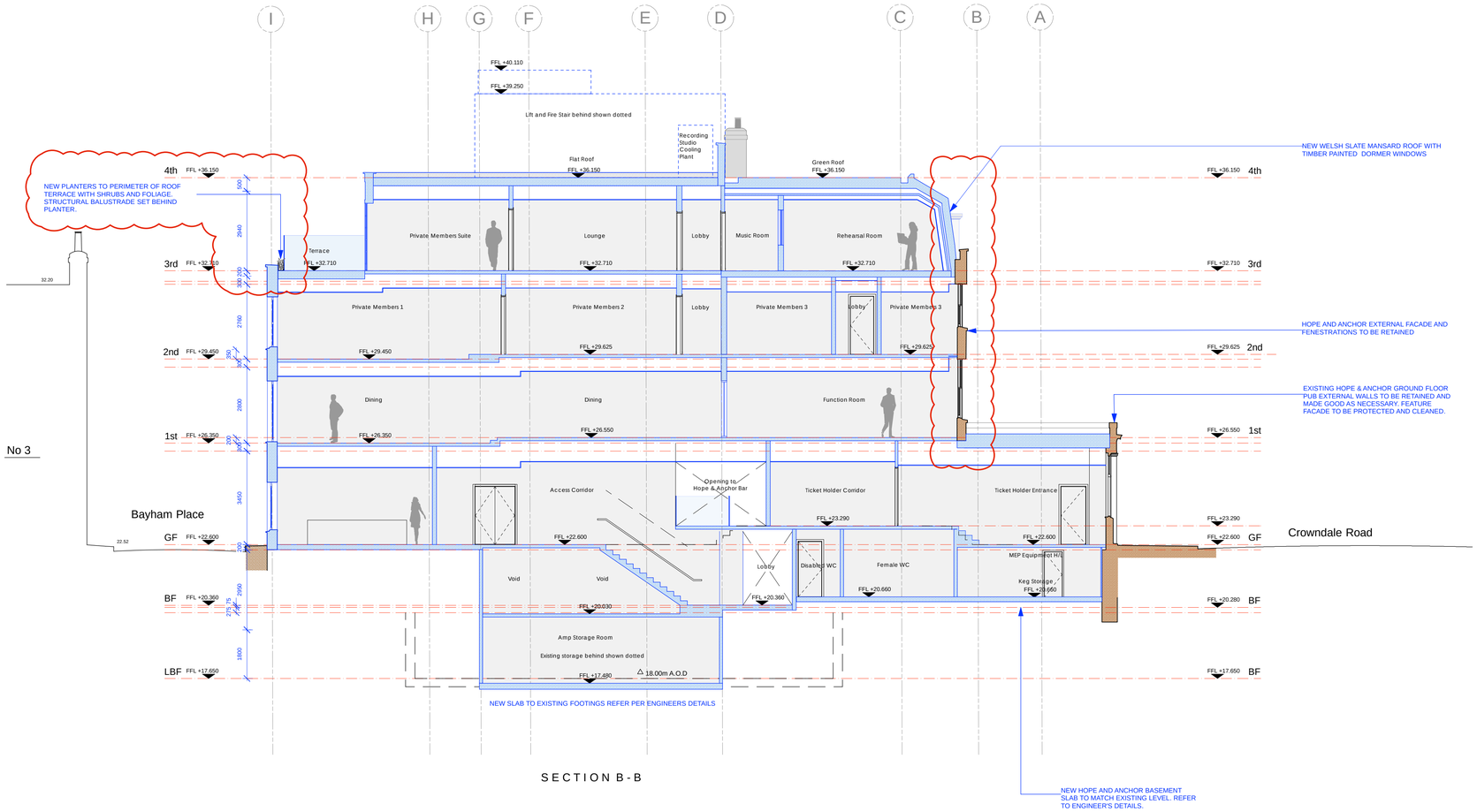
revision / date / amendments

- / --/--/-- /



SECTION B-B

DRAFT

17.10.17

0 1 2 3 4 5 8m

PLANNING

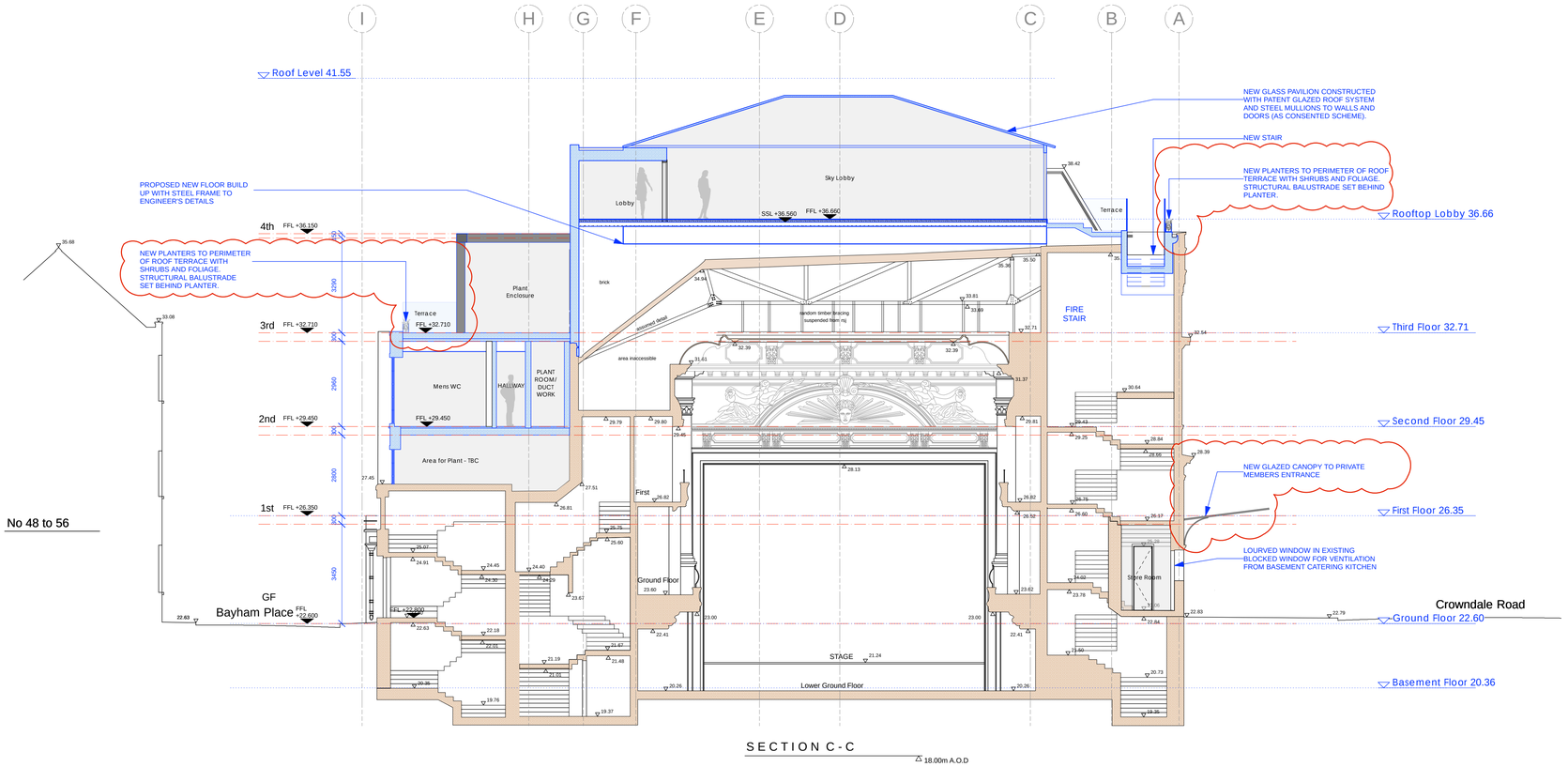
Archer Humphryes Architects

Basement
Central House
142 Central Street
London, United Kingdom
EC1V 8AR
T : +44 (0) 20 7251 8555

project title
KOKO + Hope & Anchor + Bayham Place
Camden, London

drawing title	scale	date
Section BB	1:100 @A1	18.05.17
	drawn: FR	checked: DA
drawing number: AHA/ KKC / PR /301	revision: B	

revision / date / amendments



SECTION C-C

18.00m A.O.D

DRAFT

17.10.17

0 1 2 3 4 5 8m

PLANNING

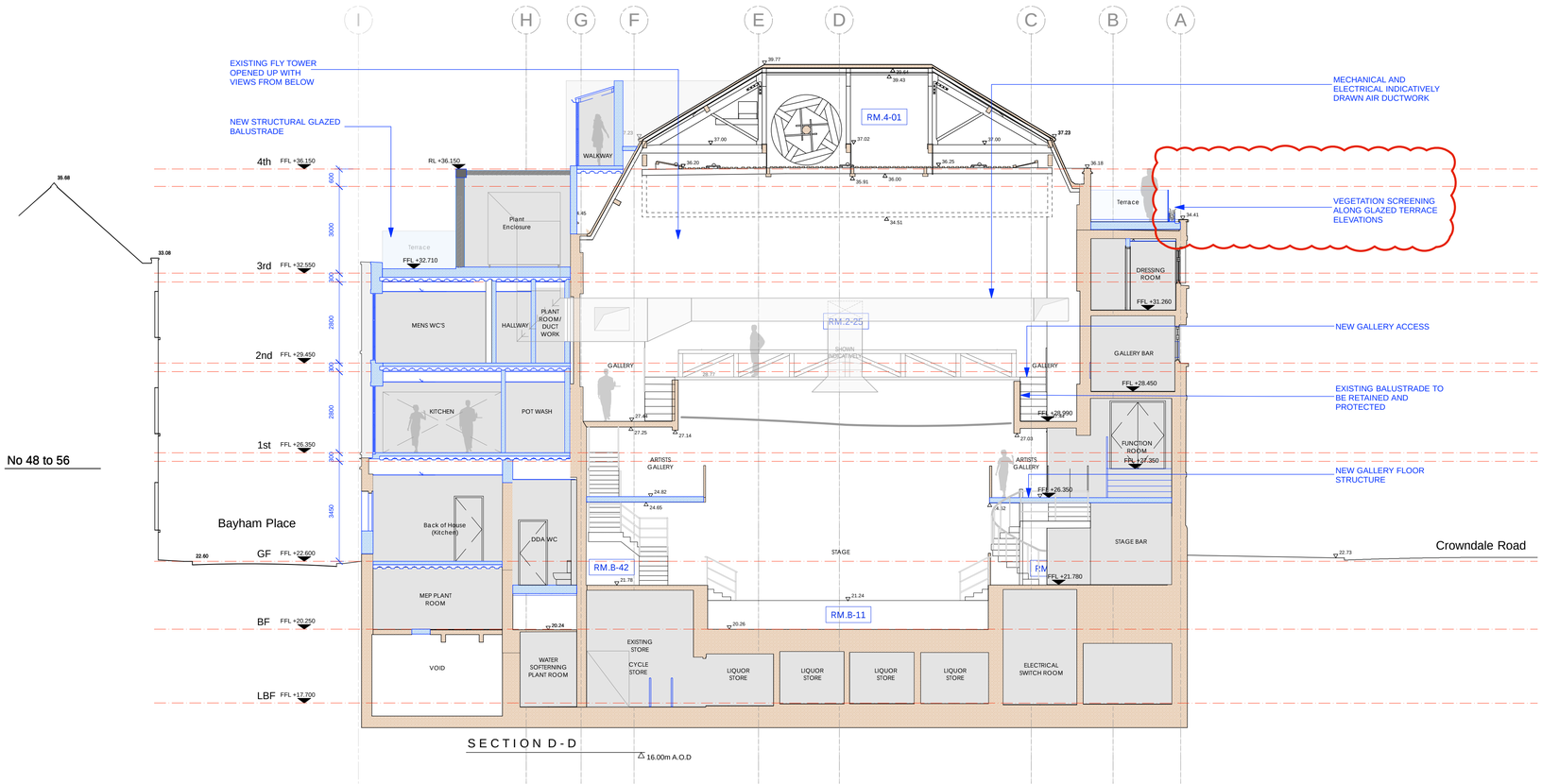
Archer Humphryes Architects

Basement
Central House
142 Central Street
London, United Kingdom
EC1V 8AR
T : +44 (0) 20 7251 8555

project title: KOKO + Hope & Anchor + Bayham Place Camden, London		
drawing title: Section CC	scale: 1:100 @A1	date: 18.05.17
	drawn: EH/FR	checked: DA
drawing number: AHA/ KKC / PR /302	revision: -	

revision / date / amendments

- / --/--/-- / -



DRAFT

17.10.17

0 1 2 3 4 5 8m

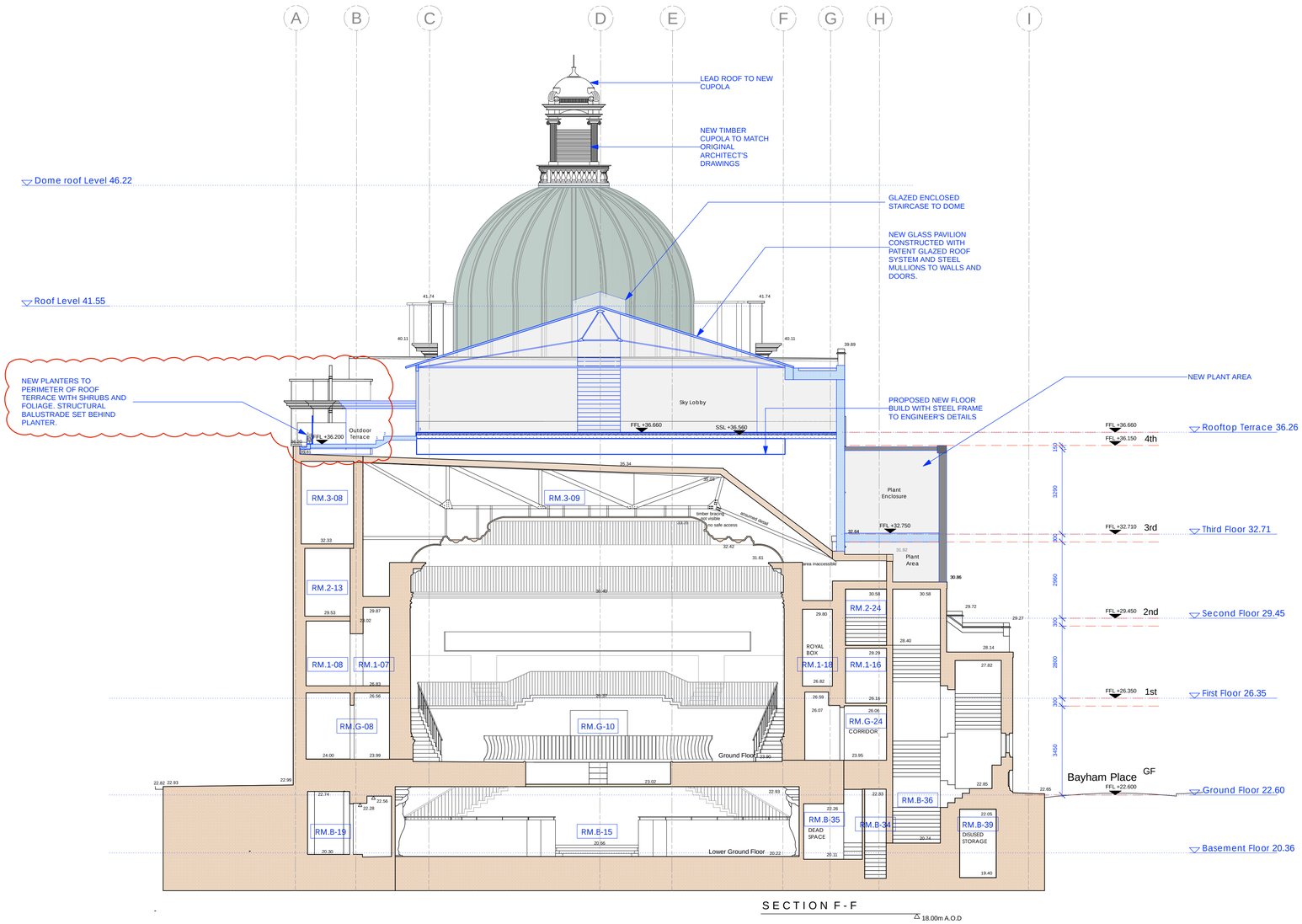
PLANNING

Archer Humphryes Architects

Basement
Central House
142 Central Street
London, United Kingdom
EC1V 8AR
T : +44 (0) 20 7251 8555

project title: KOKO + Hope & Anchor + Bayham Place Camden, London		
drawing title: Section DD	scale: 1:100 @A1	date: 18.05.17
	drawn: FR/PC	checked: DA
drawing number: AHA/ KKC / PR /303	revision: -	

revision / date / amendments



DRAFT

17.10.17

0 1 2 3 4 5 8m

PLANNING

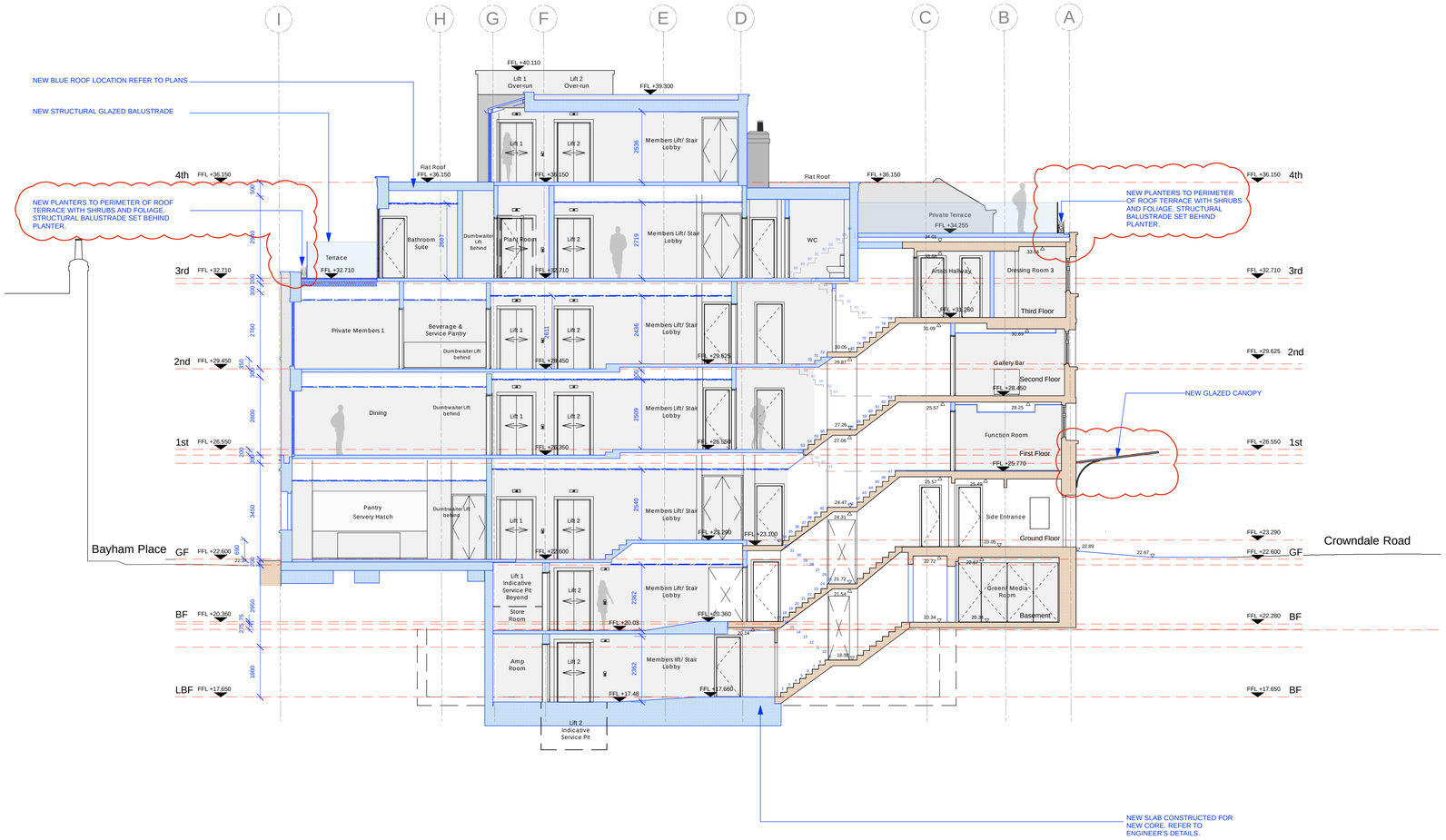
Archer Humphryes Architects

Basement
Central House
142 Central Street
London, United Kingdom
EC1V 8AR
T : +44 (0) 20 7251 8555

project title: KOKO + Hope & Anchor + Bayham Place Camden, London		
drawing title: Section FF	scale: 1:100 @A1	date: 18.05.17
	drawn: EH	checked: DA
drawing number: AHA/ KKC / PR /306	revision: -	

revision / date / amendments

- / --/--/-- / -



DRAFT

17.10.17

0 1 2 3 4 5 8m

PLANNING

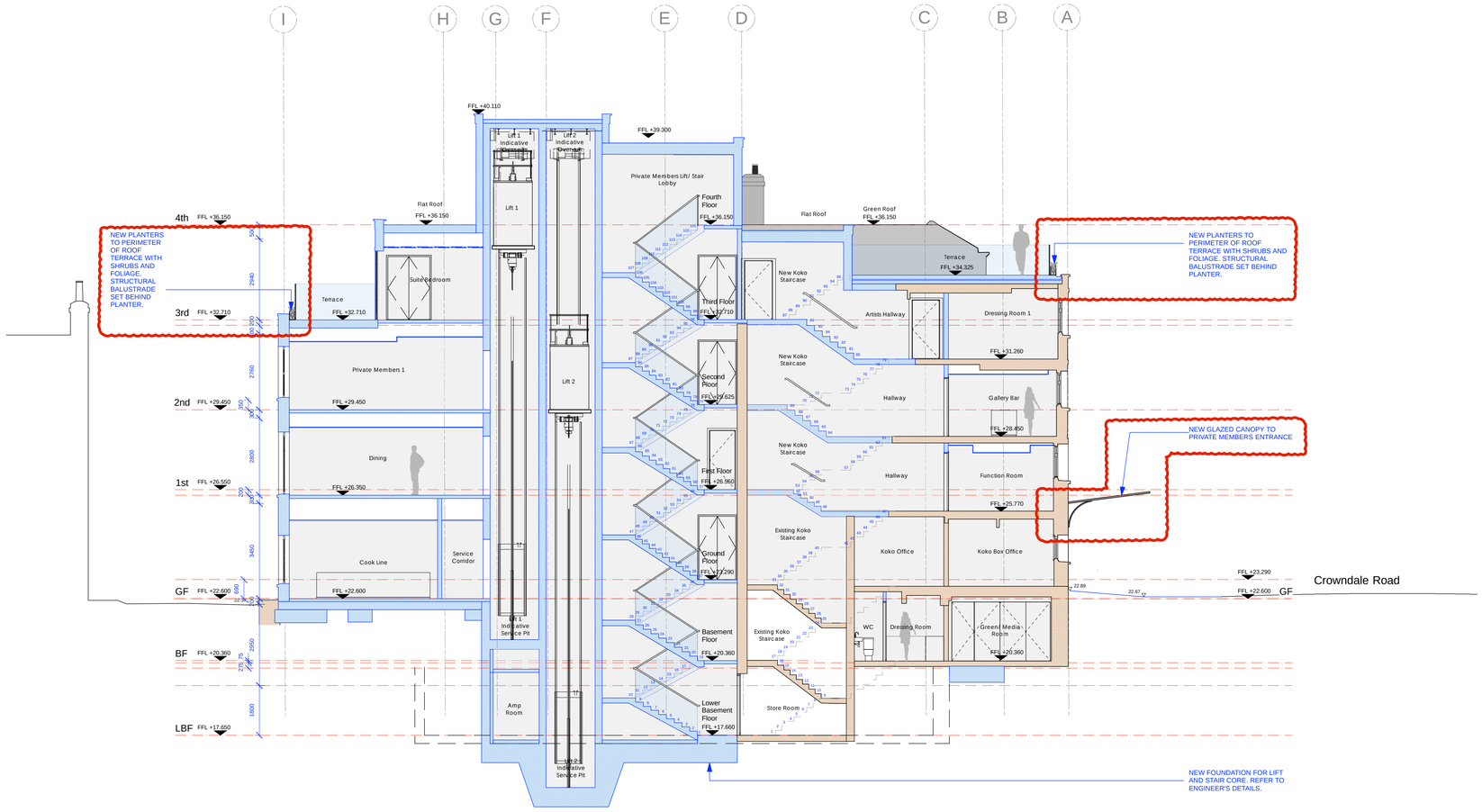
Archer Humphryes Architects

Basement
Central House
142 Central Street
London, United Kingdom
EC1V 8AR
T : +44 (0) 20 7251 8555

project title: KOKO + Hope & Anchor + Bayham Place Camden, London		
drawing title: Proposed Section JJ	scale: 1:100 @A1	date: 24.05.17
	drawn: PC	checked: DA
drawing number: AHA/KKC/ PR /309	revision: -	

revision / date / amendments

- / --/--/-- / -



DRAFT

17.10.17

0 1 2 3 4 5 8m

PLANNING

Archer Humphryes Architects

Basement
Central House
142 Central Street
London, United Kingdom
EC1V 8AR
T : +44 (0) 20 7251 8555

project title
KOKO + Hope & Anchor + Bayham Place
Camden, London

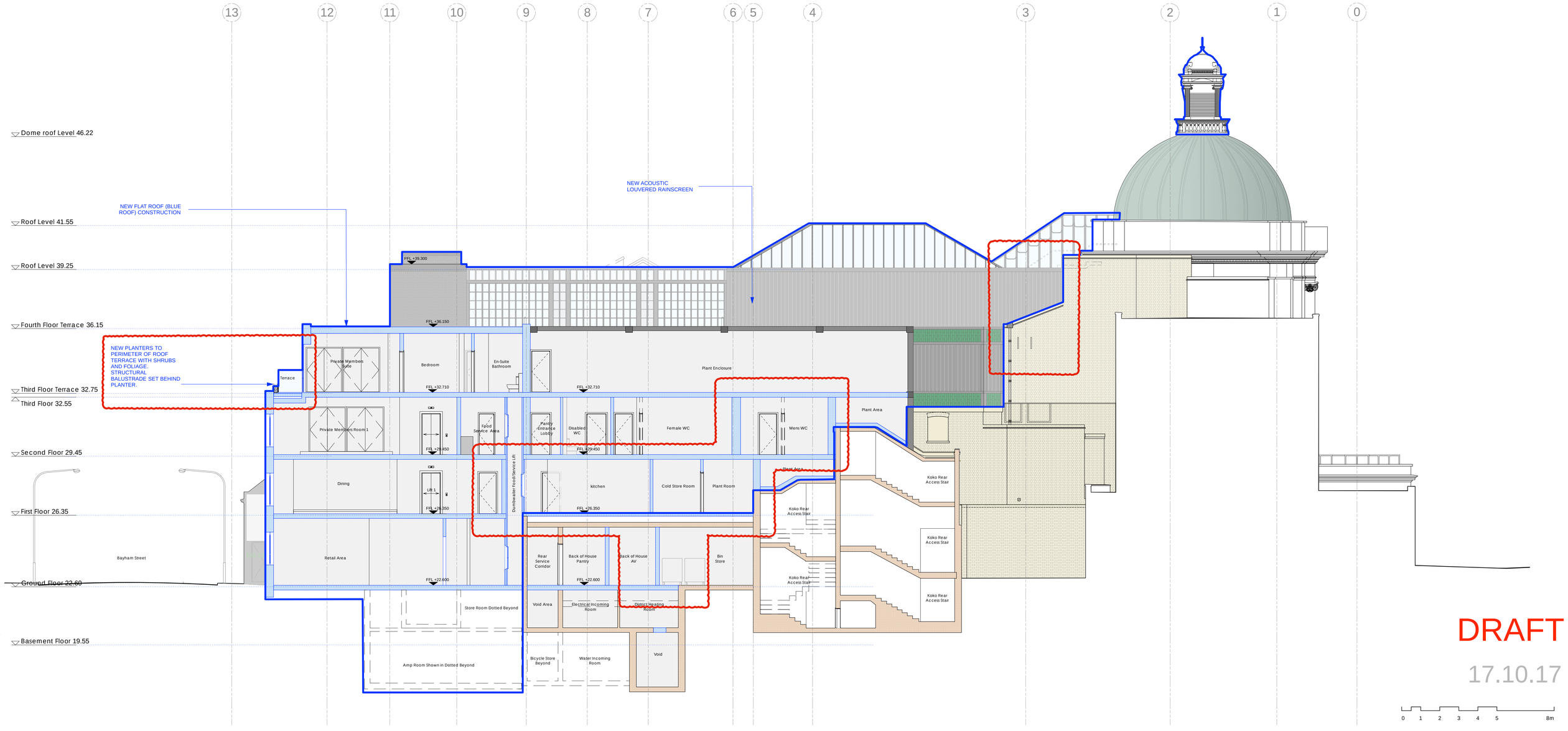
drawing title
Proposed Section KK

scale 1:100 @ A1 | date 10.07.17
drawn PC | checked DA

drawing number
AHA/KKC/ PR /310

revision
-

revision / date / amendments



DRAFT

17.10.17

0 1 2 3 4 5 8m

PLANNING

Archer Humphryes Architects

Basement
Central House
142 Central Street
London, United Kingdom
EC1V 8AR
T : +44 (0) 20 7251 8555

project title: KOKO + Hope & Anchor + Bayham Place Camden, London		
drawing title: Proposed Section GG	scale: 1:100 @A1	date: 14.07.17
	drawn: FR/PC	checked: DA
drawing number: AHA/KKO/GA/311	revision: -	

APPENDIX C
LONDON UNDERGROUND CORRESPONDANCE

Transport for London
London Underground

London Underground
Infrastructure Protection

3rd Floor
Albany House
55 Broadway
London SW1H 0BD

www.tfl.gov.uk/tube

Your ref:
Our ref: 20403-SI-N093

Matthew Turner
Heyne Tillett Steel
MTurner@hts.uk.com

01 April 2016

Dear Matthew,

The Hope Project Crowndale Road London NW1 7JE

Thank you for your communication of 31st March 2016.

Attached is a 1:1,250 plan @A4 showing the location of Mornington Crescent London Underground Station which is served by the Northern line.

Please note:

- shaded areas represent sub-surface structures which can be as shallow as 0.2 metres below surface level
- the positions of the tunnels on this plan are indicative only and must not be used for design purposes
- due to varying levels within underground stations it is not possible to show tunnel crown depths in the shaded area
- for more accurate tunnel location information a survey will need to be undertaken
- this letter must be distributed with the drawing which it refers to

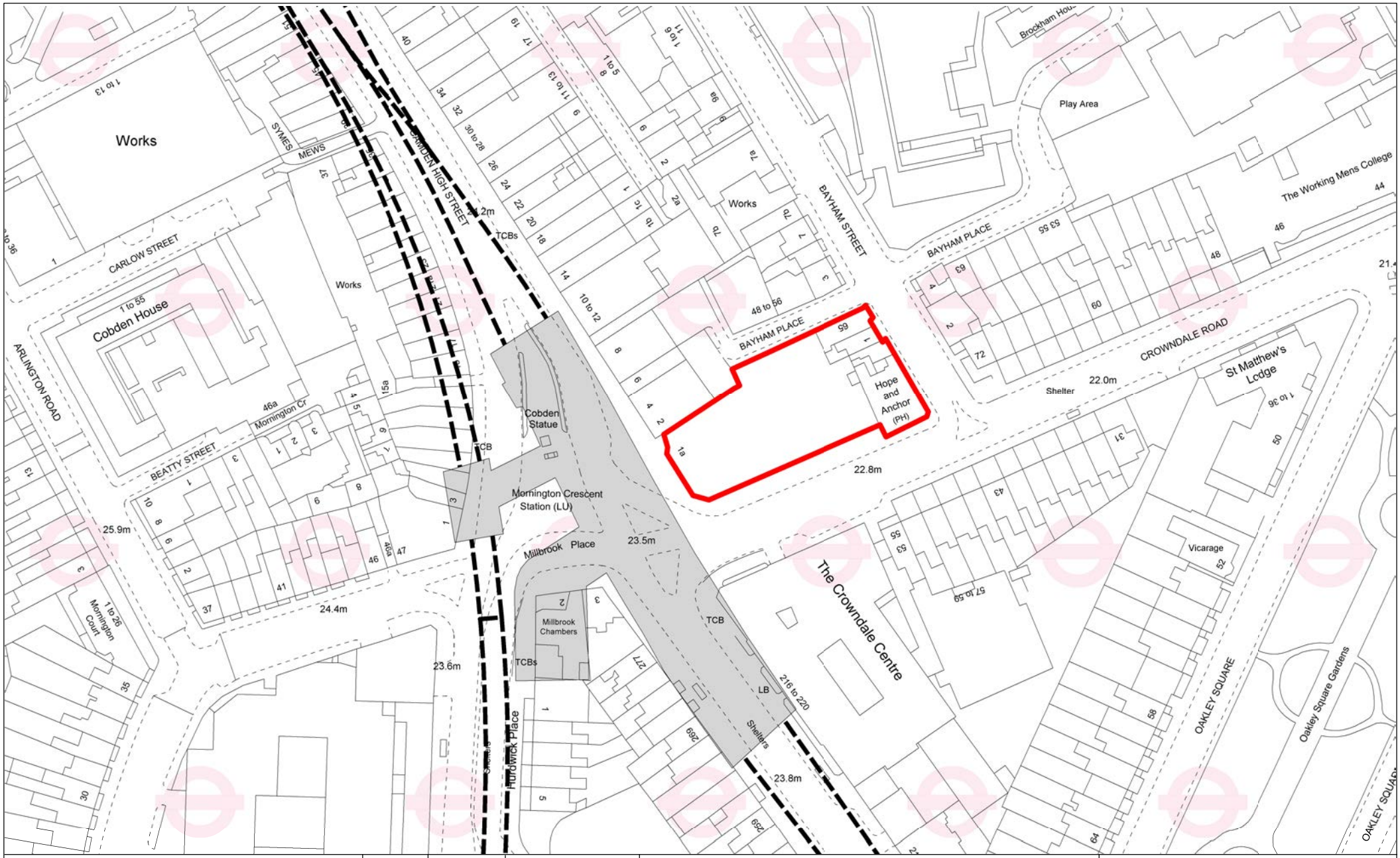
If you or any other intends undertaking the following at the above location London Underground Infrastructure Protection must be provided with details of the proposals so that the safety of our railway can be assured:

- demolition
- structural works
- excavation
- boreholes or piling
- highway works above shaded areas

If I can be of further assistance, please contact me.

Yours sincerely

Shahina Inayathusein
Information Manager
Email: locationenquiries@tube.tfl.gov.uk
Direct line: 020 7918 0016



London Underground Limited
Infrastructure Protection
3rd Floor Albany House, 55 Broadway,
London, SW1H 0BD
Tel: 0207 027 8903
lulcedip@tube.tfl.gov.uk

N

Date	01 April 2016
LCS Code	N093
Drawn by	S. Inayathusein
Scale	1:1250 at A4

1. All dimensions and LUL asset locations are approximate
2. This drawing must be read in conjunction with the accompanying letter sent by LUL
3. This drawing is for planning purposes only
4. For more accurate tunnel location information a survey will need to be undertaken.

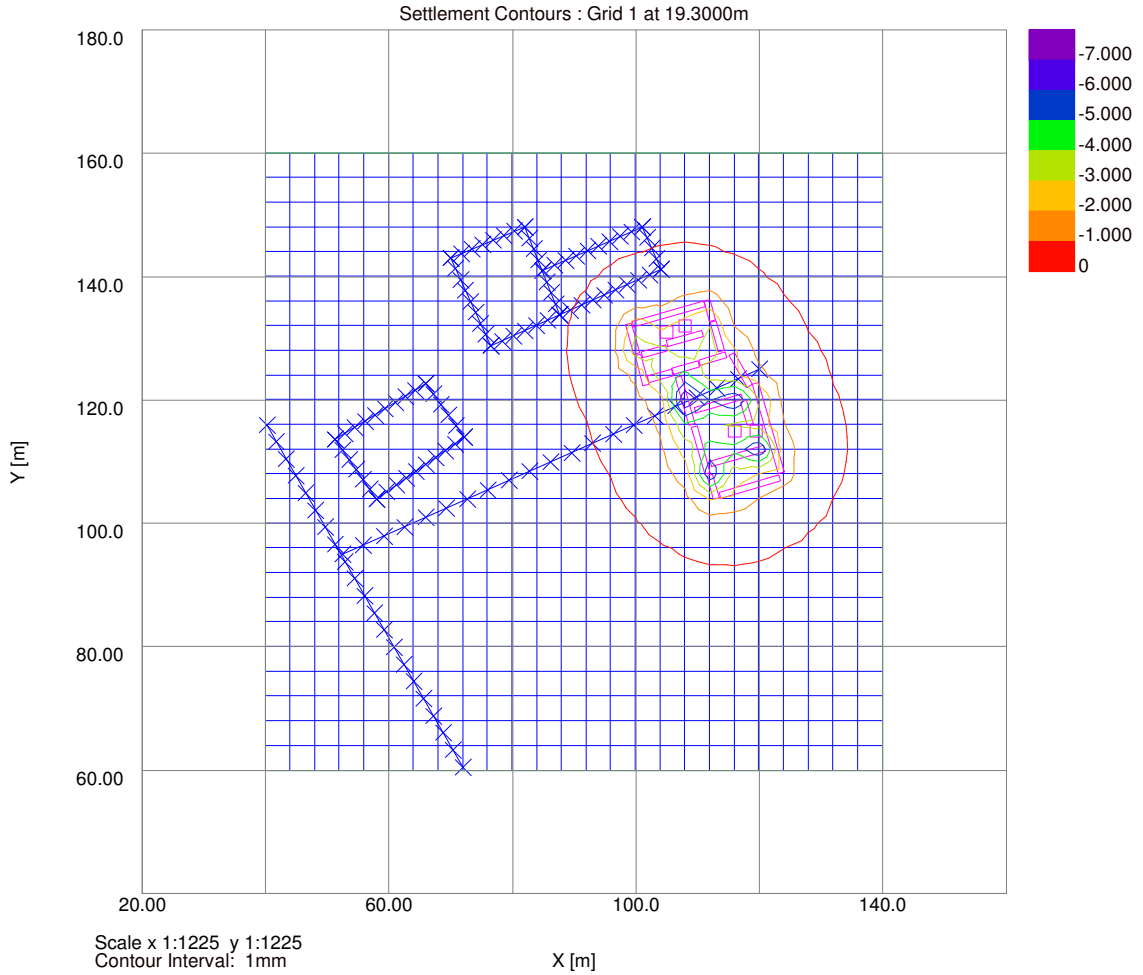
The Hope Project
Crowndale Road
London
NW1 7JE

APPENDIX D
PDISP OUTPUTS

Oasys

Hope Project
Demolition - Otpion B
Undrained

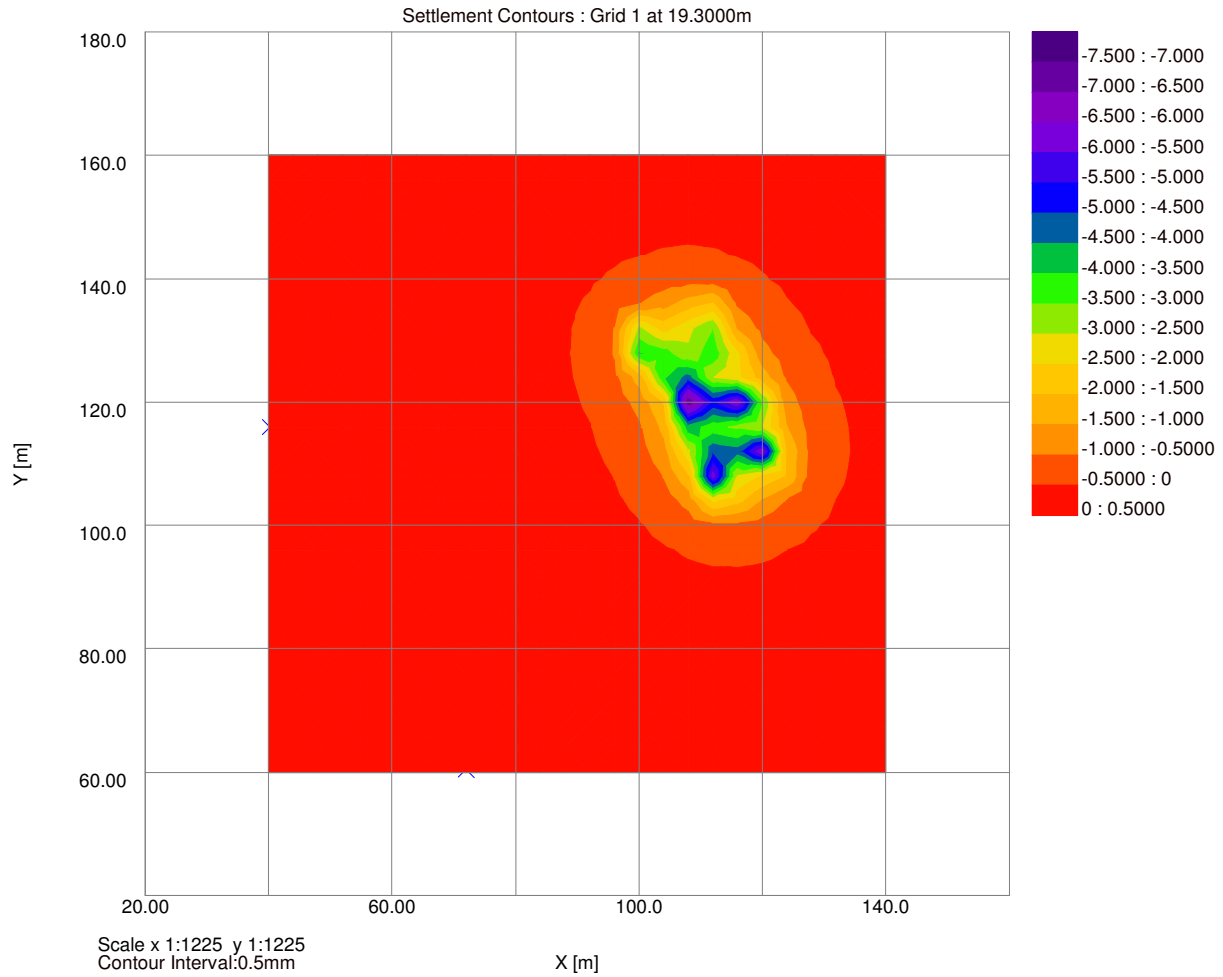
Job No.	Sheet No.	Rev.
371475		
Drg. Ref.		
Made by CS	Date	Checked



Oasys

Hope Project
Demolition - Otpion B
Undrained

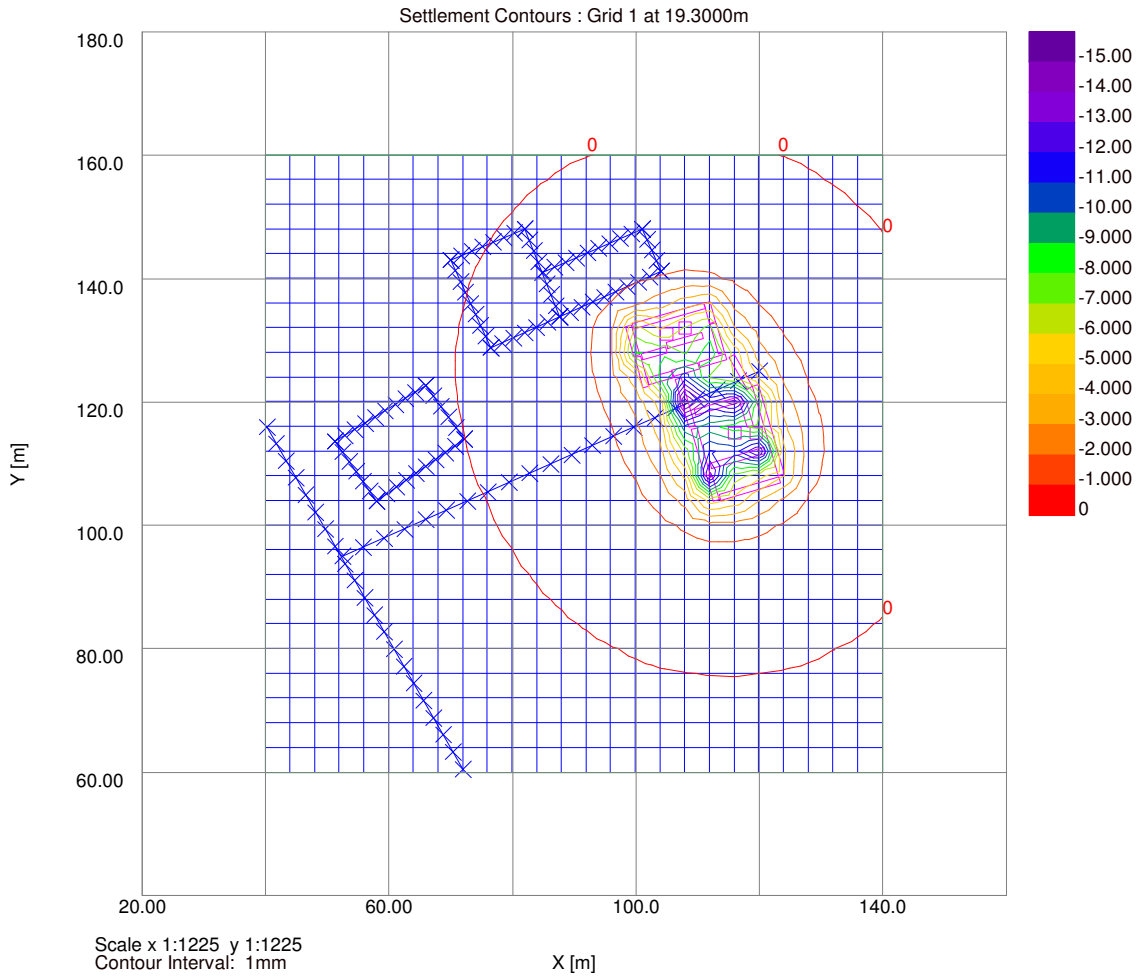
Job No.	Sheet No.	Rev.
371475		
Drg. Ref.		
Made by CS	Date	Checked



Oasys

Hope Project
Demolition - Option B
Drained

Job No.	Sheet No.	Rev.
371475		
Drg. Ref.		
Made by CS	Date	Checked



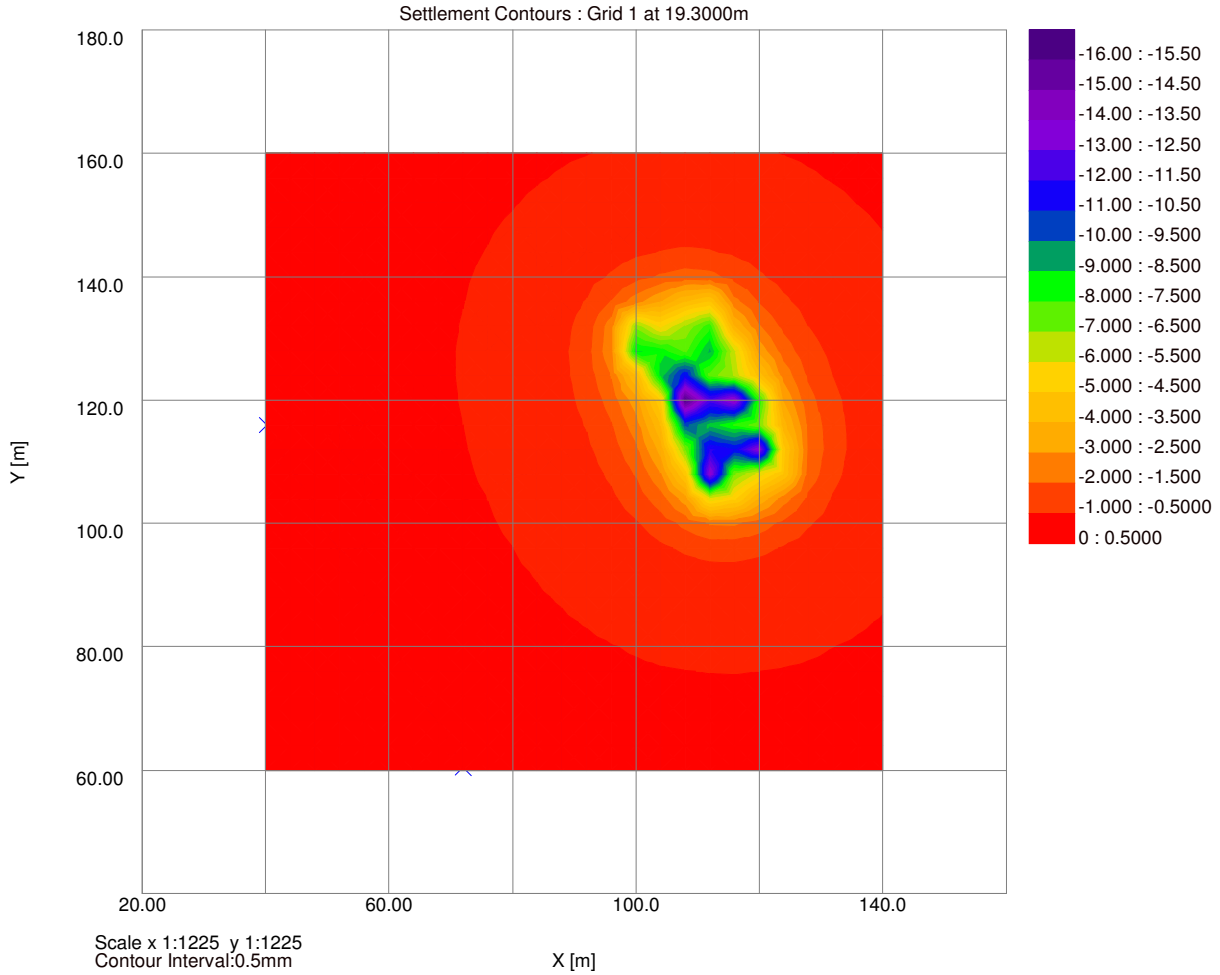
Oasys

Hope Project
Demolition - Option B
Drained

Job No.	Sheet No.	Rev.
371475		

Drg. Ref.

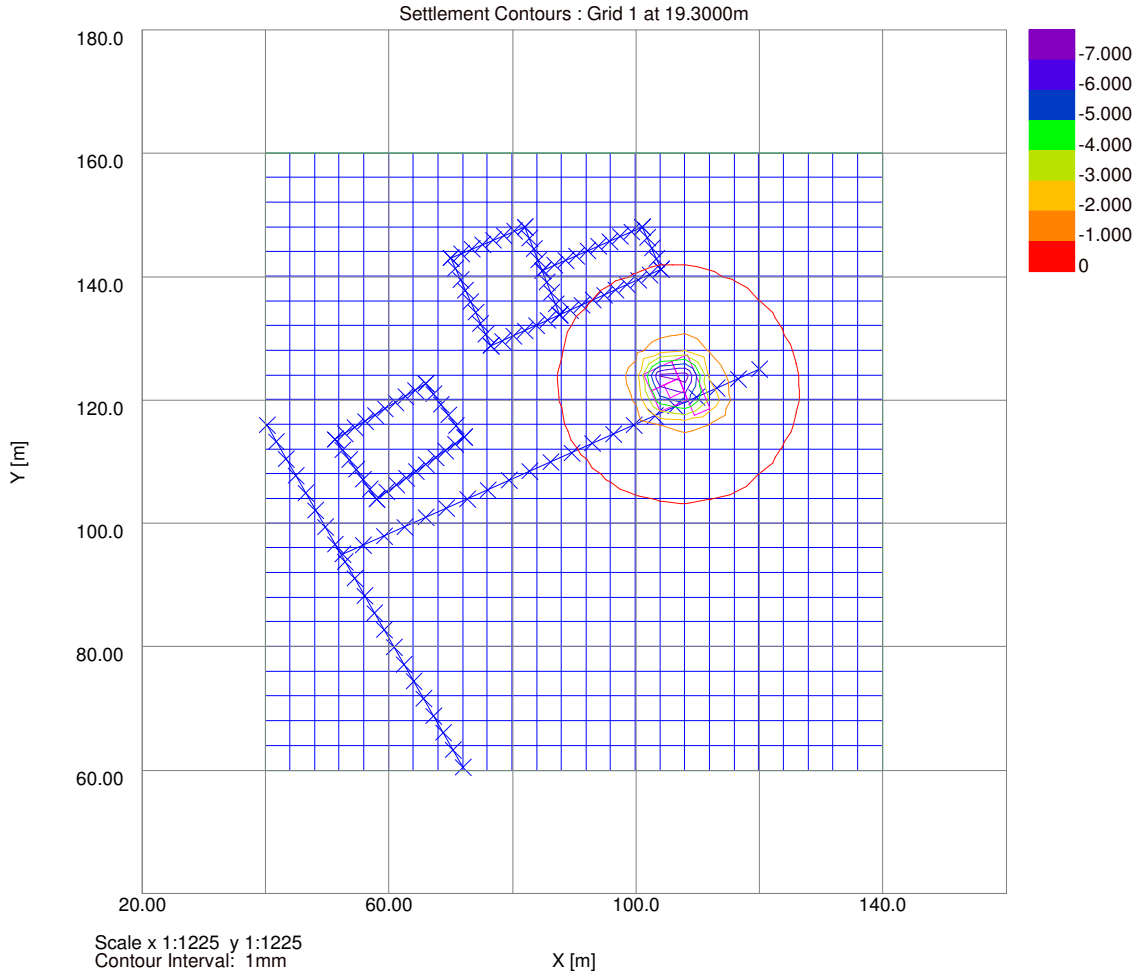
Made by	Date	Checked
CS		



Oasys

Hope Project
Basement Excavation - Option B
Undrained

Job No.	Sheet No.	Rev.
371475		
Drg. Ref.		
Made by CS	Date	Checked



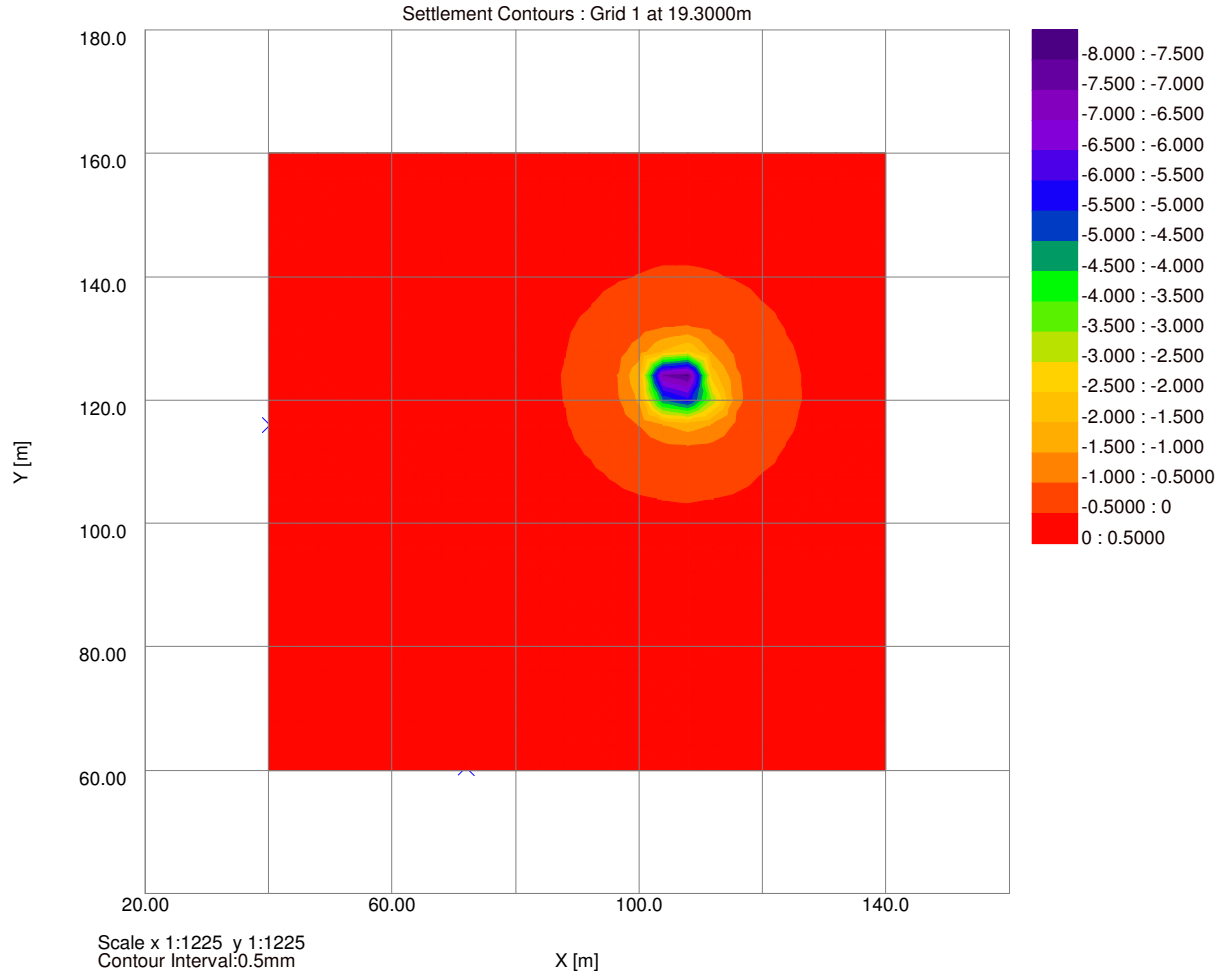
Oasys

Hope Project
Basement Excavation - Option B
Undrained

Job No.	Sheet No.	Rev.
371475		

Drg. Ref.

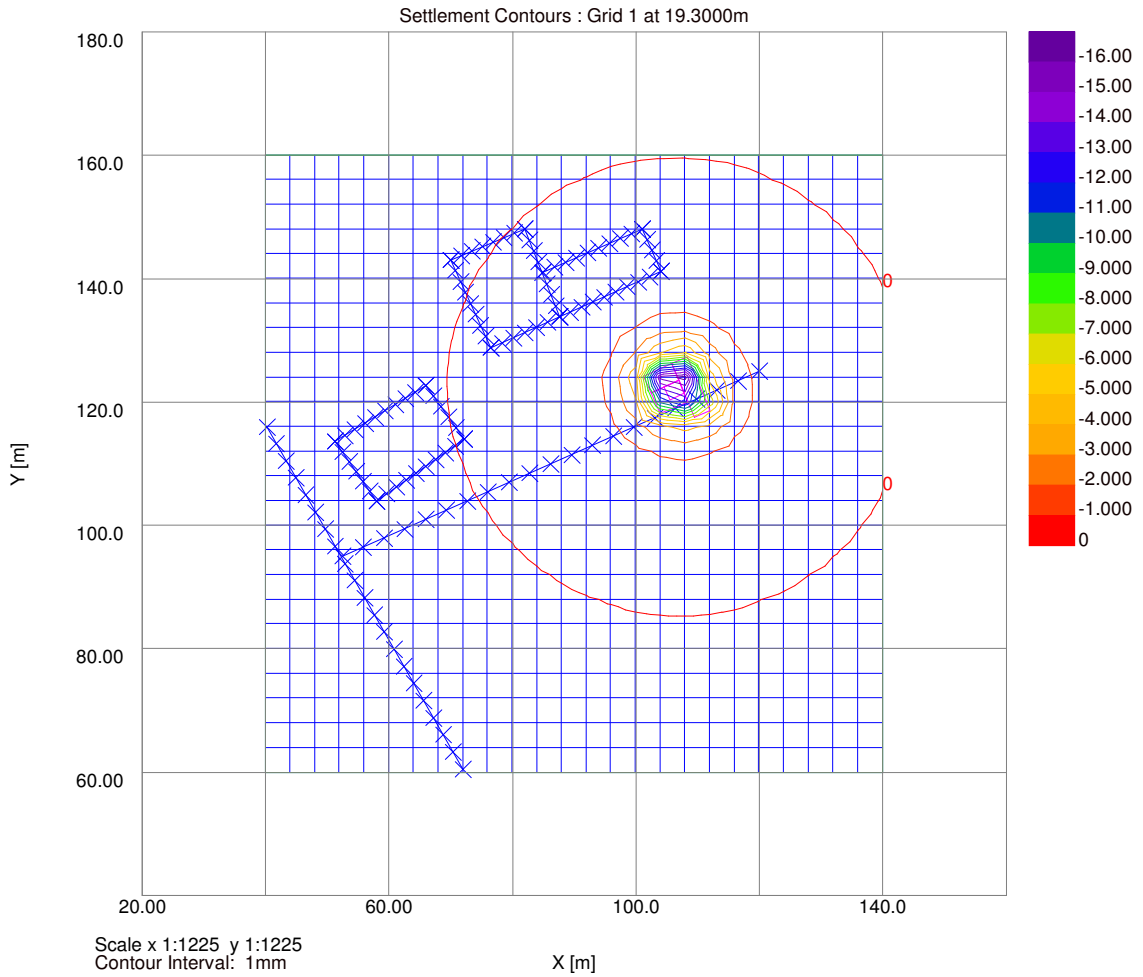
Made by	Date	Checked
CS		



Oasys

Hope Project
Basement Excavation - Option B
Drained

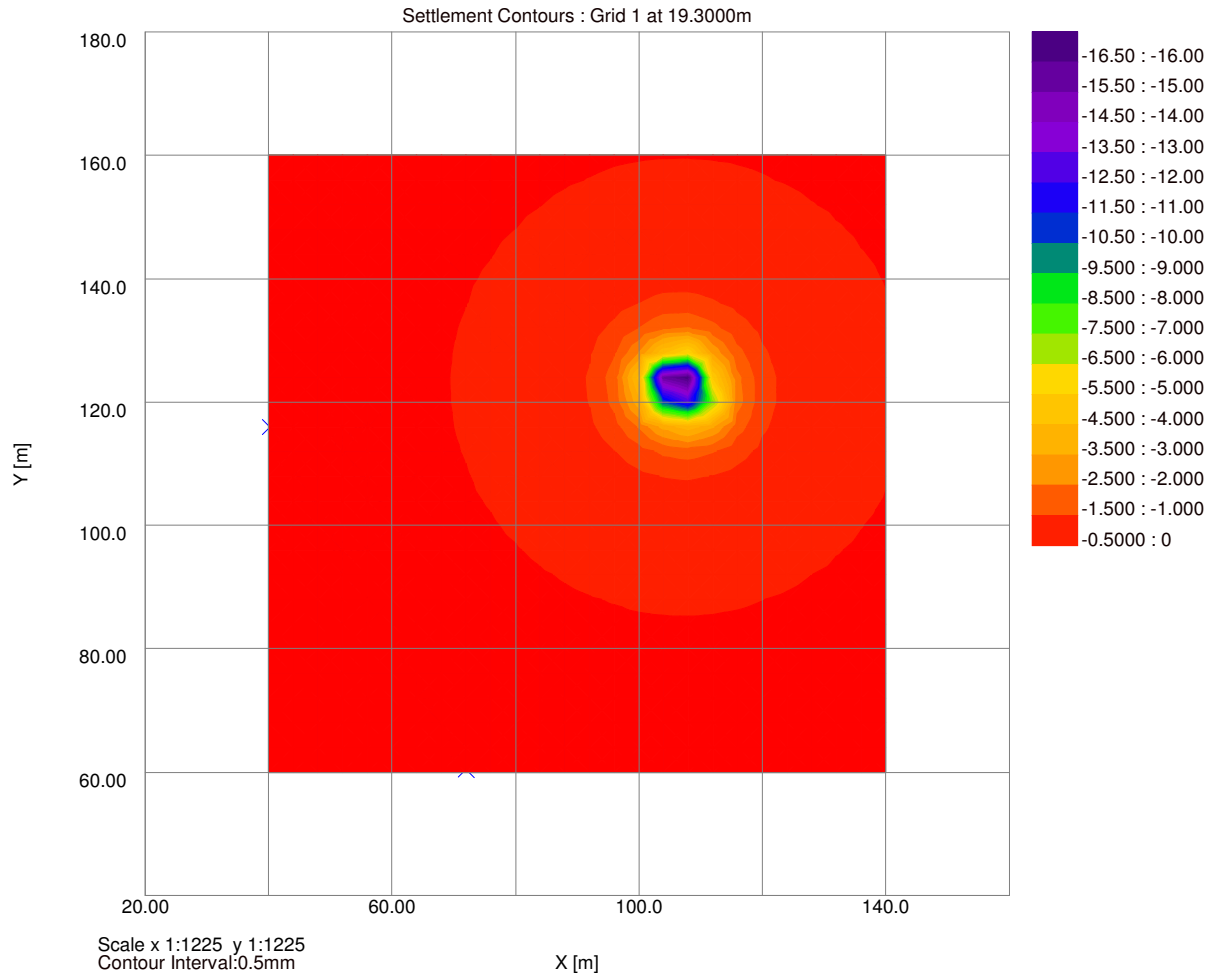
Job No.	Sheet No.	Rev.
371475		
Drg. Ref.		
Made by CS	Date	Checked



Oasys

Hope Project
Basement Excavation - Option B
Drained

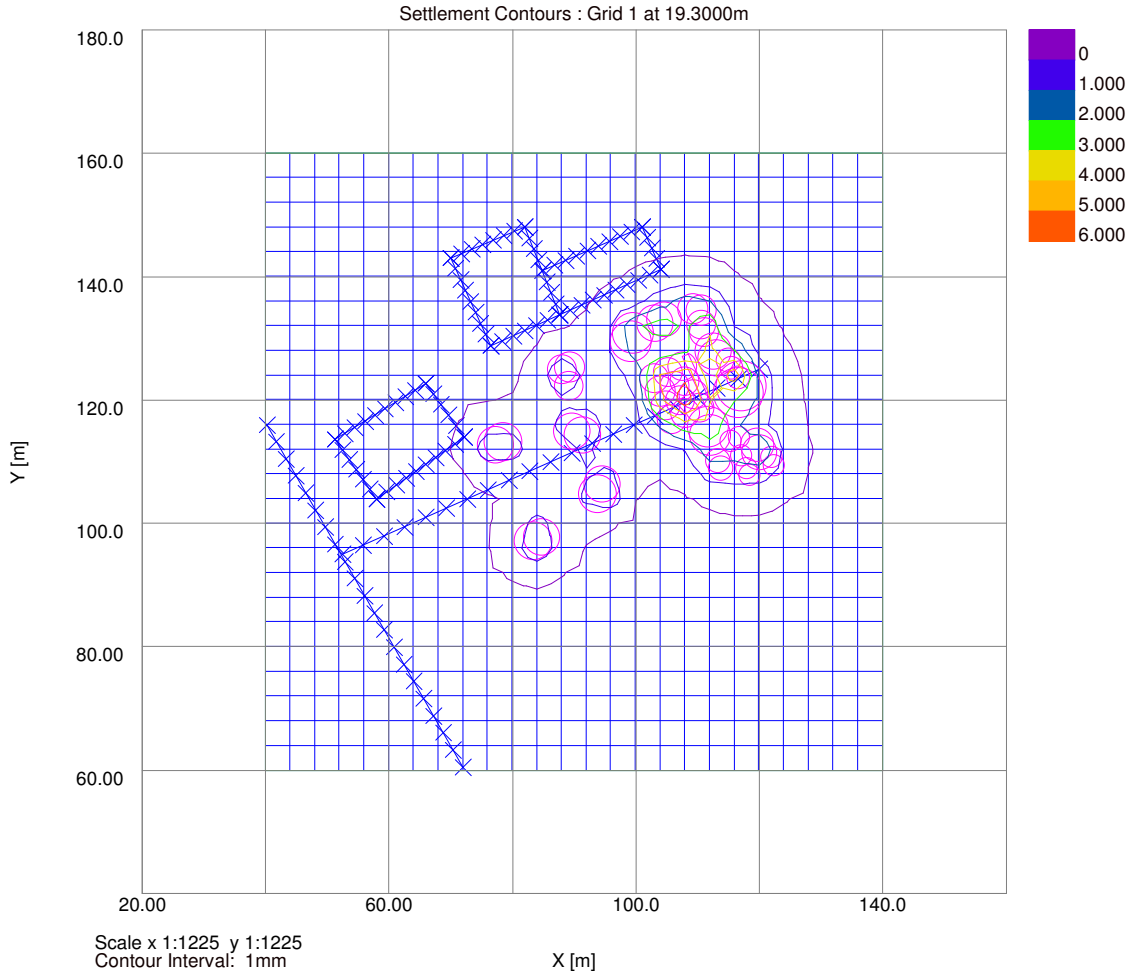
Job No.	Sheet No.	Rev.
371475		
Drg. Ref.		
Made by CS	Date	Checked



Oasys

Hope Project
Proposed Loading - Option B
Undrained

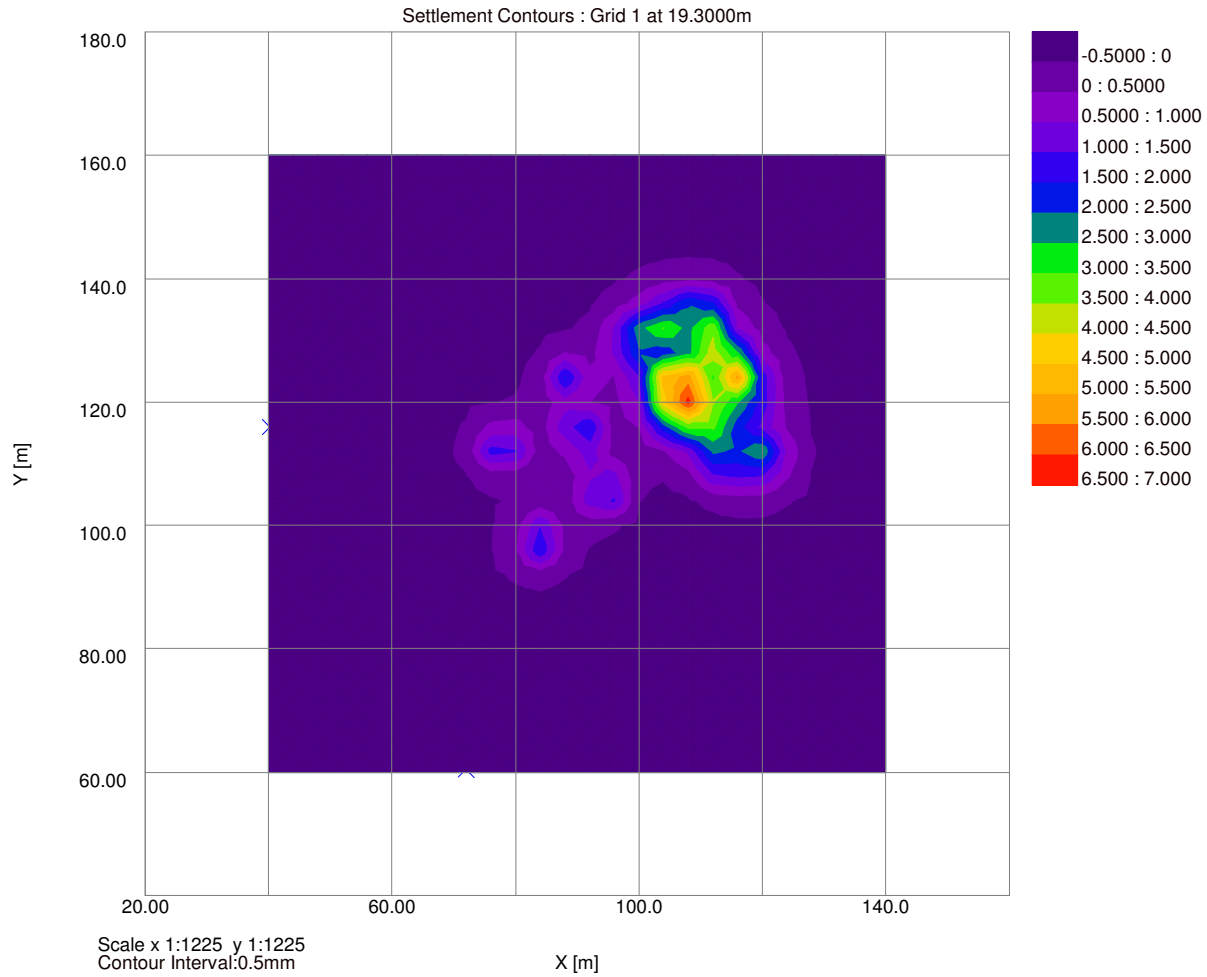
Job No.	Sheet No.	Rev.
371475		
Drg. Ref.		
Made by CS	Date	Checked



Oasys

Hope Project
Proposed Loading - Option B
Undrained

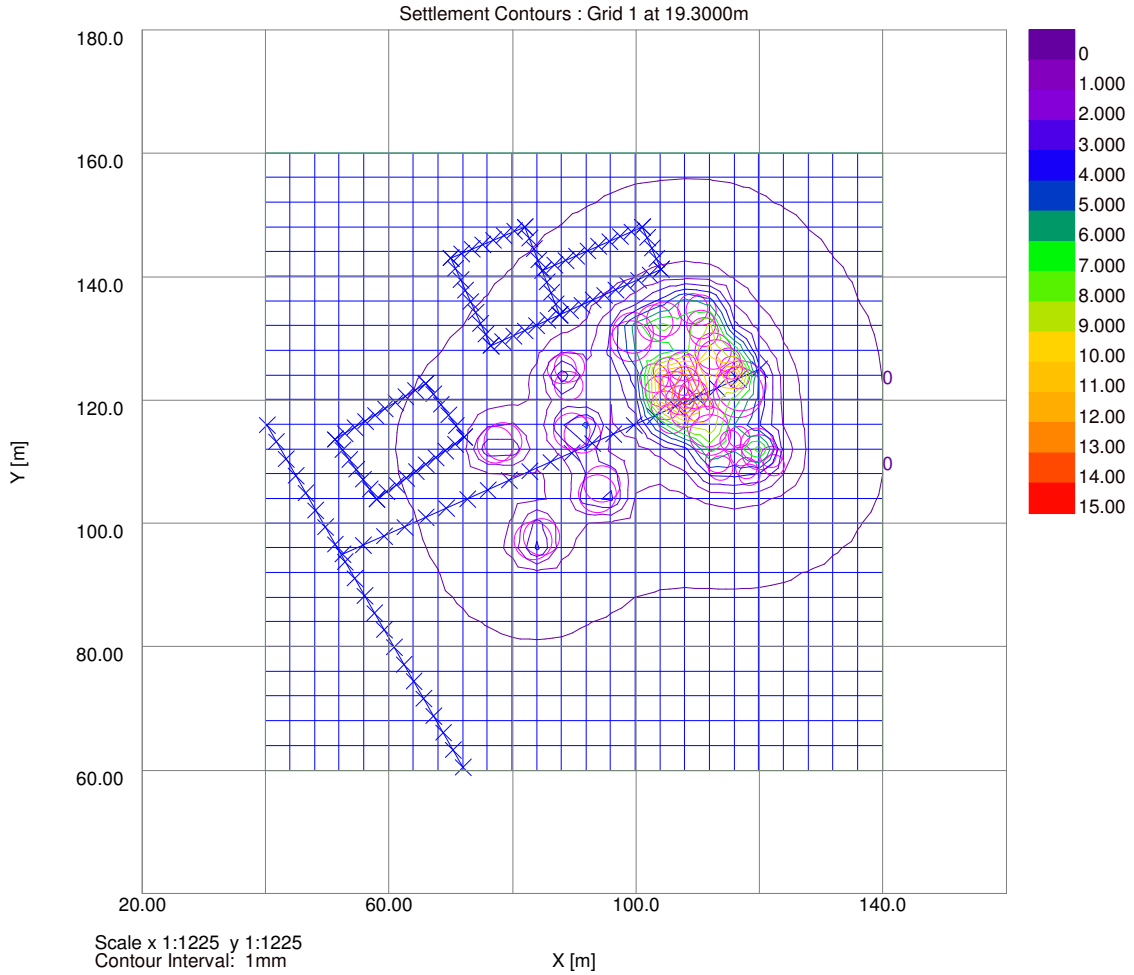
Job No.	Sheet No.	Rev.
371475		
Drg. Ref.		
Made by CS	Date	Checked



Oasys

Hope Project
Proposed Loading - Option B
Drained

Job No.	Sheet No.	Rev.
371475		
Drg. Ref.		
Made by CS	Date	Checked



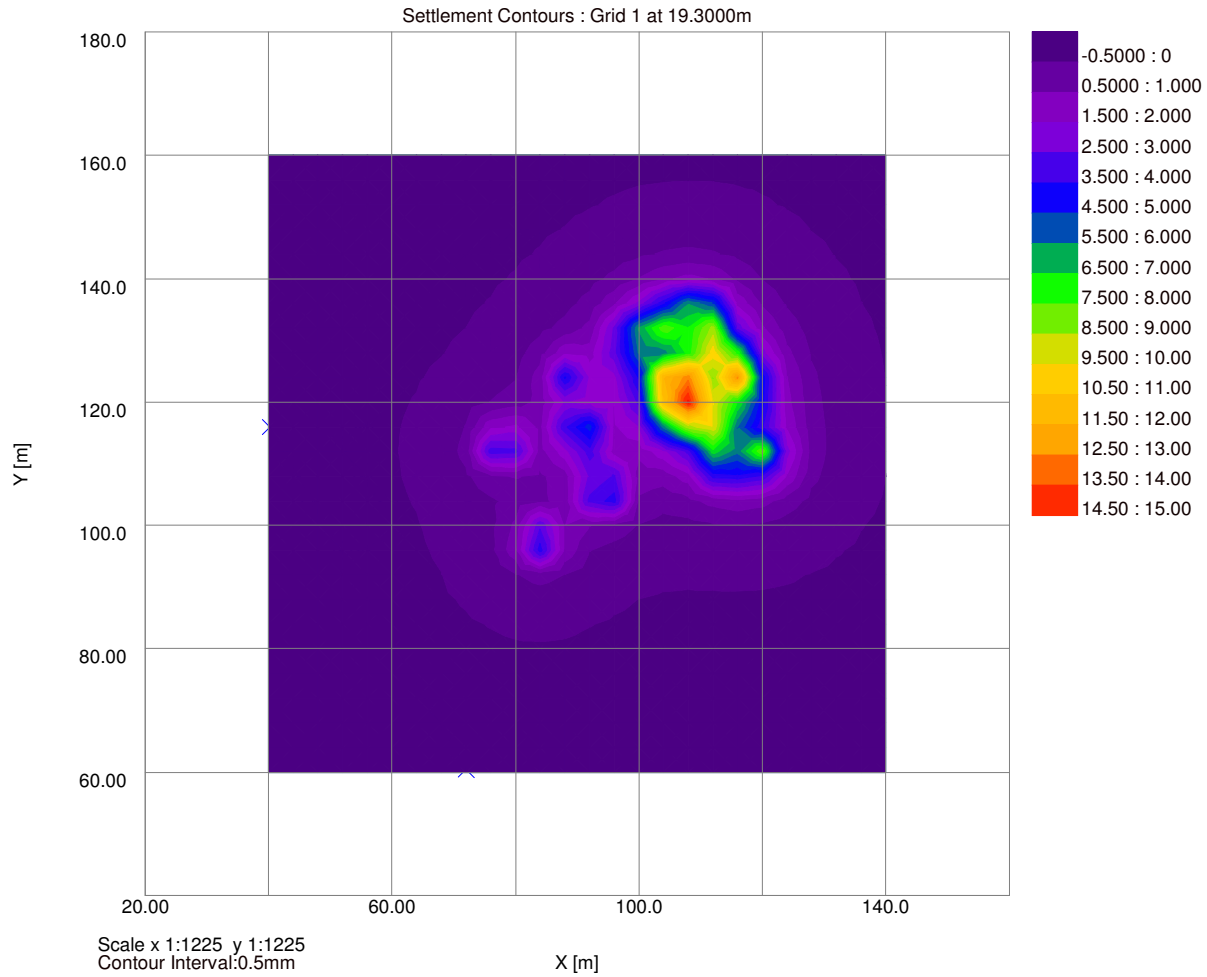
Oasys

Hope Project
Proposed Loading - Option B
Drained

Job No.	Sheet No.	Rev.
371475		

Drg. Ref.

Made by	Date	Checked
CS		



APPENDIX E
XDISP OUTPUTS

Problem Type

Problem Type : Tunnelling and Embedded Wall Excavations

Displacement Data

Type	Name	Direction of extrusion	Point/Line/Line for extrusion						No. of intervals across extrusion/line	Extrusion depth	No. of intervals along extrusion	Calculate	Surface type for tunnels
			First point			Second point							
			X [m]	Y [m]	Z(level) [m]	X [m]	Y [m]	Z(level) [m]		[m]			
Line	48-1	-	70.00000	143.00000	22.50000	76.50000	128.80000	22.50000	8	-	-	Yes	Surface
Line	48-2	-	76.50000	128.80000	22.50000	87.60000	133.80000	22.50000	6	-	-	Yes	Surface
Line	48-3	-	87.60000	133.80000	22.50000	82.00000	148.00000	22.50000	8	-	-	Yes	Surface
Line	48-4	-	82.00000	148.00000	22.50000	70.00000	143.00000	22.50000	7	-	-	Yes	Surface
Line	2-4-1	-	66.00000	122.70000	22.50000	72.20000	114.00000	22.50000	5	-	-	Yes	Surface
Line	2-4-2	-	72.20000	114.00000	22.50000	58.00000	104.00000	22.50000	9	-	-	Yes	Surface
Line	2-4-3	-	58.00000	104.00000	22.50000	51.30000	113.60000	22.50000	6	-	-	Yes	Surface
Line	2-4-4	-	51.30000	113.60000	22.50000	66.00000	122.70000	22.50000	9	-	-	Yes	Surface
Line	56-3-1	-	87.60000	133.80000	22.50000	104.10000	141.20000	22.50000	9	-	-	Yes	Surface
Line	56-3-2	-	104.10000	141.20000	22.50000	101.00000	148.00000	22.50000	4	-	-	Yes	Surface
Line	56-3-3	-	101.00000	148.00000	22.50000	85.00000	141.00000	22.50000	9	-	-	Yes	Surface

Imported Displacements

The following data points and displacements were found in the import file Demo - Undrained.csv.

Ref.	Coordinates			Displacements			
	x [m]	y [m]	z [m]	x [mm]	y [mm]	z [mm]	
1	70.00000	143.00000	22.50000	0.00000	0.00000	0.07131	1,2,6
2	70.81250	141.22500	22.50000	0.00000	0.00000	0.07486	1,2,6
3	71.62500	139.45000	22.50000	0.00000	0.00000	0.07836	1,2,6
4	72.43750	137.67500	22.50000	0.00000	0.00000	0.08175	1,2,6
5	73.25000	135.90000	22.50000	0.00000	0.00000	0.08498	1,2,6
6	74.06250	134.12500	22.50000	0.00000	0.00000	0.08799	1,2,6
7	74.87500	132.35000	22.50000	0.00000	0.00000	0.09073	1,2,6
8	75.68750	130.57500	22.50000	0.00000	0.00000	0.09319	1,2,6
9	76.50000	128.80000	22.50000	0.00000	0.00000	0.09533	1,2,6
10	78.35000	129.63333	22.50000	0.00000	0.00000	0.09586	1,2,6
11	80.20000	130.46667	22.50000	0.00000	0.00000	0.09426	1,2,6
12	82.05000	131.30000	22.50000	0.00000	0.00000	0.08970	1,2,6
13	83.90000	132.13333	22.50000	0.00000	0.00000	0.08118	1,2,6
14	85.75000	132.96667	22.50000	0.00000	0.00000	0.06744	1,2,6
15	87.60000	133.80000	22.50000	0.00000	0.00000	0.04707	1,2,6
16	86.90000	135.57500	22.50000	0.00000	0.00000	0.06263	1,2,6
17	86.20000	137.35000	22.50000	0.00000	0.00000	0.07419	1,2,6
18	85.50000	139.12500	22.50000	0.00000	0.00000	0.08205	1,2,6
19	84.80000	140.90000	22.50000	0.00000	0.00000	0.08676	1,2,6
20	84.10000	142.67500	22.50000	0.00000	0.00000	0.08892	1,2,6
21	83.40000	144.45000	22.50000	0.00000	0.00000	0.08911	1,2,6
22	82.70000	146.22500	22.50000	0.00000	0.00000	0.08782	1,2,6
23	82.00000	148.00000	22.50000	0.00000	0.00000	0.08548	1,2,6
24	80.28571	147.28571	22.50000	0.00000	0.00000	0.08421	1,2,6
25	78.57143	146.57143	22.50000	0.00000	0.00000	0.08266	1,2,6
26	76.85714	145.85714	22.50000	0.00000	0.00000	0.08082	1,2,6
27	75.14286	145.14286	22.50000	0.00000	0.00000	0.07874	1,2,6
28	73.42857	144.42857	22.50000	0.00000	0.00000	0.07643	1,2,6
29	71.71429	143.71429	22.50000	0.00000	0.00000	0.07394	1,2,6
30	66.00000	122.70000	22.50000	0.00000	0.00000	0.07526	1,2,6
31	67.24000	120.96000	22.50000	0.00000	0.00000	0.07854	1,2,6
32	68.48000	119.22000	22.50000	0.00000	0.00000	0.08173	1,2,6
33	69.72000	117.48000	22.50000	0.00000	0.00000	0.08479	1,2,6
34	70.96000	115.74000	22.50000	0.00000	0.00000	0.08769	1,2,6
35	72.20000	114.00000	22.50000	0.00000	0.00000	0.09039	1,2,6
36	70.62222	112.88889	22.50000	0.00000	0.00000	0.08590	1,2,6
37	69.04444	111.77778	22.50000	0.00000	0.00000	0.08129	1,2,6
38	67.46667	110.66667	22.50000	0.00000	0.00000	0.07669	1,2,6
39	65.88889	109.55556	22.50000	0.00000	0.00000	0.07218	1,2,6
40	64.31111	108.44444	22.50000	0.00000	0.00000	0.06782	1,2,6
41	62.73333	107.33333	22.50000	0.00000	0.00000	0.06365	1,2,6
42	61.15556	106.22222	22.50000	0.00000	0.00000	0.05968	1,2,6
43	59.57778	105.11111	22.50000	0.00000	0.00000	0.05593	1,2,6
44	58.00000	104.00000	22.50000	0.00000	0.00000	0.05240	1,2,6
45	56.88333	105.60000	22.50000	0.00000	0.00000	0.05120	1,2,6
46	55.76667	107.20000	22.50000	0.00000	0.00000	0.04994	1,2,6
47	54.65000	108.80000	22.50000	0.00000	0.00000	0.04861	1,2,6
48	53.53333	110.40000	22.50000	0.00000	0.00000	0.04724	1,2,6
49	52.41667	112.00000	22.50000	0.00000	0.00000	0.04583	1,2,6
50	51.30000	113.60000	22.50000	0.00000	0.00000	0.04439	1,2,6
51	52.93333	114.61111	22.50000	0.00000	0.00000	0.04719	1,2,6
52	54.56667	115.62222	22.50000	0.00000	0.00000	0.05016	1,2,6
53	56.20000	116.63333	22.50000	0.00000	0.00000	0.05330	1,2,6
54	57.83333	117.64444	22.50000	0.00000	0.00000	0.05662	1,2,6
55	59.46667	118.65556	22.50000	0.00000	0.00000	0.06010	1,2,6
56	61.10000	119.66667	22.50000	0.00000	0.00000	0.06373	1,2,6
57	62.73333	120.67778	22.50000	0.00000	0.00000	0.06749	1,2,6
58	64.36667	121.68889	22.50000	0.00000	0.00000	0.07135	1,2,6
59	89.43333	134.62222	22.50000	0.00000	0.00000	0.01898	1,2,6
60	91.26667	135.44444	22.50000	0.00000	0.00000	-0.01769	1,2,6
61	93.10000	136.26667	22.50000	0.00000	0.00000	-0.06156	1,2,6
62	94.93333	137.08889	22.50000	0.00000	0.00000	-0.10712	1,2,6
63	96.76667	137.91111	22.50000	0.00000	0.00000	-0.14466	1,2,6
64	98.60000	138.73333	22.50000	0.00000	0.00000	-0.16634	1,2,6
65	100.43333	139.55556	22.50000	0.00000	0.00000	-0.17149	1,2,6
66	102.26667	140.37778	22.50000	0.00000	0.00000	-0.16328	1,2,6
67	104.10000	141.20000	22.50000	0.00000	0.00000	-0.14449	1,2,6
68	103.32500	142.90000	22.50000	0.00000	0.00000	-0.05451	1,2,6
69	102.55000	144.60000	22.50000	0.00000	0.00000	0.00331	1,2,6
70	101.77500	146.30000	22.50000	0.00000	0.00000	0.04038	1,2,6
71	101.00000	148.00000	22.50000	0.00000	0.00000	0.06368	1,2,6
72	99.22222	147.22222	22.50000	0.00000	0.00000	0.06156	1,2,6
73	97.44444	146.44444	22.50000	0.00000	0.00000	0.06099	1,2,6
74	95.66667	145.66667	22.50000	0.00000	0.00000	0.06207	1,2,6
75	93.88889	144.88889	22.50000	0.00000	0.00000	0.06474	1,2,6
76	92.11111	144.11111	22.50000	0.00000	0.00000	0.06866	1,2,6
77	90.33333	143.33333	22.50000	0.00000	0.00000	0.07336	1,2,6
78	88.55556	142.55556	22.50000	0.00000	0.00000	0.07823	1,2,6
79	86.77778	141.77778	22.50000	0.00000	0.00000	0.08273	1,2,6
80	85.00000	141.00000	22.50000	0.00000	0.00000	0.08642	1,2,6

1 - Data point coincident with displacement data. Its displacement has been added to those calculated by Xdisp.
2 - Data point coincident with horizontal movement calculation point for a specific building. Its displacement has been added before performing building damage calculations.
6 - Data point coincident with vertical movement calculation point for a specific building. Its displacement has been added before performing building damage calculations.

Damage Category Strains

Name	0 (Negligible) to 1 (Very Slight)	1 (Very Slight) to 2 (Slight)	2 (Slight) to 3 (Moderate)	3 (Moderate) to 4 (Severe)
Burland Strain Limits	0.0	500.00E-6	750.00E-6	0.0015000

Specific Structures - Geometry

Structure Name	Sub-Structure	Displacement	Start	End	Vertical	Vertical	Damage Category Strains	Poisson's	E/G

Name	Line	Distance Along Line [m]	Distance Along Line [m]	Offsets from Line for Vertical Movement Calculations [m]	Displacement Limit Sensitivity [mm]		Ratio	
48-1	0 48-1	0.00000	15.61598	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
48-2	0 48-2	0.00000	12.17315	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
48-3	0 48-3	0.00000	15.26334	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
48-4	0 48-4	0.00000	12.99900	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
2-4-1	0 2-4-1	0.00000	10.68216	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
2-4-2	0 2-4-2	0.00000	17.36679	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
2-4-3	0 2-4-3	0.00000	11.70584	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
2-4-4	0 2-4-4	0.00000	17.28772	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
56-3-1	0 56-3-1	0.00000	18.08242	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
56-3-2	0 56-3-2	0.00000	7.47229	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
56-3-3	0 56-3-3	0.00000	17.46325	0.0	0.10000	Burland Strain Limits	0.20000	2.6000

Specific Structures - Bending Parameters

Structure Name	Sub-Structure Name	Height	Default Properties	Hogging			Sagging		
				2nd Moment of Area (per unit width)	Distance of Bending Strain from N.A.	Distance of N.A. from Edge of Beam in Tension	2nd Moment of Area (per unit width)	Distance of Bending Strain from N.A.	Distance of N.A. from Edge of Beam in Tension
		[m]		[m³]	[m]	[m]	[m³]	[m]	[m]
48-1	0	10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
48-2	0	10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
48-3	0	10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
48-4	0	10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
2-4-1	0	10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
2-4-2	0	10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
2-4-3	0	10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
2-4-4	0	10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
56-3-1	0	10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
56-3-2	0	10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
56-3-3	0	10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000

Building Segment Combinations

Structure Name	Sub-Structure Name	Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Combined Segment

No structures have segments combined.

Utility Strain Calculation Options

Neglect beneficial contribution of axial strains : No

Warnings

None

Errors

None

Displacement and Strain Results

Type/No. Name	Dist. [m]	Coordinates x [m]	y [m]	z [m]	Displacements x [mm]	y [mm]	z [mm]	Horizontal displacement along Line [mm]	Horizontal displacement perpendicular to Line [mm]	Angle of Line to x Axis [°]	
48-1 Line 1		70.00000	143.00000	22.50000	0.0	0.0	0.071314	0.0	0.0	294.60	*
	1.9521	70.81250	141.22500	22.50000	0.0	0.0	0.074865	0.0	0.0	294.60	*
	3.9042	71.62500	139.45000	22.50000	0.0	0.0	0.078361	0.0	0.0	294.60	*
	5.8564	72.43750	137.67500	22.50000	0.0	0.0	0.081750	0.0	0.0	294.60	*
	7.8085	73.25000	135.90000	22.50000	0.0	0.0	0.084976	0.0	0.0	294.60	*
	9.7606	74.06250	134.12500	22.50000	0.0	0.0	0.087986	0.0	0.0	294.60	*
	11.713	74.87500	132.35000	22.50000	0.0	0.0	0.090734	0.0	0.0	294.60	*
	13.665	75.68750	130.57500	22.50000	0.0	0.0	0.093186	0.0	0.0	294.60	*
	15.617	76.50000	128.80000	22.50000	0.0	0.0	0.095326	0.0	0.0	294.60	*
48-2 Line 2		76.50000	128.80000	22.50000	0.0	0.0	0.095326	0.0	0.0	24.249	*
	2.0290	78.35000	129.63333	22.50000	0.0	0.0	0.095861	0.0	0.0	24.249	*
	4.0581	80.20000	130.46667	22.50000	0.0	0.0	0.094255	0.0	0.0	24.249	*
	6.0871	82.05000	131.30000	22.50000	0.0	0.0	0.089700	0.0	0.0	24.249	*
	8.1161	83.90000	132.13333	22.50000	0.0	0.0	0.081175	0.0	0.0	24.249	*
	10.145	85.75000	132.96667	22.50000	0.0	0.0	0.067438	0.0	0.0	24.249	*
	12.174	87.60000	133.80000	22.50000	0.0	0.0	0.047073	0.0	0.0	24.249	*
48-3 Line 3		87.60000	133.80000	22.50000	0.0	0.0	0.047073	0.0	0.0	111.52	*
	1.9080	86.90000	135.57500	22.50000	0.0	0.0	0.062630	0.0	0.0	111.52	*
	3.8161	86.20000	137.35000	22.50000	0.0	0.0	0.074192	0.0	0.0	111.52	*
	5.7241	85.50000	139.12500	22.50000	0.0	0.0	0.082054	0.0	0.0	111.52	*
	7.6322	84.80000	140.90000	22.50000	0.0	0.0	0.086759	0.0	0.0	111.52	*
	9.5402	84.10000	142.67500	22.50000	0.0	0.0	0.088919	0.0	0.0	111.52	*
	11.448	83.40000	144.45000	22.50000	0.0	0.0	0.089107	0.0	0.0	111.52	*
	13.356	82.70000	146.22500	22.50000	0.0	0.0	0.087823	0.0	0.0	111.52	*
	15.264	82.00000	148.00000	22.50000	0.0	0.0	0.085483	0.0	0.0	111.52	*
48-4 Line 4		82.00000	148.00000	22.50000	0.0	0.0	0.085483	0.0	0.0	202.62	*
	1.8571	80.28571	147.28571	22.50000	0.0	0.0	0.084212	0.0	0.0	202.62	*
	3.7143	78.57143	146.57143	22.50000	0.0	0.0	0.082655	0.0	0.0	202.62	*
	5.5714	76.85714	145.85714	22.50000	0.0	0.0	0.080822	0.0	0.0	202.62	*
	7.4286	75.14286	145.14286	22.50000	0.0	0.0	0.078735	0.0	0.0	202.62	*
	9.2857	73.42857	144.42857	22.50000	0.0	0.0	0.076429	0.0	0.0	202.62	*
	11.143	71.71429	143.71429	22.50000	0.0	0.0	0.073941	0.0	0.0	202.62	*
	13.000	70.00000	143.00000	22.50000	0.0	0.0	0.071314	0.0	0.0	202.62	*
2-4-1 Line 5		66.00000	122.70000	22.50000	0.0	0.0	0.075264	0.0	0.0	305.48	*
	2.1366	67.24000	120.96000	22.50000	0.0	0.0	0.078544	0.0	0.0	305.48	*
	4.2733	68.48000	119.22000	22.50000	0.0	0.0	0.081732	0.0	0.0	305.48	*
	6.4099	69.72000	117.48000	22.50000	0.0	0.0	0.084792	0.0	0.0	305.48	*
	8.5465	70.96000	115.74000	22.50000	0.0	0.0	0.087691	0.0	0.0	305.48	*
	10.683	72.20000	114.00000	22.50000	0.0	0.0	0.090393	0.0	0.0	305.48	*
2-4-2 Line 6		72.20000	114.00000	22.50000	0.0	0.0	0.090393	0.0	0.0	215.15	*
	1.9298	70.62222	112.88889	22.50000	0.0	0.0	0.085899	0.0	0.0	215.15	*
	3.8595	69.04444	111.77778	22.50000	0.0	0.0	0.081292	0.0	0.0	215.15	*
	5.7893	67.46667	110.66667	22.50000	0.0	0.0	0.076692	0.0	0.0	215.15	*
	7.7190	65.88889	109.55556	22.50000	0.0	0.0	0.072183	0.0	0.0	215.15	*
	9.6488	64.31111	108.44444	22.50000	0.0	0.0	0.067822	0.0	0.0	215.15	*
	11.579	62.73333	107.33333	22.50000	0.0	0.0	0.063646	0.0	0.0	215.15	*
	13.508	61.15556	106.22222	22.50000	0.0	0.0	0.059676	0.0	0.0	215.15	*
	15.438	59.57778	105.11111	22.50000	0.0	0.0	0.055925	0.0	0.0	215.15	*
	17.368	58.00000	104.00000	22.50000	0.0	0.0	0.052396	0.0	0.0	215.15	*
2-4-3 Line 7		58.00000	104.00000	22.50000	0.0	0.0	0.052396	0.0	0.0	124.91	*
	1.9511	56.88333	105.60000	22.50000	0.0	0.0	0.051202	0.0	0.0	124.91	*
	3.9023	55.76667	107.20000	22.50000	0.0	0.0	0.049938	0.0	0.0	124.91	*
	5.8534	54.65000	108.80000	22.50000	0.0	0.0	0.048614	0.0	0.0	124.91	*
	7.8046	53.53333	110.40000	22.50000	0.0	0.0	0.047242	0.0	0.0	124.91	*
	9.7557	52.41667	112.00000	22.50000	0.0	0.0	0.045832	0.0	0.0	124.91	*
	11.707	51.30000	113.60000	22.50000	0.0	0.0	0.044392	0.0	0.0	124.91	*
2-4-4 Line 8		51.30000	113.60000	22.50000	0.0	0.0	0.044392	0.0	0.0	31.759	*
	1.9210	52.93333	114.61111	22.50000	0.0	0.0	0.047191	0.0	0.0	31.759	*

Type/No. Name	Dist.	Coordinates x	y	z	Displacements x	y	z	Horizontal displacement	Horizontal displacement	Angle of Line to x Axis	
	3.8419	54.56667	115.62222	22.50000	0.0	0.0	0.050161	0.0	0.0	31.759	*
	5.7629	56.20000	116.63333	22.50000	0.0	0.0	0.053305	0.0	0.0	31.759	*
	7.6839	57.83333	117.64444	22.50000	0.0	0.0	0.056620	0.0	0.0	31.759	*
	9.6048	59.46667	118.65556	22.50000	0.0	0.0	0.060099	0.0	0.0	31.759	*
	11.526	61.10000	119.66667	22.50000	0.0	0.0	0.063730	0.0	0.0	31.759	*
	13.447	62.73333	120.67778	22.50000	0.0	0.0	0.067491	0.0	0.0	31.759	*
	15.368	64.36667	121.68889	22.50000	0.0	0.0	0.071351	0.0	0.0	31.759	*
	17.289	66.00000	122.70000	22.50000	0.0	0.0	0.075264	0.0	0.0	31.759	*
56-3-1	Line 9	87.60000	133.80000	22.50000	0.0	0.0	0.047073	0.0	0.0	24.156	*
	2.0093	89.43333	134.62222	22.50000	0.0	0.0	0.018978	0.0	0.0	24.156	*
	4.0185	91.26667	135.44444	22.50000	0.0	0.0	-0.017687	0.0	0.0	24.156	*
	6.0278	93.10000	136.26667	22.50000	0.0	0.0	-0.061560	0.0	0.0	24.156	*
	8.0371	94.93333	137.08889	22.50000	0.0	0.0	-0.10712	0.0	0.0	24.156	*
	10.046	96.76667	137.91111	22.50000	0.0	0.0	-0.14466	0.0	0.0	24.156	*
	12.056	98.60000	138.73333	22.50000	0.0	0.0	-0.16634	0.0	0.0	24.156	*
	14.065	100.43333	139.55556	22.50000	0.0	0.0	-0.17149	0.0	0.0	24.156	*
	16.074	102.26667	140.37778	22.50000	0.0	0.0	-0.16328	0.0	0.0	24.156	*
	18.083	104.10000	141.20000	22.50000	0.0	0.0	-0.14449	0.0	0.0	24.156	*
56-3-2	Line 10	104.10000	141.20000	22.50000	0.0	0.0	-0.14449	0.0	0.0	114.51	*
	1.8683	103.32500	142.90000	22.50000	0.0	0.0	-0.054510	0.0	0.0	114.51	*
	3.7366	102.55000	144.60000	22.50000	0.0	0.0	0.0033060	0.0	0.0	114.51	*
	5.6050	101.77500	146.30000	22.50000	0.0	0.0	0.040380	0.0	0.0	114.51	*
	7.4733	101.00000	148.00000	22.50000	0.0	0.0	0.063681	0.0	0.0	114.51	*
56-3-3	Line 11	101.00000	148.00000	22.50000	0.0	0.0	0.063681	0.0	0.0	203.63	*
	1.9405	99.22222	147.22222	22.50000	0.0	0.0	0.061560	0.0	0.0	203.63	*
	3.8809	97.44444	146.44444	22.50000	0.0	0.0	0.060987	0.0	0.0	203.63	*
	5.8214	95.66667	145.66667	22.50000	0.0	0.0	0.062075	0.0	0.0	203.63	*
	7.7619	93.88889	144.88889	22.50000	0.0	0.0	0.064737	0.0	0.0	203.63	*
	9.7024	92.11111	144.11111	22.50000	0.0	0.0	0.068664	0.0	0.0	203.63	*
	11.643	90.33333	143.33333	22.50000	0.0	0.0	0.073358	0.0	0.0	203.63	*
	13.583	88.55556	142.55556	22.50000	0.0	0.0	0.078231	0.0	0.0	203.63	*
	15.524	86.77778	141.77778	22.50000	0.0	0.0	0.082727	0.0	0.0	203.63	*
	17.464	85.00000	141.00000	22.50000	0.0	0.0	0.086420	0.0	0.0	203.63	*

* Result includes imported displacement(s).

Specific Building Damage Results - Horizontal Displacements

Structure: 48-1 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	70.00000	143.00000	22.50000	0.0	0.0	0.0	0.0	d
1.9521	70.81250	141.22500	22.50000	0.0	0.0	0.0	0.0	d
3.9042	71.62500	139.45000	22.50000	0.0	0.0	0.0	0.0	d
5.8564	72.43750	137.67500	22.50000	0.0	0.0	0.0	0.0	d
7.8085	73.25000	135.90000	22.50000	0.0	0.0	0.0	0.0	d
9.7606	74.06250	134.12500	22.50000	0.0	0.0	0.0	0.0	d
11.713	74.87500	132.35000	22.50000	0.0	0.0	0.0	0.0	d
13.665	75.68750	130.57500	22.50000	0.0	0.0	0.0	0.0	d
15.617	76.50000	128.80000	22.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Structure: 48-2 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	76.50000	128.80000	22.50000	0.0	0.0	0.0	0.0	d
2.0290	78.35000	129.63333	22.50000	0.0	0.0	0.0	0.0	d
4.0581	80.20000	130.46667	22.50000	0.0	0.0	0.0	0.0	d
6.0871	82.05000	131.30000	22.50000	0.0	0.0	0.0	0.0	d
8.1161	83.90000	132.13333	22.50000	0.0	0.0	0.0	0.0	d
10.145	85.75000	132.96667	22.50000	0.0	0.0	0.0	0.0	d
12.174	87.60000	133.80000	22.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Structure: 48-3 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	87.60000	133.80000	22.50000	0.0	0.0	0.0	0.0	d
1.9080	86.90000	135.57500	22.50000	0.0	0.0	0.0	0.0	d
3.8161	86.20000	137.35000	22.50000	0.0	0.0	0.0	0.0	d
5.7241	85.50000	139.12500	22.50000	0.0	0.0	0.0	0.0	d
7.6322	84.80000	140.90000	22.50000	0.0	0.0	0.0	0.0	d
9.5402	84.10000	142.67500	22.50000	0.0	0.0	0.0	0.0	d
11.448	83.40000	144.45000	22.50000	0.0	0.0	0.0	0.0	d
13.356	82.70000	146.22500	22.50000	0.0	0.0	0.0	0.0	d
15.264	82.00000	148.00000	22.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Structure: 48-4 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	82.00000	148.00000	22.50000	0.0	0.0	0.0	0.0	d
1.8571	80.28571	147.28571	22.50000	0.0	0.0	0.0	0.0	d
3.7143	78.57143	146.57143	22.50000	0.0	0.0	0.0	0.0	d
5.5714	76.85714	145.85714	22.50000	0.0	0.0	0.0	0.0	d
7.4286	75.14286	145.14286	22.50000	0.0	0.0	0.0	0.0	d
9.2857	73.42857	144.42857	22.50000	0.0	0.0	0.0	0.0	d
11.143	71.71429	143.71429	22.50000	0.0	0.0	0.0	0.0	d
13.000	70.00000	143.00000	22.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Structure: 2-4-1 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	66.00000	122.70000	22.50000	0.0	0.0	0.0	0.0	d
2.1366	67.24000	120.96000	22.50000	0.0	0.0	0.0	0.0	d
4.2733	68.48000	119.22000	22.50000	0.0	0.0	0.0	0.0	d
6.4099	69.72000	117.48000	22.50000	0.0	0.0	0.0	0.0	d
8.5465	70.96000	115.74000	22.50000	0.0	0.0	0.0	0.0	d
10.683	72.20000	114.00000	22.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Structure: 2-4-2 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement	Horizontal displacement

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	72.20000	114.00000	22.50000	0.0	0.0	0.0	0.0 d
1.9298	70.62222	112.88889	22.50000	0.0	0.0	0.0	0.0 d
3.8595	69.04444	111.77778	22.50000	0.0	0.0	0.0	0.0 d
5.7893	67.46667	110.66667	22.50000	0.0	0.0	0.0	0.0 d
7.7190	65.88889	109.55556	22.50000	0.0	0.0	0.0	0.0 d
9.6488	64.31111	108.44444	22.50000	0.0	0.0	0.0	0.0 d
11.579	62.73333	107.33333	22.50000	0.0	0.0	0.0	0.0 d
13.508	61.15556	106.22222	22.50000	0.0	0.0	0.0	0.0 d
15.438	59.57778	105.11111	22.50000	0.0	0.0	0.0	0.0 d
17.368	58.00000	104.00000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 2-4-3 | Sub-structure: 0

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	58.00000	104.00000	22.50000	0.0	0.0	0.0	0.0 d
1.9511	56.88333	105.60000	22.50000	0.0	0.0	0.0	0.0 d
3.9023	55.76667	107.20000	22.50000	0.0	0.0	0.0	0.0 d
5.8534	54.65000	108.80000	22.50000	0.0	0.0	0.0	0.0 d
7.8046	53.53333	110.40000	22.50000	0.0	0.0	0.0	0.0 d
9.7557	52.41667	112.00000	22.50000	0.0	0.0	0.0	0.0 d
11.707	51.30000	113.60000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 2-4-4 | Sub-structure: 0

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	51.30000	113.60000	22.50000	0.0	0.0	0.0	0.0 d
1.9210	52.93333	114.61111	22.50000	0.0	0.0	0.0	0.0 d
3.8419	54.56667	115.62222	22.50000	0.0	0.0	0.0	0.0 d
5.7629	56.20000	116.63333	22.50000	0.0	0.0	0.0	0.0 d
7.6839	57.83333	117.64444	22.50000	0.0	0.0	0.0	0.0 d
9.6048	59.46667	118.65556	22.50000	0.0	0.0	0.0	0.0 d
11.526	61.10000	119.66667	22.50000	0.0	0.0	0.0	0.0 d
13.447	62.73333	120.67778	22.50000	0.0	0.0	0.0	0.0 d
15.368	64.36667	121.68889	22.50000	0.0	0.0	0.0	0.0 d
17.289	66.00000	122.70000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 56-3-1 | Sub-structure: 0

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	87.60000	133.80000	22.50000	0.0	0.0	0.0	0.0 d
2.0093	89.43333	134.62222	22.50000	0.0	0.0	0.0	0.0 d
4.0185	91.26667	135.44444	22.50000	0.0	0.0	0.0	0.0 d
6.0278	93.10000	136.26667	22.50000	0.0	0.0	0.0	0.0 d
8.0371	94.93333	137.08889	22.50000	0.0	0.0	0.0	0.0 d
10.046	96.76667	137.91111	22.50000	0.0	0.0	0.0	0.0 d
12.056	98.60000	138.73333	22.50000	0.0	0.0	0.0	0.0 d
14.065	100.43333	139.55556	22.50000	0.0	0.0	0.0	0.0 d
16.074	102.26667	140.37778	22.50000	0.0	0.0	0.0	0.0 d
18.083	104.10000	141.20000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 56-3-2 | Sub-structure: 0

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	104.10000	141.20000	22.50000	0.0	0.0	0.0	0.0 d
1.8683	103.32500	142.90000	22.50000	0.0	0.0	0.0	0.0 d
3.7366	102.55000	144.60000	22.50000	0.0	0.0	0.0	0.0 d
5.6050	101.77500	146.30000	22.50000	0.0	0.0	0.0	0.0 d
7.4733	101.00000	148.00000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 56-3-3 | Sub-structure: 0

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	101.00000	148.00000	22.50000	0.0	0.0	0.0	0.0 d
1.9405	99.22222	147.22222	22.50000	0.0	0.0	0.0	0.0 d
3.8809	97.44444	146.44444	22.50000	0.0	0.0	0.0	0.0 d
5.8214	95.66667	145.66667	22.50000	0.0	0.0	0.0	0.0 d
7.7619	93.88889	144.88889	22.50000	0.0	0.0	0.0	0.0 d
9.7024	92.11111	144.11111	22.50000	0.0	0.0	0.0	0.0 d
11.643	90.33333	143.33333	22.50000	0.0	0.0	0.0	0.0 d
13.583	88.55556	142.55556	22.50000	0.0	0.0	0.0	0.0 d
15.524	86.77778	141.77778	22.50000	0.0	0.0	0.0	0.0 d
17.464	85.00000	141.00000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Specific Building Damage Results - Vertical Displacements

Structure: 48-1 | Sub-structure: 0

Dist.	Coordinates			Displacements
	x	y	z	z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	70.00000	143.00000	22.50000	0.071314 d
1.9521	70.81250	141.22500	22.50000	0.074865 d
3.9042	71.62500	139.45000	22.50000	0.078361 d
5.8564	72.43750	137.67500	22.50000	0.081750 d
7.8085	73.25000	135.90000	22.50000	0.084976 d
9.7606	74.06250	134.12500	22.50000	0.087986 d
11.713	74.87500	132.35000	22.50000	0.090734 d
13.665	75.68750	130.57500	22.50000	0.093186 d
15.617	76.50000	128.80000	22.50000	0.095326 d

d - Displacements include imported displacements.

Structure: 48-2 | Sub-structure: 0

Dist.	Coordinates			Displacements

Dist.	x	y	z	z
[m]	[m]	[m]	[m]	[mm]	

Vertical Offset 1

	0.0	76.50000	128.80000	22.50000	0.095326 d
2.0290	78.35000	129.63333	22.50000	0.095861 d	
4.0581	80.20000	130.46667	22.50000	0.094255 d	
6.0871	82.05000	131.30000	22.50000	0.089700 d	
8.1161	83.90000	132.13333	22.50000	0.081175 d	
10.145	85.75000	132.96667	22.50000	0.067438 d	
12.174	87.60000	133.80000	22.50000	0.047073 d	

d - Displacements include imported displacements.

Structure: 48-3 | Sub-structure: 0

Dist.	Coordinates			Displacements
	x	y	z	z
[m]	[m]	[m]	[m]	[mm]

Vertical Offset 1

	0.0	87.60000	133.80000	22.50000	0.047073 d
1.9080	86.90000	135.57500	22.50000	0.062630 d	
3.8161	86.20000	137.35000	22.50000	0.074192 d	
5.7241	85.50000	139.12500	22.50000	0.082054 d	
7.6322	84.80000	140.90000	22.50000	0.086759 d	
9.5402	84.10000	142.67500	22.50000	0.088919 d	
11.448	83.40000	144.45000	22.50000	0.089107 d	
13.356	82.70000	146.22500	22.50000	0.087823 d	
15.264	82.00000	148.00000	22.50000	0.085483 d	

d - Displacements include imported displacements.

Structure: 48-4 | Sub-structure: 0

Dist.	Coordinates			Displacements
	x	y	z	z
[m]	[m]	[m]	[m]	[mm]

Vertical Offset 1

	0.0	82.00000	148.00000	22.50000	0.085483 d
1.8571	80.28571	147.28571	22.50000	0.084212 d	
3.7143	78.57143	146.57143	22.50000	0.082655 d	
5.5714	76.85714	145.85714	22.50000	0.080822 d	
7.4286	75.14286	145.14286	22.50000	0.078735 d	
9.2857	73.42857	144.42857	22.50000	0.076429 d	
11.143	71.71429	143.71429	22.50000	0.073941 d	
13.000	70.00000	143.00000	22.50000	0.071314 d	

d - Displacements include imported displacements.

Structure: 2-4-1 | Sub-structure: 0

Dist.	Coordinates			Displacements
	x	y	z	z
[m]	[m]	[m]	[m]	[mm]

Vertical Offset 1

	0.0	66.00000	122.70000	22.50000	0.075264 d
2.1366	67.24000	120.96000	22.50000	0.078544 d	
4.2733	68.48000	119.22000	22.50000	0.081732 d	
6.4099	69.72000	117.48000	22.50000	0.084792 d	
8.5465	70.96000	115.74000	22.50000	0.087691 d	
10.683	72.20000	114.00000	22.50000	0.090393 d	

d - Displacements include imported displacements.

Structure: 2-4-2 | Sub-structure: 0

Dist.	Coordinates			Displacements
	x	y	z	z
[m]	[m]	[m]	[m]	[mm]

Vertical Offset 1

	0.0	72.20000	114.00000	22.50000	0.090393 d
1.9298	70.62222	112.88889	22.50000	0.085899 d	
3.8595	69.04444	111.77778	22.50000	0.081292 d	
5.7893	67.46667	110.66667	22.50000	0.076692 d	
7.7190	65.88889	109.55556	22.50000	0.072183 d	
9.6488	64.31111	108.44444	22.50000	0.067822 d	
11.579	62.73333	107.33333	22.50000	0.063646 d	
13.508	61.15556	106.22222	22.50000	0.059676 d	
15.438	59.57778	105.11111	22.50000	0.055925 d	
17.368	58.00000	104.00000	22.50000	0.052396 d	

d - Displacements include imported displacements.

Structure: 2-4-3 | Sub-structure: 0

Dist.	Coordinates			Displacements
	x	y	z	z
[m]	[m]	[m]	[m]	[mm]

Vertical Offset 1

	0.0	58.00000	104.00000	22.50000	0.052396 d
1.9511	56.88333	105.60000	22.50000	0.051202 d	
3.9023	55.76667	107.20000	22.50000	0.049938 d	
5.8534	54.65000	108.80000	22.50000	0.048614 d	
7.8046	53.53333	110.40000	22.50000	0.047242 d	
9.7557	52.41667	112.00000	22.50000	0.045832 d	
11.707	51.30000	113.60000	22.50000	0.044392 d	

d - Displacements include imported displacements.

Structure: 2-4-4 | Sub-structure: 0

Dist.	Coordinates			Displacements
	x	y	z	z
[m]	[m]	[m]	[m]	[mm]

Vertical Offset 1

	0.0	51.30000	113.60000	22.50000	0.044392 d
1.9210	52.93333	114.61111	22.50000	0.047191 d	
3.8419	54.56667	115.62222	22.50000	0.050161 d	
5.7629	56.20000	116.63333	22.50000	0.053305 d	
7.6839	57.83333	117.64444	22.50000	0.056620 d	
9.6048	59.46667	118.65556	22.50000	0.060099 d	
11.526	61.10000	119.66667	22.50000	0.063730 d	
13.447	62.73333	120.67778	22.50000	0.067491 d	
15.368	64.36667	121.68889	22.50000	0.071351 d	
17.289	66.00000	122.70000	22.50000	0.075264 d	

d - Displacements include imported displacements.

Structure: 56-3-1 | Sub-structure: 0

Dist.	Coordinates			Displacements
	x	y	z	z
[m]	[m]	[m]	[m]	[mm]

Vertical Offset 1

	0.0	87.60000	133.80000	22.50000	0.047073 d
2.0093	89.43333	134.62222	22.50000	0.018978 d	
4.0185	91.26667	135.44444	22.50000	-0.017687 d	
6.0278	93.10000	136.26667	22.50000	-0.061560 d	
8.0371	94.93333	137.08889	22.50000	-0.10712 d	
10.046	96.76667	137.91111	22.50000	-0.14466 d	
12.056	98.60000	138.73333	22.50000	-0.16634 d	
14.065	100.43333	139.55556	22.50000	-0.17149 d	

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
16.074	102.26667	140.37778	22.50000	-0.16328 d
18.083	104.10000	141.20000	22.50000	-0.14449 d

d - Displacements include imported displacements.

Structure: 56-3-2 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	104.10000	141.20000	22.50000	-0.14449 d
1.8683	103.32500	142.90000	22.50000	-0.054510 d
3.7366	102.55000	144.60000	22.50000	0.0033060 d
5.6050	101.77500	146.30000	22.50000	0.040380 d
7.4733	101.00000	148.00000	22.50000	0.063681 d

d - Displacements include imported displacements.

Structure: 56-3-3 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	101.00000	148.00000	22.50000	0.063681 d
1.9405	99.22222	147.22222	22.50000	0.061560 d
3.8809	97.44444	146.44444	22.50000	0.060987 d
5.8214	95.66667	145.66667	22.50000	0.062075 d
7.7619	93.88889	144.88889	22.50000	0.064737 d
9.7024	92.11111	144.11111	22.50000	0.068664 d
11.643	90.33333	143.33333	22.50000	0.073358 d
13.583	88.55556	142.55556	22.50000	0.078231 d
15.524	86.77778	141.77778	22.50000	0.082727 d
17.464	85.00000	141.00000	22.50000	0.086420 d

d - Displacements include imported displacements.

Specific Building Damage Results - All Segments

Structure: 48-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]	[%]	[%]	[%]			[m]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.									

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

Structure: 48-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]	[%]	[%]	[%]			[m]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.									

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

Structure: 48-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]	[%]	[%]	[%]			[m]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.									

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

Structure: 48-4 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]	[%]	[%]	[%]			[m]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.									

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

Structure: 2-4-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]	[%]	[%]	[%]			[m]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.									

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

Structure: 2-4-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]	[%]	[%]	[%]			[m]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.									

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

Structure: 2-4-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]	[%]	[%]	[%]			[m]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.									

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

Structure: 2-4-4 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]	[%]	[%]	[%]			[m]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.									

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

Vertical Offset from Line for Vertical Movement	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category

Structure: 56-3-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0		1	8.0371	10.045	Hogging	440.19E-6	0.0	413.45E-6	0.0	22.673E-6	260000.	0 (Negligible)

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

Structure: 56-3-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0		1	0.0	0.0	None	0.0	0.0	0.0	0.0	-48.162E-6	99669.	0 (Negligible)

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

Structure: 56-3-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.										

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

Specific Building Damage Results - Critical Values for All Segments within Each Sub-Structure

Structure: 48-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	

Structure: 48-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	

Structure: 48-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	

Structure: 48-4 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	

Structure: 2-4-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	

Structure: 2-4-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	

Structure: 2-4-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	

Structure: 2-4-4 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	

Structure: 56-3-1 | Sub-structure: 0

Vertical Offset from	Deflection Ratio	Average Horizontal	Max Slope	Max Settlement	Max Tensile	Max Gradient of	Max Gradient of Vertical	Min Radius of	Min Radius of	Damage Category

Line for Vertical Movement Calculations	Strain		Strain	Horizontal Displacement Curve	Displacement Curve	Curvature (Hogging)	Curvature (Sagging)	
[m]	[%]	[%]	[mm]	[%]		[m]	[m]	
0.0	440.19E-6	0.0	22.673E-6	0.17138	413.45E-6	0.0	22.673E-6	260000. - 0 (Negligible)

Structure: 56-3-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain		Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]			[mm]	[%]			[m]	[m]	
0.0	0.0	0.0	-48.162E-6		0.14449	0.0	0.0	-48.162E-6	-		- 0 (Negligible)

Structure: 56-3-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	

Specific Building Damage Results - Critical Segments within Each Structure

Structure Name	Parameter	Critical Sub-Structure	Critical Segment	Start	End	Curvature Max Slope	Max Settlement	Max Tensile Strain	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
				[m]	[m]		[mm]	[%]	[m]	[m]	
48-1	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
48-2	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
48-3	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
48-4	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
2-4-1	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
2-4-2	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
2-4-3	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
2-4-4	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
56-3-1	Max Slope	0	1	8.0371	18.082	Hogging **22.673E-6**	0.17138	413.45E-6	260000.		- 0 (Negligible)
	Max Settlement	0	1	8.0371	18.082	Hogging 22.673E-6	**0.17138**	413.45E-6	260000.		- 0 (Negligible)
	Max Tensile Strain	0	1	8.0371	18.082	Hogging 22.673E-6	0.17138	**413.45E-6**	260000.		- 0 (Negligible)
	Min Radius of Curvature (Hogging)	0	1	8.0371	18.082	Hogging 22.673E-6	0.17138	413.45E-6	**260000.**		- 0 (Negligible)
	Min Radius of Curvature (Sagging)		-	-	- -	-	-	-	-	-	- -
56-3-2	Max Slope	0	1	0.0	0.0	Sagging **48.162E-6**	0.14449	0.0	-	99669.	0 (Negligible)
	Max Settlement	0	1	0.0	0.0	Sagging 48.162E-6	**0.14449**	0.0	-	99669.	0 (Negligible)
	Max Tensile Strain	0	1	0.0	0.0	Sagging 48.162E-6	0.14449	**0.0**	-	99669.	0 (Negligible)
	Min Radius of Curvature (Hogging)		-	-	- -	-	-	-	-	-	- -
	Min Radius of Curvature (Sagging)		-	-	- -	-	-	-	-	-	- -
56-3-3	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										

Problem Type

Problem Type : Tunnelling and Embedded Wall Excavations

Displacement Data

Type	Name	Direction of extrusion	Point/Line/Line for extrusion						No. of intervals across extrusion/line	Extrusion depth	No. of intervals along extrusion	Calculate	Surface type for tunnels
			First point			Second point							
			X [m]	Y [m]	Z(level) [m]	X [m]	Y [m]	Z(level) [m]		[m]			
Line	48-1	-	70.00000	143.00000	22.50000	76.50000	128.80000	22.50000	8	-	-	Yes	Surface
Line	48-2	-	76.50000	128.80000	22.50000	87.60000	133.80000	22.50000	6	-	-	Yes	Surface
Line	48-3	-	87.60000	133.80000	22.50000	82.00000	148.00000	22.50000	8	-	-	Yes	Surface
Line	48-4	-	82.00000	148.00000	22.50000	70.00000	143.00000	22.50000	7	-	-	Yes	Surface
Line	2-4-1	-	66.00000	122.70000	22.50000	72.20000	114.00000	22.50000	5	-	-	Yes	Surface
Line	2-4-2	-	72.20000	114.00000	22.50000	58.00000	104.00000	22.50000	9	-	-	Yes	Surface
Line	2-4-3	-	58.00000	104.00000	22.50000	51.30000	113.60000	22.50000	6	-	-	Yes	Surface
Line	2-4-4	-	51.30000	113.60000	22.50000	66.00000	122.70000	22.50000	9	-	-	Yes	Surface
Line	56-3-1	-	87.60000	133.80000	22.50000	104.10000	141.20000	22.50000	9	-	-	Yes	Surface
Line	56-3-2	-	104.10000	141.20000	22.50000	101.00000	148.00000	22.50000	4	-	-	Yes	Surface
Line	56-3-3	-	101.00000	148.00000	22.50000	85.00000	141.00000	22.50000	9	-	-	Yes	Surface

Imported Displacements

The following data points and displacements were found in the import file Demo XDISP.csv.

Ref.	Coordinates			Displacements			
	x [m]	y [m]	z [m]	x [mm]	y [mm]	z [mm]	
1	70.00000	143.00000	22.50000	0.00000	0.00000	0.07131	1,2,6
2	70.81250	141.22500	22.50000	0.00000	0.00000	0.07486	1,2,6
3	71.62500	139.45000	22.50000	0.00000	0.00000	0.07836	1,2,6
4	72.43750	137.67500	22.50000	0.00000	0.00000	0.08175	1,2,6
5	73.25000	135.90000	22.50000	0.00000	0.00000	0.08498	1,2,6
6	74.06250	134.12500	22.50000	0.00000	0.00000	0.08799	1,2,6
7	74.87500	132.35000	22.50000	0.00000	0.00000	0.09073	1,2,6
8	75.68750	130.57500	22.50000	0.00000	0.00000	0.09319	1,2,6
9	76.50000	128.80000	22.50000	0.00000	0.00000	0.09533	1,2,6
10	78.35000	129.63333	22.50000	0.00000	0.00000	0.09586	1,2,6
11	80.20000	130.46667	22.50000	0.00000	0.00000	0.09426	1,2,6
12	82.05000	131.30000	22.50000	0.00000	0.00000	0.08970	1,2,6
13	83.90000	132.13333	22.50000	0.00000	0.00000	0.08118	1,2,6
14	85.75000	132.96667	22.50000	0.00000	0.00000	0.06744	1,2,6
15	87.60000	133.80000	22.50000	0.00000	0.00000	0.04707	1,2,6
16	86.90000	135.57500	22.50000	0.00000	0.00000	0.06263	1,2,6
17	86.20000	137.35000	22.50000	0.00000	0.00000	0.07419	1,2,6
18	85.50000	139.12500	22.50000	0.00000	0.00000	0.08205	1,2,6
19	84.80000	140.90000	22.50000	0.00000	0.00000	0.08676	1,2,6
20	84.10000	142.67500	22.50000	0.00000	0.00000	0.08892	1,2,6
21	83.40000	144.45000	22.50000	0.00000	0.00000	0.08911	1,2,6
22	82.70000	146.22500	22.50000	0.00000	0.00000	0.08782	1,2,6
23	82.00000	148.00000	22.50000	0.00000	0.00000	0.08548	1,2,6
24	80.28571	147.28571	22.50000	0.00000	0.00000	0.08421	1,2,6
25	78.57143	146.57143	22.50000	0.00000	0.00000	0.08266	1,2,6
26	76.85714	145.85714	22.50000	0.00000	0.00000	0.08082	1,2,6
27	75.14286	145.14286	22.50000	0.00000	0.00000	0.07874	1,2,6
28	73.42857	144.42857	22.50000	0.00000	0.00000	0.07643	1,2,6
29	71.71429	143.71429	22.50000	0.00000	0.00000	0.07394	1,2,6
30	66.00000	122.70000	22.50000	0.00000	0.00000	0.07526	1,2,6
31	67.24000	120.96000	22.50000	0.00000	0.00000	0.07854	1,2,6
32	68.48000	119.22000	22.50000	0.00000	0.00000	0.08173	1,2,6
33	69.72000	117.48000	22.50000	0.00000	0.00000	0.08479	1,2,6
34	70.96000	115.74000	22.50000	0.00000	0.00000	0.08769	1,2,6
35	72.20000	114.00000	22.50000	0.00000	0.00000	0.09039	1,2,6
36	70.62222	112.88889	22.50000	0.00000	0.00000	0.08590	1,2,6
37	69.04444	111.77778	22.50000	0.00000	0.00000	0.08129	1,2,6
38	67.46667	110.66667	22.50000	0.00000	0.00000	0.07669	1,2,6
39	65.88889	109.55556	22.50000	0.00000	0.00000	0.07218	1,2,6
40	64.31111	108.44444	22.50000	0.00000	0.00000	0.06782	1,2,6
41	62.73333	107.33333	22.50000	0.00000	0.00000	0.06365	1,2,6
42	61.15556	106.22222	22.50000	0.00000	0.00000	0.05968	1,2,6
43	59.57778	105.11111	22.50000	0.00000	0.00000	0.05593	1,2,6
44	58.00000	104.00000	22.50000	0.00000	0.00000	0.05240	1,2,6
45	56.88333	105.60000	22.50000	0.00000	0.00000	0.05120	1,2,6
46	55.76667	107.20000	22.50000	0.00000	0.00000	0.04994	1,2,6
47	54.65000	108.80000	22.50000	0.00000	0.00000	0.04861	1,2,6
48	53.53333	110.40000	22.50000	0.00000	0.00000	0.04724	1,2,6
49	52.41667	112.00000	22.50000	0.00000	0.00000	0.04583	1,2,6
50	51.30000	113.60000	22.50000	0.00000	0.00000	0.04439	1,2,6
51	52.93333	114.61111	22.50000	0.00000	0.00000	0.04719	1,2,6
52	54.56667	115.62222	22.50000	0.00000	0.00000	0.05016	1,2,6
53	56.20000	116.63333	22.50000	0.00000	0.00000	0.05330	1,2,6
54	57.83333	117.64444	22.50000	0.00000	0.00000	0.05662	1,2,6
55	59.46667	118.65556	22.50000	0.00000	0.00000	0.06010	1,2,6
56	61.10000	119.66667	22.50000	0.00000	0.00000	0.06373	1,2,6
57	62.73333	120.67778	22.50000	0.00000	0.00000	0.06749	1,2,6
58	64.36667	121.68889	22.50000	0.00000	0.00000	0.07135	1,2,6
59	89.43333	134.62222	22.50000	0.00000	0.00000	0.01898	1,2,6
60	91.26667	135.44444	22.50000	0.00000	0.00000	-0.01769	1,2,6
61	93.10000	136.26667	22.50000	0.00000	0.00000	-0.06156	1,2,6
62	94.93333	137.08889	22.50000	0.00000	0.00000	-0.10712	1,2,6
63	96.76667	137.91111	22.50000	0.00000	0.00000	-0.14466	1,2,6
64	98.60000	138.73333	22.50000	0.00000	0.00000	-0.16634	1,2,6
65	100.43333	139.55556	22.50000	0.00000	0.00000	-0.17149	1,2,6
66	102.26667	140.37778	22.50000	0.00000	0.00000	-0.16328	1,2,6
67	104.10000	141.20000	22.50000	0.00000	0.00000	-0.14449	1,2,6
68	103.32500	142.90000	22.50000	0.00000	0.00000	-0.05451	1,2,6
69	102.55000	144.60000	22.50000	0.00000	0.00000	0.00331	1,2,6
70	101.77500	146.30000	22.50000	0.00000	0.00000	0.04038	1,2,6
71	101.00000	148.00000	22.50000	0.00000	0.00000	0.06368	1,2,6
72	99.22222	147.22222	22.50000	0.00000	0.00000	0.06156	1,2,6
73	97.44444	146.44444	22.50000	0.00000	0.00000	0.06099	1,2,6
74	95.66667	145.66667	22.50000	0.00000	0.00000	0.06207	1,2,6
75	93.88889	144.88889	22.50000	0.00000	0.00000	0.06474	1,2,6
76	92.11111	144.11111	22.50000	0.00000	0.00000	0.06866	1,2,6
77	90.33333	143.33333	22.50000	0.00000	0.00000	0.07336	1,2,6
78	88.55556	142.55556	22.50000	0.00000	0.00000	0.07823	1,2,6
79	86.77778	141.77778	22.50000	0.00000	0.00000	0.08273	1,2,6
80	85.00000	141.00000	22.50000	0.00000	0.00000	0.08642	1,2,6

1 - Data point coincident with displacement data. Its displacement has been added to those calculated by Xdisp.
2 - Data point coincident with horizontal movement calculation point for a specific building. Its displacement has been added before performing building damage calculations.
6 - Data point coincident with vertical movement calculation point for a specific building. Its displacement has been added before performing building damage calculations.

Vertical Ground Movement Curves (Excavations)

Curve Name: **No vertical ground movement**
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)(%)]
[0.000,0.000,0.000][1.000,0.000,0.000][0.000,1.000,0.000][1.000,1.000,0.000]
Curve Fitting Method: Polynomial
x Order: 1
y Order: 0

Ref.	Coordinates x [m]	y [m]	z [m]	Displacements x [mm]	y [mm]	z [mm]

Polynomial: z = 0.0x + 0.0
Coeff. of Determination: −2147483648.E+2147483647

Curve Name: **Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(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)(%)]
[0.000,0.000,0.050][2.000,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 1
y Order: 0
Polynomial: z = −2.5E-2x + 5.0E-2
Coeff. of Determination: 1.0

Curve Name: **Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(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]
[0.400,0.000,0.067][0.500,0.000,0.070][0.600,0.000,0.072][0.700,0.000,0.073]
[0.800,0.000,0.073][0.900,0.000,0.072][1.000,0.000,0.070][1.100,0.000,0.068]
[1.200,0.000,0.065][1.300,0.000,0.061][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]
[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]
[2.800,0.000,0.010][2.900,0.000,0.008][3.000,0.000,0.007][3.100,0.000,0.005]
[3.200,0.000,0.004][3.300,0.000,0.004][3.400,0.000,0.003][3.500,0.000,0.002]
[3.600,0.000,0.002][3.700,0.000,0.002][3.800,0.000,0.001][3.900,0.000,0.001]
[4.000,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 4
y Order: 0
Polynomial: z = $-2.6455E-3x^4 + 2.8495E-2x^3 - 1.0051E-1x^2 + 1.0569E-1x + 3.8990E-2$
Coeff. of Determination: 9.9991E-1

Curve Name: **Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(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)(%)]
[0.000,0.000,0.345][0.100,0.000,0.327][0.200,0.000,0.311][0.300,0.000,0.294]
[0.400,0.000,0.279][0.500,0.000,0.264][0.600,0.000,0.250][0.700,0.000,0.237]
[0.800,0.000,0.224][0.900,0.000,0.212][1.000,0.000,0.200][1.100,0.000,0.189]
[1.200,0.000,0.178][1.300,0.000,0.168][1.400,0.000,0.158][1.500,0.000,0.149]
[1.600,0.000,0.140][1.700,0.000,0.132][1.800,0.000,0.124][1.900,0.000,0.116]
[2.000,0.000,0.109][2.100,0.000,0.101][2.200,0.000,0.095][2.300,0.000,0.088]
[2.400,0.000,0.082][2.500,0.000,0.076][2.600,0.000,0.070][2.700,0.000,0.065]
[2.800,0.000,0.059][2.900,0.000,0.054][3.000,0.000,0.049][3.100,0.000,0.044]
[3.200,0.000,0.039][3.300,0.000,0.034][3.400,0.000,0.029][3.500,0.000,0.025]
[3.600,0.000,0.020][3.700,0.000,0.015][3.800,0.000,0.010][3.900,0.000,0.005]
[4.000,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 3
y Order: 0
Polynomial: z = $-3.5383E-3x^3 + 3.7194E-2x^2 - 1.7831E-1x + 3.4467E-1$
Coeff. of Determination: 9.9999E-1

Horizontal Ground Movement Curves (Excavations)

Curve Name: **No horizontal ground movement**
Coordinates: [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)(%)]
[0.000,0.000,0.000][1.000,0.000,0.000][0.000,1.000,0.000][1.000,1.000,0.000]
Curve Fitting Method: Polynomial
x Order: 0
y Order: 0
Polynomial: z = 0.0
Coeff. of Determination: −2147483648.E+2147483647

Curve Name: **Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(a))**
Coordinates: [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)(%)]
[0.000,0.000,0.081][0.050,0.000,0.076][0.100,0.000,0.072][0.150,0.000,0.067]
[0.200,0.000,0.063][0.250,0.000,0.059][0.300,0.000,0.056][0.350,0.000,0.052]
[0.400,0.000,0.049][0.450,0.000,0.045][0.500,0.000,0.043][0.550,0.000,0.040]
[0.600,0.000,0.037][0.650,0.000,0.034][0.700,0.000,0.032][0.750,0.000,0.029]
[0.800,0.000,0.027][0.850,0.000,0.024][0.900,0.000,0.022][0.950,0.000,0.020]
[1.000,0.000,0.018][1.050,0.000,0.016][1.100,0.000,0.014][1.150,0.000,0.012]
[1.200,0.000,0.011][1.250,0.000,0.009][1.300,0.000,0.007][1.350,0.000,0.005]
[1.400,0.000,0.004][1.450,0.000,0.002][1.500,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 3
y Order: 0
Polynomial: z = $-1.0610E-2x^3 + 4.4203E-2x^2 - 9.6358E-2x + 8.0901E-2$
Coeff. of Determination: 1.0000

Curve Name: **Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))**
Coordinates: [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)(%)]
[0.000,0.000,0.150][4.000,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 1
y Order: 0
Polynomial: z = −3.75E-2x + 1.50E-1
Coeff. of Determination: 1.00

Curve Name: **Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))**
Coordinates: [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)(%)]
[0.000,0.000,0.400][4.000,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 1
y Order: 0
Polynomial: z = −10.E-2x + 4.0E-1
Coeff. of Determination: 1.0

Polygonal Excavations

Excavation Name: **Lift Pit**
Surface level [m]: 17.500
Contribution: Positive
Enabled: Yes
Surface movement curves which are selected are applied between surface and [m]: 16.100

Corner	x	y	Base	Stiffened	Previous Side	Next Side

		Level		d	p1	p2*	d	p1	p2*
	[m]	[m]		[m]	[%]	[%]	[m]	[%]	[%]
1	104.50	122.40	16.100	Yes	0.0	67.000	25.000	0.0	67.000	25.000
2	107.00	123.50	16.100	Yes	0.0	67.000	25.000	0.0	67.000	25.000
3	107.90	121.50	16.100	Yes	0.0	67.000	25.000	0.0	67.000	25.000
4	105.50	120.30	16.100	Yes	0.0	67.000	25.000	0.0	67.000	25.000

Side	Corner 1 x [m]	Corner 1 y [m]	Corner 2 x [m]	Corner 2 y [m]	Ground Movement Curve Vertical	Horizontal
1	104.50	122.40	107.00	123.50	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b))	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))
2	107.00	123.50	107.90	121.50	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b))	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))
3	107.90	121.50	105.50	120.30	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b))	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))
4	105.50	120.30	104.50	122.40	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b))	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))

Excavation Name: New Basement 1
Surface level [m]: 22.550
Contribution: Positive
Enabled: Yes
Surface movement curves which are selected are applied between surface and [m]: 17.500

Corner	x [m]	y [m]	Base Level [m]	Stiffened	Previous Side d [m]	Previous Side p1 [%]	Previous Side p2* [%]	Next Side d [m]	Next Side p1 [%]	Next Side p2* [%]
1	109.50	117.50	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
2	105.80	126.20	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
3	108.30	127.30	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
4	112.00	118.60	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000

Side	Corner 1 x [m]	Corner 1 y [m]	Corner 2 x [m]	Corner 2 y [m]	Ground Movement Curve Vertical	Horizontal
1	109.50	117.50	105.80	126.20	No vertical ground movement	No horizontal ground movement
2	105.80	126.20	108.30	127.30	Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(b))	Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(a))
3	108.30	127.30	112.00	118.60	Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(b))	Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(a))
4	112.00	118.60	109.50	117.50	No vertical ground movement	No horizontal ground movement

Excavation Name: New Basement 2
Surface level [m]: 22.550
Contribution: Positive
Enabled: Yes
Surface movement curves which are selected are applied between surface and [m]: 17.500

Corner	x [m]	y [m]	Base Level [m]	Stiffened	Previous Side d [m]	Previous Side p1 [%]	Previous Side p2* [%]	Next Side d [m]	Next Side p1 [%]	Next Side p2* [%]
1	105.80	126.20	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
2	101.20	124.20	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
3	102.50	121.50	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
4	107.00	123.50	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000

Side	Corner 1 x [m]	Corner 1 y [m]	Corner 2 x [m]	Corner 2 y [m]	Ground Movement Curve Vertical	Horizontal
1	105.80	126.20	101.20	124.20	Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(b))	Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(a))
2	101.20	124.20	102.50	121.50	Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b)	Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))
3	102.50	121.50	107.00	123.50	No vertical ground movement	No horizontal ground movement
4	107.00	123.50	105.80	126.20	No vertical ground movement	No horizontal ground movement

Excavation Name: New Basement 3
Surface level [m]: 20.350
Contribution: Positive
Enabled: Yes
Surface movement curves which are selected are applied between surface and [m]: 17.500

Corner	x [m]	y [m]	Base Level [m]	Stiffened	Previous Side d [m]	Previous Side p1 [%]	Previous Side p2* [%]	Next Side d [m]	Next Side p1 [%]	Next Side p2* [%]
1	102.50	121.50	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
2	104.00	118.20	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
3	108.40	120.00	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
4	107.00	123.50	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000

Side	Corner 1 x [m]	Corner 1 y [m]	Corner 2 x [m]	Corner 2 y [m]	Ground Movement Curve Vertical	Horizontal
1	102.50	121.50	104.00	118.20	Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b)	Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))
2	104.00	118.20	108.40	120.00	Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b)	Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))
3	108.40	120.00	107.00	123.50	No vertical ground movement	No horizontal ground movement
4	107.00	123.50	102.50	121.50	No vertical ground movement	No horizontal ground movement

Damage Category Strains

Name	0 (Negligible) to 1 (Very Slight)	1 (Very Slight) to 2 (Slight)	2 (Slight) to 3 (Moderate)	3 (Moderate) to 4 (Severe)
Burland Strain Limits	0.0	500.00E-6	750.00E-6	0.0015000

Specific Structures - Geometry

Structure Name	Sub-Structure Name	Displacement Line	Start Distance Along Line [m]	End Distance Along Line [m]	Vertical Offsets from Line for Vertical Movement Calculations [m]	Vertical Displacement Limit Sensitivity [mm]	Damage Category Strains	Poisson's Ratio	E/G
48-1		0 48-1	0.00000	15.61598	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
48-2		0 48-2	0.00000	12.17315	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
48-3		0 48-3	0.00000	15.26334	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
48-4		0 48-4	0.00000	12.99900	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
2-4-1		0 2-4-1	0.00000	10.68216	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
2-4-2		0 2-4-2	0.00000	17.36679	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
2-4-3		0 2-4-3	0.00000	11.70584	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
2-4-4		0 2-4-4	0.00000	17.28772	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
56-3-1		0 56-3-1	0.00000	18.08242	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
56-3-2		0 56-3-2	0.00000	7.47229	0.0	0.10000	Burland Strain Limits	0.20000	2.6000

Structure Name	Sub-Structure Name	Displacement Line	Start Distance Along Line	End Distance Along Line	Vertical Offsets from Line for Vertical	Vertical Displacement Limit Sensitivity	Damage Category Strains	Poisson's Ratio	E/G
56-3-3		0 56-3-3	0.00000	17.46325	0.0	0.10000	Burland Strain Limits	0.20000	2.6000

Specific Structures - Bending Parameters

Structure Name	Sub-Structure Name	Height	Default Properties	Hogging			Sagging		
				2nd Moment of Area (per unit width)	Distance of Bending Strain from N.A.	Distance of N.A. from Edge of Beam in Tension	2nd Moment of Area (per unit width)	Distance of Bending Strain from N.A.	Distance of N.A. from Edge of Beam in Tension
		[m]		[m³]	[m]	[m]	[m³]	[m]	[m]
48-1		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
48-2		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
48-3		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
48-4		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
2-4-1		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
2-4-2		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
2-4-3		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
2-4-4		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
56-3-1		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
56-3-2		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
56-3-3		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000

Building Segment Combinations

Structure Name	Sub-Structure Name	Vertical Offset from Line for Vertical Movement Calculations	Segment Start	Length	Curvature	Combined Segment
		[m]	[m]	[m]		

No structures have segments combined.

Utility Strain Calculation Options

Neglect beneficial contribution of axial strains : No

Warnings

1 Multiple excavations have been specified. The displacements resulting from these excavations are calculated by summing the displacements resulting from each individual excavation. No account has been taken of the interactions between excavations (e.g. overlapping zones of influence or 'shielding' of one excavation by another).

2 Embedded Wall Excavation PE1 : Lift Pit intersects PE2 : New Basement 1, , PE3 : New Basement 2, and PE4 : New Basement 3.

3 Embedded Wall Excavation PE2 : New Basement 1 intersects PE1 : Lift Pit, , PE3 : New Basement 2, and PE4 : New Basement 3.

4 Embedded Wall Excavation PE3 : New Basement 2 intersects PE1 : Lift Pit, , PE2 : New Basement 1, and PE4 : New Basement 3.

5 Embedded Wall Excavation PE4 : New Basement 3 intersects PE1 : Lift Pit, , PE2 : New Basement 1, and PE3 : New Basement 2.

6 If an embedded wall excavation is assigned a 'surface' ground movement curve and if the 'allow movement calculation to level' option is checked for the excavation then displacements induced by it are calculated for points at the surface, and points below the surface to the level specified. Others are ignored. An example of such a combination, for which displacements will not be calculated is Excavation XP1/Side 1/Line 1/Vertical. This is an example only. There are 131 others.

7 If an embedded wall excavation is assigned a 'sub-surface' ground movement curve then displacements induced by it can only be calculated for those points that are level with or below the embedded wall excavation's 'surface level'. Others are ignored. An example of such a combination, for which displacements will not be calculated is Excavation XP4/Side 3/Line 1/Vertical. This is an example only. There are 43 others.

Errors

None

Displacement and Strain Results

Type/No. Name	Dist.	Coordinates x	y	z	Displacements x	y	z	Horizontal displacement along Line	Horizontal displacement perpendicular to Line	Angle of Line to x Axis	
	[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	[mm]	[°]	
48-1	Line 1	70.00000	143.00000	22.50000	0.0	0.0	0.071314	0.0	0.0	294.60	*
	1.9521	70.81250	141.22500	22.50000	0.0	0.0	0.074865	0.0	0.0	294.60	*
	3.9042	71.62500	139.45000	22.50000	0.0	0.0	0.078361	0.0	0.0	294.60	*
	5.8564	72.43750	137.67500	22.50000	0.0	0.0	0.081750	0.0	0.0	294.60	*
	7.8085	73.25000	135.90000	22.50000	0.0	0.0	0.084976	0.0	0.0	294.60	*
	9.7606	74.06250	134.12500	22.50000	0.0	0.0	0.087986	0.0	0.0	294.60	*
	11.713	74.87500	132.35000	22.50000	0.0	0.0	0.090734	0.0	0.0	294.60	*
	13.665	75.68750	130.57500	22.50000	0.0	0.0	0.093186	0.0	0.0	294.60	*
	15.617	76.50000	128.80000	22.50000	0.0	0.0	0.095326	0.0	0.0	294.60	*
48-2	Line 2	76.50000	128.80000	22.50000	0.0	0.0	0.095326	0.0	0.0	24.249	*
	2.0290	78.35000	129.63333	22.50000	0.0	0.0	0.095861	0.0	0.0	24.249	*
	4.0581	80.20000	130.46667	22.50000	0.0	0.0	0.094255	0.0	0.0	24.249	*
	6.0871	82.05000	131.30000	22.50000	0.0	0.0	0.089700	0.0	0.0	24.249	*
	8.1161	83.90000	132.13333	22.50000	0.087366	0.042065	0.096763	0.096934	0.0024719	24.249	*
	10.145	85.75000	132.96667	22.50000	0.16077	0.077408	0.090763	0.17838	0.0045487	24.249	*
	12.174	87.60000	133.80000	22.50000	0.19864	0.095641	0.076926	0.22039	0.0056201	24.249	*
48-3	Line 3	87.60000	133.80000	22.50000	0.19864	0.095641	0.076926	0.016098	-0.21988	111.52	*
	1.9080	86.90000	135.57500	22.50000	0.096455	0.046441	0.077353	0.0078168	-0.10677	111.52	*
	3.8161	86.20000	137.35000	22.50000	0.011376	0.0054775	0.077215	921.96E-6	-0.012593	111.52	*
	5.7241	85.50000	139.12500	22.50000	0.0	0.0	0.082054	0.0	0.0	111.52	*
	7.6322	84.80000	140.90000	22.50000	0.0	0.0	0.086759	0.0	0.0	111.52	*
	9.5402	84.10000	142.67500	22.50000	0.0	0.0	0.088919	0.0	0.0	111.52	*
	11.448	83.40000	144.45000	22.50000	0.0	0.0	0.089107	0.0	0.0	111.52	*
	13.356	82.70000	146.22500	22.50000	0.0	0.0	0.087823	0.0	0.0	111.52	*
	15.264	82.00000	148.00000	22.50000	0.0	0.0	0.085483	0.0	0.0	111.52	*
48-4	Line 4	82.00000	148.00000	22.50000	0.0	0.0	0.085483	0.0	0.0	202.62	*
	1.8571	80.28571	147.28571	22.50000	0.0	0.0	0.084212	0.0	0.0	202.62	*
	3.7143	78.57143	146.57143	22.50000	0.0	0.0	0.082655	0.0	0.0	202.62	*
	5.5714	76.85714	145.85714	22.50000	0.0	0.0	0.080822	0.0	0.0	202.62	*
	7.4286	75.14286	145.14286	22.50000	0.0	0.0	0.078735	0.0	0.0	202.62	*
	9.2857	73.42857	144.42857	22.50000	0.0	0.0	0.076429	0.0	0.0	202.62	*
	11.143	71.71429	143.71429	22.50000	0.0	0.0	0.073941	0.0	0.0	202.62	*
	13.000	70.00000	143.00000	22.50000	0.0	0.0	0.071314	0.0	0.0	202.62	*
2-4-1	Line 5	66.00000	122.70000	22.50000	0.0	0.0	0.075264	0.0	0.0	305.48	*
	2.1366	67.24000	120.96000	22.50000	0.0	0.0	0.078544	0.0	0.0	305.48	*
	4.2733	68.48000	119.22000	22.50000	0.0	0.0	0.081732	0.0	0.0	305.48	*
	6.4099	69.72000	117.48000	22.50000	0.0	0.0	0.084792	0.0	0.0	305.48	*
	8.5465	70.96000	115.74000	22.50000	0.0	0.0	0.087691	0.0	0.0	305.48	*
	10.683	72.20000	114.00000	22.50000	0.0	0.0	0.090393	0.0	0.0	305.48	*
2-4-2	Line 6	72.20000	114.00000	22.50000	0.0	0.0	0.090393	0.0	0.0	215.15	*
	1.9298	70.62222	112.88889	22.50000	0.0	0.0	0.085899	0.0	0.0	215.15	*
	3.8595	69.04444	111.77778	22.50000	0.0	0.0	0.081292	0.0	0.0	215.15	*
	5.7893	67.46667	110.66667	22.50000	0.0	0.0	0.076692	0.0	0.0	215.15	*
	7.7190	65.88889	109.55556	22.50000	0.0	0.0	0.072183	0.0	0.0	215.15	*
	9.6488	64.31111	108.44444	22.50000	0.0	0.0	0.067822	0.0	0.0	215.15	*
	11.579	62.73333	107.33333	22.50000	0.0	0.0	0.063646	0.0	0.0	215.15	*
	13.508	61.15556	106.22222	22.50000	0.0	0.0	0.059676	0.0	0.0	215.15	*
	15.438	59.57778	105.11111	22.50000	0.0	0.0	0.055925	0.0	0.0	215.15	*
	17.368	58.00000	104.00000	22.50000	0.0	0.0	0.052396	0.0	0.0	215.15	*
2-4-3	Line 7	58.00000	104.00000	22.50000	0.0	0.0	0.052396	0.0	0.0	124.91	*
	1.9511	56.88333	105.60000	22.50000	0.0	0.0	0.051202	0.0	0.0	124.91	*

Type/No.		Coordinates			Displacements					Angle of Line to x Axis
Name	Dist.	x	y	z	x	y	z	Horizontal displacement	Horizontal displacement	
	3.9023	55.76667	107.20000	22.50000	0.0	0.0	0.049938	0.0	0.0	124.91 *
	5.8534	54.65000	108.80000	22.50000	0.0	0.0	0.048614	0.0	0.0	124.91 *
	7.8046	53.53333	110.40000	22.50000	0.0	0.0	0.047242	0.0	0.0	124.91 *
	9.7557	52.41667	112.00000	22.50000	0.0	0.0	0.045832	0.0	0.0	124.91 *
	11.707	51.30000	113.60000	22.50000	0.0	0.0	0.044392	0.0	0.0	124.91 *
2-4-4	Line 8	51.30000	113.60000	22.50000	0.0	0.0	0.044392	0.0	0.0	31.759 *
	1.9210	52.93333	114.61111	22.50000	0.0	0.0	0.047191	0.0	0.0	31.759 *
	3.8419	54.56667	115.62222	22.50000	0.0	0.0	0.050161	0.0	0.0	31.759 *
	5.7629	56.20000	116.63333	22.50000	0.0	0.0	0.053305	0.0	0.0	31.759 *
	7.6839	57.83333	117.64444	22.50000	0.0	0.0	0.056620	0.0	0.0	31.759 *
	9.6048	59.46667	118.65556	22.50000	0.0	0.0	0.060099	0.0	0.0	31.759 *
	11.526	61.10000	119.66667	22.50000	0.0	0.0	0.063730	0.0	0.0	31.759 *
	13.447	62.73333	120.67778	22.50000	0.0	0.0	0.067491	0.0	0.0	31.759 *
	15.368	64.36667	121.68889	22.50000	0.0	0.0	0.071351	0.0	0.0	31.759 *
	17.289	66.00000	122.70000	22.50000	0.0	0.0	0.075264	0.0	0.0	31.759 *
56-3-1	Line 9	87.60000	133.80000	22.50000	0.19864	0.095641	0.076926	0.22038	0.0059805	24.156 *
	2.0093	89.43333	134.62222	22.50000	0.19996	0.096277	0.053697	0.22185	0.0060202	24.156 *
	4.0185	91.26667	135.44444	22.50000	0.16677	0.080296	0.015869	0.18502	0.0050210	24.156 *
	6.0278	93.10000	136.26667	22.50000	0.10505	0.050581	-0.038117	0.11655	0.0031629	24.156 *
	8.0371	94.93333	137.08889	22.50000	0.025492	0.012274	-0.10117	0.028282	767.50E-6	24.156 *
	10.046	96.76667	137.91111	22.50000	0.0	0.0	-0.14466	0.0	0.0	24.156 *
	12.056	98.60000	138.73333	22.50000	0.0	0.0	-0.16634	0.0	0.0	24.156 *
	14.065	100.43333	139.55556	22.50000	0.0	0.0	-0.17149	0.0	0.0	24.156 *
	16.074	102.26667	140.37778	22.50000	0.0	0.0	-0.16328	0.0	0.0	24.156 *
	18.083	104.10000	141.20000	22.50000	0.0	0.0	-0.14449	0.0	0.0	24.156 *
56-3-2	Line 10	104.10000	141.20000	22.50000	0.0	0.0	-0.14449	0.0	0.0	114.51 *
	1.8683	103.32500	142.90000	22.50000	0.0	0.0	-0.054510	0.0	0.0	114.51 *
	3.7366	102.55000	144.60000	22.50000	0.0	0.0	0.0033060	0.0	0.0	114.51 *
	5.6050	101.77500	146.30000	22.50000	0.0	0.0	0.040380	0.0	0.0	114.51 *
	7.4733	101.00000	148.00000	22.50000	0.0	0.0	0.063681	0.0	0.0	114.51 *
56-3-3	Line 11	101.00000	148.00000	22.50000	0.0	0.0	0.063681	0.0	0.0	203.63 *
	1.9405	99.22222	147.22222	22.50000	0.0	0.0	0.061560	0.0	0.0	203.63 *
	3.8809	97.44444	146.44444	22.50000	0.0	0.0	0.060987	0.0	0.0	203.63 *
	5.8214	95.66667	145.66667	22.50000	0.0	0.0	0.062075	0.0	0.0	203.63 *
	7.7619	93.88889	144.88889	22.50000	0.0	0.0	0.064737	0.0	0.0	203.63 *
	9.7024	92.11111	144.11111	22.50000	0.0	0.0	0.068664	0.0	0.0	203.63 *
	11.643	90.33333	143.33333	22.50000	0.0	0.0	0.073358	0.0	0.0	203.63 *
	13.583	88.55556	142.55556	22.50000	0.0	0.0	0.078231	0.0	0.0	203.63 *
	15.524	86.77778	141.77778	22.50000	0.0	0.0	0.082727	0.0	0.0	203.63 *
	17.464	85.00000	141.00000	22.50000	0.0	0.0	0.086420	0.0	0.0	203.63 *

* Result includes imported displacement(s).

Specific Building Damage Results - Horizontal Displacements

Structure: 48-1 | Sub-structure: 0

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	70.00000	143.00000	22.50000	0.0	0.0	0.0	0.0 d
1.9521	70.81250	141.22500	22.50000	0.0	0.0	0.0	0.0 d
3.9042	71.62500	139.45000	22.50000	0.0	0.0	0.0	0.0 d
5.8564	72.43750	137.67500	22.50000	0.0	0.0	0.0	0.0 d
7.8085	73.25000	135.90000	22.50000	0.0	0.0	0.0	0.0 d
9.7606	74.06250	134.12500	22.50000	0.0	0.0	0.0	0.0 d
11.713	74.87500	132.35000	22.50000	0.0	0.0	0.0	0.0 d
13.665	75.68750	130.57500	22.50000	0.0	0.0	0.0	0.0 d
15.617	76.50000	128.80000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 48-2 | Sub-structure: 0

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	76.50000	128.80000	22.50000	0.0	0.0	0.0	0.0 d
2.0290	78.35000	129.63333	22.50000	0.0	0.0	0.0	0.0 d
4.0581	80.20000	130.46667	22.50000	0.0	0.0	0.0	0.0 d
6.0871	82.05000	131.30000	22.50000	0.0	0.0	0.0	0.0 d
8.1161	83.90000	132.13333	22.50000	0.087366	0.042065	0.096934	0.0024719 d
10.145	85.75000	132.96667	22.50000	0.16077	0.077408	0.17838	0.0045487 d
12.174	87.60000	133.80000	22.50000	0.19864	0.095641	0.22039	0.0056201 d

d - Displacements include imported displacements.

Structure: 48-3 | Sub-structure: 0

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	87.60000	133.80000	22.50000	0.19864	0.095641	0.016098	-0.21988 d
1.9080	86.90000	135.57500	22.50000	0.096455	0.046441	0.0078168	-0.10677 d
3.8161	86.20000	137.35000	22.50000	0.011376	0.0054775	921.96E-6	-0.012593 d
5.7241	85.50000	139.12500	22.50000	0.0	0.0	0.0	0.0 d
7.6322	84.80000	140.90000	22.50000	0.0	0.0	0.0	0.0 d
9.5402	84.10000	142.67500	22.50000	0.0	0.0	0.0	0.0 d
11.448	83.40000	144.45000	22.50000	0.0	0.0	0.0	0.0 d
13.356	82.70000	146.22500	22.50000	0.0	0.0	0.0	0.0 d
15.264	82.00000	148.00000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 48-4 | Sub-structure: 0

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	82.00000	148.00000	22.50000	0.0	0.0	0.0	0.0 d
1.8571	80.28571	147.28571	22.50000	0.0	0.0	0.0	0.0 d
3.7143	78.57143	146.57143	22.50000	0.0	0.0	0.0	0.0 d
5.5714	76.85714	145.85714	22.50000	0.0	0.0	0.0	0.0 d
7.4286	75.14286	145.14286	22.50000	0.0	0.0	0.0	0.0 d
9.2857	73.42857	144.42857	22.50000	0.0	0.0	0.0	0.0 d
11.143	71.71429	143.71429	22.50000	0.0	0.0	0.0	0.0 d
13.000	70.00000	143.00000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 2-4-1 | Sub-structure: 0

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	66.00000	122.70000	22.50000	0.0	0.0	0.0	0.0 d
2.1366	67.24000	120.96000	22.50000	0.0	0.0	0.0	0.0 d
4.2733	68.48000	119.22000	22.50000	0.0	0.0	0.0	0.0 d
6.4099	69.72000	117.48000	22.50000	0.0	0.0	0.0	0.0 d
8.5465	70.96000	115.74000	22.50000	0.0	0.0	0.0	0.0 d
10.683	72.20000	114.00000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line

Structure: 2-4-2 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	72.20000	114.00000	22.50000	0.0	0.0	0.0	0.0 d
1.9298	70.62222	112.88889	22.50000	0.0	0.0	0.0	0.0 d
3.8595	69.04444	111.77778	22.50000	0.0	0.0	0.0	0.0 d
5.7893	67.46667	110.66667	22.50000	0.0	0.0	0.0	0.0 d
7.7190	65.88889	109.55556	22.50000	0.0	0.0	0.0	0.0 d
9.6488	64.31111	108.44444	22.50000	0.0	0.0	0.0	0.0 d
11.579	62.73333	107.33333	22.50000	0.0	0.0	0.0	0.0 d
13.508	61.15556	106.22222	22.50000	0.0	0.0	0.0	0.0 d
15.438	59.57778	105.11111	22.50000	0.0	0.0	0.0	0.0 d
17.368	58.00000	104.00000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 2-4-3 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	58.00000	104.00000	22.50000	0.0	0.0	0.0	0.0 d
1.9511	56.88333	105.60000	22.50000	0.0	0.0	0.0	0.0 d
3.9023	55.76667	107.20000	22.50000	0.0	0.0	0.0	0.0 d
5.8534	54.65000	108.80000	22.50000	0.0	0.0	0.0	0.0 d
7.8046	53.53333	110.40000	22.50000	0.0	0.0	0.0	0.0 d
9.7557	52.41667	112.00000	22.50000	0.0	0.0	0.0	0.0 d
11.707	51.30000	113.60000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 2-4-4 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	51.30000	113.60000	22.50000	0.0	0.0	0.0	0.0 d
1.9210	52.93333	114.61111	22.50000	0.0	0.0	0.0	0.0 d
3.8419	54.56667	115.62222	22.50000	0.0	0.0	0.0	0.0 d
5.7629	56.20000	116.63333	22.50000	0.0	0.0	0.0	0.0 d
7.6839	57.83333	117.64444	22.50000	0.0	0.0	0.0	0.0 d
9.6048	59.46667	118.65556	22.50000	0.0	0.0	0.0	0.0 d
11.526	61.10000	119.66667	22.50000	0.0	0.0	0.0	0.0 d
13.447	62.73333	120.67778	22.50000	0.0	0.0	0.0	0.0 d
15.368	64.36667	121.68889	22.50000	0.0	0.0	0.0	0.0 d
17.289	66.00000	122.70000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 56-3-1 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	87.60000	133.80000	22.50000	0.19864	0.095641	0.22038	0.0059805 d
2.0093	89.43333	134.62222	22.50000	0.19996	0.096277	0.22185	0.0060202 d
4.0185	91.26667	135.44444	22.50000	0.16677	0.080296	0.18502	0.0050210 d
6.0278	93.10000	136.26667	22.50000	0.10505	0.050581	0.11655	0.0031629 d
8.0371	94.93333	137.08889	22.50000	0.025492	0.012274	0.028282	767.50E-6 d
10.046	96.76667	137.91111	22.50000	0.0	0.0	0.0	0.0 d
12.056	98.60000	138.73333	22.50000	0.0	0.0	0.0	0.0 d
14.065	100.43333	139.55556	22.50000	0.0	0.0	0.0	0.0 d
16.074	102.26667	140.37778	22.50000	0.0	0.0	0.0	0.0 d
18.083	104.10000	141.20000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 56-3-2 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	104.10000	141.20000	22.50000	0.0	0.0	0.0	0.0 d
1.8683	103.32500	142.90000	22.50000	0.0	0.0	0.0	0.0 d
3.7366	102.55000	144.60000	22.50000	0.0	0.0	0.0	0.0 d
5.6050	101.77500	146.30000	22.50000	0.0	0.0	0.0	0.0 d
7.4733	101.00000	148.00000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 56-3-3 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	101.00000	148.00000	22.50000	0.0	0.0	0.0	0.0 d
1.9405	99.22222	147.22222	22.50000	0.0	0.0	0.0	0.0 d
3.8809	97.44444	146.44444	22.50000	0.0	0.0	0.0	0.0 d
5.8214	95.66667	145.66667	22.50000	0.0	0.0	0.0	0.0 d
7.7619	93.88889	144.88889	22.50000	0.0	0.0	0.0	0.0 d
9.7024	92.11111	144.11111	22.50000	0.0	0.0	0.0	0.0 d
11.643	90.33333	143.33333	22.50000	0.0	0.0	0.0	0.0 d
13.583	88.55556	142.55556	22.50000	0.0	0.0	0.0	0.0 d
15.524	86.77778	141.77778	22.50000	0.0	0.0	0.0	0.0 d
17.464	85.00000	141.00000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Specific Building Damage Results - Vertical Displacements

Structure: 48-1 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]

Vertical Offset 1

0.0	70.00000	143.00000	22.50000	0.071314 d
1.9521	70.81250	141.22500	22.50000	0.074865 d
3.9042	71.62500	139.45000	22.50000	0.078361 d
5.8564	72.43750	137.67500	22.50000	0.081750 d
7.8085	73.25000	135.90000	22.50000	0.084976 d
9.7606	74.06250	134.12500	22.50000	0.087986 d
11.713	74.87500	132.35000	22.50000	0.090734 d
13.665	75.68750	130.57500	22.50000	0.093186 d
15.617	76.50000	128.80000	22.50000	0.095326 d

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]

d - Displacements include imported displacements.

Structure: 48-2 | Sub-structure: 0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	76.50000	128.80000	22.50000	0.095326 d
2.0290	78.35000	129.63333	22.50000	0.095861 d
4.0581	80.20000	130.46667	22.50000	0.094255 d
6.0871	82.05000	131.30000	22.50000	0.089700 d
8.1161	83.90000	132.13333	22.50000	0.096763 d
10.145	85.75000	132.96667	22.50000	0.090763 d
12.174	87.60000	133.80000	22.50000	0.076926 d

d - Displacements include imported displacements.

Structure: 48-3 | Sub-structure: 0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	87.60000	133.80000	22.50000	0.076926 d
1.9080	86.90000	135.57500	22.50000	0.077353 d
3.8161	86.20000	137.35000	22.50000	0.077215 d
5.7241	85.50000	139.12500	22.50000	0.082054 d
7.6322	84.80000	140.90000	22.50000	0.086759 d
9.5402	84.10000	142.67500	22.50000	0.088919 d
11.448	83.40000	144.45000	22.50000	0.089107 d
13.356	82.70000	146.22500	22.50000	0.087823 d
15.264	82.00000	148.00000	22.50000	0.085483 d

d - Displacements include imported displacements.

Structure: 48-4 | Sub-structure: 0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	82.00000	148.00000	22.50000	0.085483 d
1.8571	80.28571	147.28571	22.50000	0.084212 d
3.7143	78.57143	146.57143	22.50000	0.082655 d
5.5714	76.85714	145.85714	22.50000	0.080822 d
7.4286	75.14286	145.14286	22.50000	0.078735 d
9.2857	73.42857	144.42857	22.50000	0.076429 d
11.143	71.71429	143.71429	22.50000	0.073941 d
13.000	70.00000	143.00000	22.50000	0.071314 d

d - Displacements include imported displacements.

Structure: 2-4-1 | Sub-structure: 0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	66.00000	122.70000	22.50000	0.075264 d
2.1366	67.24000	120.96000	22.50000	0.078544 d
4.2733	68.48000	119.22000	22.50000	0.081732 d
6.4099	69.72000	117.48000	22.50000	0.084792 d
8.5465	70.96000	115.74000	22.50000	0.087691 d
10.683	72.20000	114.00000	22.50000	0.090393 d

d - Displacements include imported displacements.

Structure: 2-4-2 | Sub-structure: 0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	72.20000	114.00000	22.50000	0.090393 d
1.9298	70.62222	112.88889	22.50000	0.085899 d
3.8595	69.04444	111.77778	22.50000	0.081292 d
5.7893	67.46667	110.66667	22.50000	0.076692 d
7.7190	65.88889	109.55556	22.50000	0.072183 d
9.6488	64.31111	108.44444	22.50000	0.067822 d
11.579	62.73333	107.33333	22.50000	0.063646 d
13.508	61.15556	106.22222	22.50000	0.059676 d
15.438	59.57778	105.11111	22.50000	0.055925 d
17.368	58.00000	104.00000	22.50000	0.052396 d

d - Displacements include imported displacements.

Structure: 2-4-3 | Sub-structure: 0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	58.00000	104.00000	22.50000	0.052396 d
1.9511	56.88333	105.60000	22.50000	0.051202 d
3.9023	55.76667	107.20000	22.50000	0.049938 d
5.8534	54.65000	108.80000	22.50000	0.048614 d
7.8046	53.53333	110.40000	22.50000	0.047242 d
9.7557	52.41667	112.00000	22.50000	0.045832 d
11.707	51.30000	113.60000	22.50000	0.044392 d

d - Displacements include imported displacements.

Structure: 2-4-4 | Sub-structure: 0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	51.30000	113.60000	22.50000	0.044392 d
1.9210	52.93333	114.61111	22.50000	0.047191 d
3.8419	54.56667	115.62222	22.50000	0.050161 d
5.7629	56.20000	116.63333	22.50000	0.053305 d
7.6839	57.83333	117.64444	22.50000	0.056620 d
9.6048	59.46667	118.65556	22.50000	0.060099 d
11.526	61.10000	119.66667	22.50000	0.063730 d
13.447	62.73333	120.67778	22.50000	0.067491 d
15.368	64.36667	121.68889	22.50000	0.071351 d
17.289	66.00000	122.70000	22.50000	0.075264 d

d - Displacements include imported displacements.

Structure: 56-3-1 | Sub-structure: 0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	87.60000	133.80000	22.50000	0.076926 d
2.0093	89.43333	134.62222	22.50000	0.053697 d

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]	
4.0185	91.26667	135.44444	22.50000	0.015869 d
6.0278	93.10000	136.26667	22.50000	-0.038117 d
8.0371	94.93333	137.08889	22.50000	-0.10117 d
10.046	96.76667	137.91111	22.50000	-0.14466 d
12.056	98.60000	138.73333	22.50000	-0.16634 d
14.065	100.43333	139.55556	22.50000	-0.17149 d
16.074	102.26667	140.37778	22.50000	-0.16328 d
18.083	104.10000	141.20000	22.50000	-0.14449 d

d - Displacements include imported displacements.

Structure: 56-3-2 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]	
Vertical Offset 1				
0.0	104.10000	141.20000	22.50000	-0.14449 d
1.8683	103.32500	142.90000	22.50000	-0.054510 d
3.7366	102.55000	144.60000	22.50000	0.0033060 d
5.6050	101.77500	146.30000	22.50000	0.040380 d
7.4733	101.00000	148.00000	22.50000	0.063681 d

d - Displacements include imported displacements.

Structure: 56-3-3 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]	
Vertical Offset 1				
0.0	101.00000	148.00000	22.50000	0.063681 d
1.9405	99.22222	147.22222	22.50000	0.061560 d
3.8809	97.44444	146.44444	22.50000	0.060987 d
5.8214	95.66667	145.66667	22.50000	0.062075 d
7.7619	93.88889	144.88889	22.50000	0.064737 d
9.7024	92.11111	144.11111	22.50000	0.068664 d
11.643	90.33333	143.33333	22.50000	0.073358 d
13.583	88.55556	142.55556	22.50000	0.078231 d
15.524	86.77778	141.77778	22.50000	0.082727 d
17.464	85.00000	141.00000	22.50000	0.086420 d

d - Displacements include imported displacements.

Specific Building Damage Results - All Segments

Structure: 48-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]	[%]	[%]	[%]			[m]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.									

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

Structure: 48-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]	[%]	[%]	[%]			[m]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.									

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

Structure: 48-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]	[%]	[%]	[%]			[m]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.									

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

Structure: 48-4 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]	[%]	[%]	[%]			[m]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.									

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

Structure: 2-4-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]	[%]	[%]	[%]			[m]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.									

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

Structure: 2-4-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]	[%]	[%]	[%]			[m]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.									

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

Structure: 2-4-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]	[%]	[%]	[%]			[m]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.									

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

Structure: 2-4-4 | Sub-structure: 0

Vertical Offset from Line for	Segment	Start Length	Curvature	Deflection Ratio	Average Horizontal	Max Tensile	Max Gradient of	Max Gradient of Vertical	Min Radius of	Damage Category

Vertical Movement Calculations			Strain	Strain	Horizontal Displacement Curve	Displacement Curve	Curvature
[m]	[m]	[m]	[%]	[%]	[%]		[m]
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.						

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

Structure: 56-3-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	8.0371	10.045	Hogging	475.48E-6	-281.55E-6	364.89E-6	43.934E-6	31.382E-6	202880.	0 (Negligible)

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

Structure: 56-3-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	0.0	None	0.0	0.0	0.0	0.0	-48.162E-6	99669.	0 (Negligible)

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

Structure: 56-3-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.										

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

Specific Building Damage Results - Critical Values for All Segments within Each Sub-Structure

Structure: 48-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	

Structure: 48-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	

Structure: 48-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	

Structure: 48-4 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	

Structure: 2-4-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	

Structure: 2-4-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	

Structure: 2-4-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	

Structure: 2-4-4 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	

Structure: 56-3-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain		Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]			[mm]	[%]			[m]	[m]	
0.0	475.48E-6	-281.55E-6	31.382E-6		0.17138	364.89E-6	43.934E-6	31.382E-6	202880.		- 0 (Negligible)

Structure: 56-3-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain		Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]			[mm]	[%]			[m]	[m]	
0.0	0.0	0.0	-48.162E-6		0.14449	0.0	0.0	-48.162E-6	-		- 0 (Negligible)

Structure: 56-3-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	

Specific Building Damage Results - Critical Segments within Each Structure

Structure Name	Parameter	Critical Sub-Structure	Critical Segment	Start	End	Curvature	Max Slope	Max Settlement	Max Tensile Strain	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
				[m]	[m]			[mm]	[%]	[m]	[m]	
48-1	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
48-2	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
48-3	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
48-4	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
2-4-1	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
2-4-2	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
2-4-3	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
2-4-4	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
56-3-1	Max Slope		0	1	8.0371	18.082	Hogging	**31.382E-6**	0.17138	364.89E-6	202880.	- 0 (Negligible)
	Max Settlement		0	1	8.0371	18.082	Hogging	31.382E-6	**0.17138**	364.89E-6	202880.	- 0 (Negligible)
	Max Tensile Strain		0	1	8.0371	18.082	Hogging	31.382E-6	0.17138	**364.89E-6**	202880.	- 0 (Negligible)
	Min Radius of Curvature (Hogging)		0	1	8.0371	18.082	Hogging	31.382E-6	0.17138	364.89E-6	**202880.**	- 0 (Negligible)
	Min Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	- -
56-3-2	Max Slope		0	1	0.0	0.0	Sagging	**48.162E-6**	0.14449	0.0	-	99669. 0 (Negligible)
	Max Settlement		0	1	0.0	0.0	Sagging	48.162E-6	**0.14449**	0.0	-	99669. 0 (Negligible)
	Max Tensile Strain		0	1	0.0	0.0	Sagging	48.162E-6	0.14449	**0.0**	-	99669. 0 (Negligible)
	Min Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	- -
	Min Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	- -
56-3-3	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											

Hope Project
Proposed Loading - Old - Option B
Undrained

Problem Type

Problem Type : Tunnelling and Embedded Wall Excavations

Displacement Data

Type	Name	Direction of extrusion	Point/Line/Line for extrusion						No. of intervals across extrusion/line	Extrusion depth	No. of intervals along extrusion	Calculate	Surface type for tunnels
			First point			Second point							
			X [m]	Y [m]	Z(level) [m]	X [m]	Y [m]	Z(level) [m]		[m]			
Line	48-1	-	70.00000	143.00000	22.50000	76.50000	128.80000	22.50000	8	-	-	Yes	Surface
Line	48-2	-	76.50000	128.80000	22.50000	87.60000	133.80000	22.50000	6	-	-	Yes	Surface
Line	48-3	-	87.60000	133.80000	22.50000	82.00000	148.00000	22.50000	8	-	-	Yes	Surface
Line	48-4	-	82.00000	148.00000	22.50000	70.00000	143.00000	22.50000	7	-	-	Yes	Surface
Line	2-4-1	-	66.00000	122.70000	22.50000	72.20000	114.00000	22.50000	5	-	-	Yes	Surface
Line	2-4-2	-	72.20000	114.00000	22.50000	58.00000	104.00000	22.50000	9	-	-	Yes	Surface
Line	2-4-3	-	58.00000	104.00000	22.50000	51.30000	113.60000	22.50000	6	-	-	Yes	Surface
Line	2-4-4	-	51.30000	113.60000	22.50000	66.00000	122.70000	22.50000	9	-	-	Yes	Surface
Line	56-3-1	-	87.60000	133.80000	22.50000	104.10000	141.20000	22.50000	9	-	-	Yes	Surface
Line	56-3-2	-	104.10000	141.20000	22.50000	101.00000	148.00000	22.50000	4	-	-	Yes	Surface
Line	56-3-3	-	101.00000	148.00000	22.50000	85.00000	141.00000	22.50000	9	-	-	Yes	Surface

Imported Displacements

The following data points and displacements were found in the import file Short term OLD XDISP.csv.

Ref.	Coordinates x [m]	y [m]	z [m]	Displacements x [mm]	y [mm]	z [mm]	
1	70.00000	143.00000	22.50000	0.00000	0.00000	-0.14230	1,2,6
2	70.81250	141.22500	22.50000	0.00000	0.00000	-0.15463	1,2,6
3	71.62500	139.45000	22.50000	0.00000	0.00000	-0.16756	1,2,6
4	72.43750	137.67500	22.50000	0.00000	0.00000	-0.18083	1,2,6
5	73.25000	135.90000	22.50000	0.00000	0.00000	-0.19398	1,2,6
6	74.06250	134.12500	22.50000	0.00000	0.00000	-0.20631	1,2,6
7	74.87500	132.35000	22.50000	0.00000	0.00000	-0.21678	1,2,6
8	75.68750	130.57500	22.50000	0.00000	0.00000	-0.22388	1,2,6
9	76.50000	128.80000	22.50000	0.00000	0.00000	-0.22561	1,2,6
10	78.35000	129.63333	22.50000	0.00000	0.00000	-0.23347	1,2,6
11	80.20000	130.46667	22.50000	0.00000	0.00000	-0.23835	1,2,6
12	82.05000	131.30000	22.50000	0.00000	0.00000	-0.24213	1,2,6
13	83.90000	132.13333	22.50000	0.00000	0.00000	-0.24899	1,2,6
14	85.75000	132.96667	22.50000	0.00000	0.00000	-0.26192	1,2,6
15	87.60000	133.80000	22.50000	0.00000	0.00000	-0.27720	1,2,6
16	86.90000	135.57500	22.50000	0.00000	0.00000	-0.29196	1,2,6
17	86.20000	137.35000	22.50000	0.00000	0.00000	-0.29101	1,2,6
18	85.50000	139.12500	22.50000	0.00000	0.00000	-0.28088	1,2,6
19	84.80000	140.90000	22.50000	0.00000	0.00000	-0.26555	1,2,6
20	84.10000	142.67500	22.50000	0.00000	0.00000	-0.24759	1,2,6
21	83.40000	144.45000	22.50000	0.00000	0.00000	-0.22868	1,2,6
22	82.70000	146.22500	22.50000	0.00000	0.00000	-0.20986	1,2,6
23	82.00000	148.00000	22.50000	0.00000	0.00000	-0.19178	1,2,6
24	80.28571	147.28571	22.50000	0.00000	0.00000	-0.18560	1,2,6
25	78.57143	146.57143	22.50000	0.00000	0.00000	-0.17893	1,2,6
26	76.85714	145.85714	22.50000	0.00000	0.00000	-0.17188	1,2,6
27	75.14286	145.14286	22.50000	0.00000	0.00000	-0.16460	1,2,6
28	73.42857	144.42857	22.50000	0.00000	0.00000	-0.15719	1,2,6
29	71.71429	143.71429	22.50000	0.00000	0.00000	-0.14973	1,2,6
30	66.00000	122.70000	22.50000	0.00000	0.00000	-0.15764	1,2,6
31	67.24000	120.96000	22.50000	0.00000	0.00000	-0.15725	1,2,6
32	68.48000	119.22000	22.50000	0.00000	0.00000	-0.14635	1,2,6
33	69.72000	117.48000	22.50000	0.00000	0.00000	-0.11616	1,2,6
34	70.96000	115.74000	22.50000	0.00000	0.00000	-0.05024	1,2,6
35	72.20000	114.00000	22.50000	0.00000	0.00000	0.08483	1,2,6
36	70.62222	112.88889	22.50000	0.00000	0.00000	-0.02987	1,2,6
37	69.04444	111.77778	22.50000	0.00000	0.00000	-0.09079	1,2,6
38	67.46667	110.66667	22.50000	0.00000	0.00000	-0.12050	1,2,6
39	65.88889	109.55556	22.50000	0.00000	0.00000	-0.13235	1,2,6
40	64.31111	108.44444	22.50000	0.00000	0.00000	-0.13412	1,2,6
41	62.73333	107.33333	22.50000	0.00000	0.00000	-0.13033	1,2,6
42	61.15556	106.22222	22.50000	0.00000	0.00000	-0.12364	1,2,6
43	59.57778	105.11111	22.50000	0.00000	0.00000	-0.11561	1,2,6
44	58.00000	104.00000	22.50000	0.00000	0.00000	-0.10715	1,2,6
45	56.88333	105.60000	22.50000	0.00000	0.00000	-0.10407	1,2,6
46	55.76667	107.20000	22.50000	0.00000	0.00000	-0.10071	1,2,6
47	54.65000	108.80000	22.50000	0.00000	0.00000	-0.09712	1,2,6
48	53.53333	110.40000	22.50000	0.00000	0.00000	-0.09333	1,2,6
49	52.41667	112.00000	22.50000	0.00000	0.00000	-0.08940	1,2,6
50	51.30000	113.60000	22.50000	0.00000	0.00000	-0.08538	1,2,6
51	52.93333	114.61111	22.50000	0.00000	0.00000	-0.09236	1,2,6
52	54.56667	115.62222	22.50000	0.00000	0.00000	-0.09976	1,2,6
53	56.20000	116.63333	22.50000	0.00000	0.00000	-0.10751	1,2,6
54	57.83333	117.64444	22.50000	0.00000	0.00000	-0.11554	1,2,6
55	59.46667	118.65556	22.50000	0.00000	0.00000	-0.12374	1,2,6
56	61.10000	119.66667	22.50000	0.00000	0.00000	-0.13204	1,2,6
57	62.73333	120.67778	22.50000	0.00000	0.00000	-0.14038	1,2,6
58	64.36667	121.68889	22.50000	0.00000	0.00000	-0.14885	1,2,6
59	89.43333	134.62222	22.50000	0.00000	0.00000	-0.28487	1,2,6
60	91.26667	135.44444	22.50000	0.00000	0.00000	-0.27599	1,2,6
61	93.10000	136.26667	22.50000	0.00000	0.00000	-0.24794	1,2,6
62	94.93333	137.08889	22.50000	0.00000	0.00000	-0.20777	1,2,6
63	96.76667	137.91111	22.50000	0.00000	0.00000	-0.16916	1,2,6
64	98.60000	138.73333	22.50000	0.00000	0.00000	-0.14187	1,2,6
65	100.43333	139.55556	22.50000	0.00000	0.00000	-0.12894	1,2,6
66	102.26667	140.37778	22.50000	0.00000	0.00000	-0.13040	1,2,6
67	104.10000	141.20000	22.50000	0.00000	0.00000	-0.14204	1,2,6
68	103.32500	142.90000	22.50000	0.00000	0.00000	-0.22632	1,2,6
69	102.55000	144.60000	22.50000	0.00000	0.00000	-0.26408	1,2,6
70	101.77500	146.30000	22.50000	0.00000	0.00000	-0.27523	1,2,6
71	101.00000	148.00000	22.50000	0.00000	0.00000	-0.27121	1,2,6
72	99.22222	147.22222	22.50000	0.00000	0.00000	-0.27563	1,2,6
73	97.44444	146.44444	22.50000	0.00000	0.00000	-0.27943	1,2,6
74	95.66667	145.66667	22.50000	0.00000	0.00000	-0.28244	1,2,6
75	93.88889	144.88889	22.50000	0.00000	0.00000	-0.28440	1,2,6
76	92.11111	144.11111	22.50000	0.00000	0.00000	-0.28492	1,2,6
77	90.33333	143.33333	22.50000	0.00000	0.00000	-0.28359	1,2,6
78	88.55556	142.55556	22.50000	0.00000	0.00000	-0.28009	1,2,6
79	86.77778	141.77778	22.50000	0.00000	0.00000	-0.27431	1,2,6
80	85.00000	141.00000	22.50000	0.00000	0.00000	-0.26646	1,2,6

1 - Data point coincident with displacement data. Its displacement has been added to those calculated by Xdisp.
2 - Data point coincident with horizontal movement calculation point for a specific building. Its displacement has been added before performing building damage calculations.
6 - Data point coincident with vertical movement calculation point for a specific building. Its displacement has been added before performing building damage calculations.

Vertical Ground Movement Curves (Excavations)

Curve Name: **No vertical ground movement**
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)(%)]
[0.000,0.000,0.000][1.000,0.000,0.000][0.000,1.000,0.000][1.000,1.000,0.000]
Curve Fitting Method: Polynomial
x Order: 1
y Order: 0

Ref.	Coordinates x [m]	y [m]	z [m]	Displacements x [mm]	y [mm]	z [mm]

Polynomial: z = 0.0x + 0.0
Coeff. of Determination: −2147483648.E+2147483647

Curve Name: **Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(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)(%)]
[0.000,0.000,0.050][2.000,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 1
y Order: 0
Polynomial: z = −2.5E−2x + 5.0E−2
Coeff. of Determination: 1.0

Curve Name: **Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(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]
[0.400,0.000,0.067][0.500,0.000,0.070][0.600,0.000,0.072][0.700,0.000,0.073]
[0.800,0.000,0.073][0.900,0.000,0.072][1.000,0.000,0.070][1.100,0.000,0.068]
[1.200,0.000,0.065][1.300,0.000,0.061][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]
[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]
[2.800,0.000,0.010][2.900,0.000,0.008][3.000,0.000,0.007][3.100,0.000,0.005]
[3.200,0.000,0.004][3.300,0.000,0.004][3.400,0.000,0.003][3.500,0.000,0.002]
[3.600,0.000,0.002][3.700,0.000,0.002][3.800,0.000,0.001][3.900,0.000,0.001]
[4.000,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 4
y Order: 0
Polynomial: z = $-2.6455E-3x^4 + 2.8495E-2x^3 - 1.0051E-1x^2 + 1.0569E-1x + 3.8990E-2$
Coeff. of Determination: 9.9991E−1

Curve Name: **Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(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)(%)]
[0.000,0.000,0.345][0.100,0.000,0.327][0.200,0.000,0.311][0.300,0.000,0.294]
[0.400,0.000,0.279][0.500,0.000,0.264][0.600,0.000,0.250][0.700,0.000,0.237]
[0.800,0.000,0.224][0.900,0.000,0.212][1.000,0.000,0.200][1.100,0.000,0.189]
[1.200,0.000,0.178][1.300,0.000,0.168][1.400,0.000,0.158][1.500,0.000,0.149]
[1.600,0.000,0.140][1.700,0.000,0.132][1.800,0.000,0.124][1.900,0.000,0.116]
[2.000,0.000,0.109][2.100,0.000,0.101][2.200,0.000,0.095][2.300,0.000,0.088]
[2.400,0.000,0.082][2.500,0.000,0.076][2.600,0.000,0.070][2.700,0.000,0.065]
[2.800,0.000,0.059][2.900,0.000,0.054][3.000,0.000,0.049][3.100,0.000,0.044]
[3.200,0.000,0.039][3.300,0.000,0.034][3.400,0.000,0.029][3.500,0.000,0.025]
[3.600,0.000,0.020][3.700,0.000,0.015][3.800,0.000,0.010][3.900,0.000,0.005]
[4.000,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 3
y Order: 0
Polynomial: z = $-3.5383E-3x^3 + 3.7194E-2x^2 - 1.7831E-1x + 3.4467E-1$
Coeff. of Determination: 9.9999E−1

Horizontal Ground Movement Curves (Excavations)

Curve Name: **No horizontal ground movement**
Coordinates: [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)(%)]
[0.000,0.000,0.000][1.000,0.000,0.000][0.000,1.000,0.000][1.000,1.000,0.000]
Curve Fitting Method: Polynomial
x Order: 0
y Order: 0
Polynomial: z = 0.0
Coeff. of Determination: −2147483648.E+2147483647

Curve Name: **Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(a))**
Coordinates: [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)(%)]
[0.000,0.000,0.081][0.050,0.000,0.076][0.100,0.000,0.072][0.150,0.000,0.067]
[0.200,0.000,0.063][0.250,0.000,0.059][0.300,0.000,0.056][0.350,0.000,0.052]
[0.400,0.000,0.049][0.450,0.000,0.045][0.500,0.000,0.043][0.550,0.000,0.040]
[0.600,0.000,0.037][0.650,0.000,0.034][0.700,0.000,0.032][0.750,0.000,0.029]
[0.800,0.000,0.027][0.850,0.000,0.024][0.900,0.000,0.022][0.950,0.000,0.020]
[1.000,0.000,0.018][1.050,0.000,0.016][1.100,0.000,0.014][1.150,0.000,0.012]
[1.200,0.000,0.011][1.250,0.000,0.009][1.300,0.000,0.007][1.350,0.000,0.005]
[1.400,0.000,0.004][1.450,0.000,0.002][1.500,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 3
y Order: 0
Polynomial: z = $-1.0610E-2x^3 + 4.4203E-2x^2 - 9.6358E-2x + 8.0901E-2$
Coeff. of Determination: 1.0000

Curve Name: **Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))**
Coordinates: [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)(%)]
[0.000,0.000,0.150][4.000,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 1
y Order: 0
Polynomial: z = −3.75E−2x + 1.50E−1
Coeff. of Determination: 1.00

Curve Name: **Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))**
Coordinates: [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)(%)]
[0.000,0.000,0.400][4.000,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 1
y Order: 0
Polynomial: z = −10.E−2x + 4.0E−1
Coeff. of Determination: 1.0

Polygonal Excavations

Excavation Name: **Lift Pit**
Surface level [m]: 17.500
Contribution: Positive
Enabled: Yes
Surface movement curves which are selected are applied between surface and [m]: 16.100

Corner	x	y	Base	Stiffened	Previous Side	Next Side

			Level		d	p1	p2*	d	p1	p2*
	[m]	[m]	[m]		[m]	[%]	[%]	[m]	[%]	[%]
1	104.50	122.40	16.100	Yes	0.0	67.000	25.000	0.0	67.000	25.000
2	107.00	123.50	16.100	Yes	0.0	67.000	25.000	0.0	67.000	25.000
3	107.90	121.50	16.100	Yes	0.0	67.000	25.000	0.0	67.000	25.000
4	105.50	120.30	16.100	Yes	0.0	67.000	25.000	0.0	67.000	25.000

Side	Corner 1		Corner 2		Ground Movement Curve	
	x	y	x	y	Vertical	Horizontal
	[m]	[m]	[m]	[m]		
1	104.50	122.40	107.00	123.50	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b))	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))
2	107.00	123.50	107.90	121.50	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b))	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))
3	107.90	121.50	105.50	120.30	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b))	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))
4	105.50	120.30	104.50	122.40	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b))	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))

Excavation Name: New Basement 1
Surface level [m]: 22.550
Contribution: Positive
Enabled: Yes
Surface movement curves which are selected are applied between surface and [m]: 17.500

Corner	x	y	Base Level	Stiffened	Previous Side d	p1	p2*	Next Side d	p1	p2*
	[m]	[m]	[m]		[m]	[%]	[%]	[m]	[%]	[%]
1	109.50	117.50	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
2	105.80	126.20	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
3	108.30	127.30	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
4	112.00	118.60	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000

Side	Corner 1		Corner 2		Ground Movement Curve	
	x	y	x	y	Vertical	Horizontal
	[m]	[m]	[m]	[m]		
1	109.50	117.50	105.80	126.20	No vertical ground movement	No horizontal ground movement
2	105.80	126.20	108.30	127.30	Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(b))	Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(a))
3	108.30	127.30	112.00	118.60	Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(b))	Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(a))
4	112.00	118.60	109.50	117.50	No vertical ground movement	No horizontal ground movement

Excavation Name: New Basement 2
Surface level [m]: 22.550
Contribution: Positive
Enabled: Yes
Surface movement curves which are selected are applied between surface and [m]: 17.500

Corner	x	y	Base Level	Stiffened	Previous Side d	p1	p2*	Next Side d	p1	p2*
	[m]	[m]	[m]		[m]	[%]	[%]	[m]	[%]	[%]
1	105.80	126.20	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
2	101.20	124.20	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
3	102.50	121.50	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
4	107.00	123.50	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000

Side	Corner 1		Corner 2		Ground Movement Curve	
	x	y	x	y	Vertical	Horizontal
	[m]	[m]	[m]	[m]		
1	105.80	126.20	101.20	124.20	Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(b))	Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(a))
2	101.20	124.20	102.50	121.50	Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b)	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))
3	102.50	121.50	107.00	123.50	No vertical ground movement	No horizontal ground movement
4	107.00	123.50	105.80	126.20	No vertical ground movement	No horizontal ground movement

Excavation Name: New Basement 3
Surface level [m]: 20.350
Contribution: Positive
Enabled: Yes
Surface movement curves which are selected are applied between surface and [m]: 17.500

Corner	x	y	Base Level	Stiffened	Previous Side d	p1	p2*	Next Side d	p1	p2*
	[m]	[m]	[m]		[m]	[%]	[%]	[m]	[%]	[%]
1	102.50	121.50	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
2	104.00	118.20	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
3	108.40	120.00	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
4	107.00	123.50	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000

Side	Corner 1		Corner 2		Ground Movement Curve	
	x	y	x	y	Vertical	Horizontal
	[m]	[m]	[m]	[m]		
1	102.50	121.50	104.00	118.20	Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b)	Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))
2	104.00	118.20	108.40	120.00	Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b)	Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))
3	108.40	120.00	107.00	123.50	No vertical ground movement	No horizontal ground movement
4	107.00	123.50	102.50	121.50	No vertical ground movement	No horizontal ground movement

Damage Category Strains

Name	0 (Negligible) to 1 (Very Slight)	1 (Very Slight) to 2 (Slight)	2 (Slight) to 3 (Moderate)	3 (Moderate) to 4 (Severe)
Burland Strain Limits	0.0	500.00E-6	750.00E-6	0.0015000

Specific Structures - Geometry

Structure Name	Sub-Structure Name	Displacement Line	Start Distance Along Line	End Distance Along Line	Vertical Offsets from Line for Vertical Movement Calculations	Vertical Displacement Limit Sensitivity	Damage Category Strains	Poisson's Ratio	E/G
			[m]	[m]	[m]	[mm]			
48-1		0 48-1	0.00000	15.61598	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
48-2		0 48-2	0.00000	12.17315	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
48-3		0 48-3	0.00000	15.26334	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
48-4		0 48-4	0.00000	12.99900	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
2-4-1		0 2-4-1	0.00000	10.68216	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
2-4-2		0 2-4-2	0.00000	17.36679	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
2-4-3		0 2-4-3	0.00000	11.70584	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
2-4-4		0 2-4-4	0.00000	17.28772	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
56-3-1		0 56-3-1	0.00000	18.08242	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
56-3-2		0 56-3-2	0.00000	7.47229	0.0	0.10000	Burland Strain Limits	0.20000	2.6000

Structure Name	Sub-Structure Name	Displacement Line	Start Distance Along Line	End Distance Along Line	Vertical Offsets from Line for Vertical	Vertical Displacement Limit Sensitivity	Damage Category Strains	Poisson's Ratio	E/G
56-3-3		0 56-3-3	0.00000	17.46325	0.0	0.10000	Burland Strain Limits	0.20000	2.6000

Specific Structures - Bending Parameters

Structure Name	Sub-Structure Name	Height	Default Properties	Hogging			Sagging		
				2nd Moment of Area (per unit width)	Distance of Bending Strain from N.A.	Distance of N.A. from Edge of Beam in Tension	2nd Moment of Area (per unit width)	Distance of Bending Strain from N.A.	Distance of N.A. from Edge of Beam in Tension
		[m]		[m³]	[m]	[m]	[m³]	[m]	[m]
48-1		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
48-2		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
48-3		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
48-4		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
2-4-1		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
2-4-2		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
2-4-3		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
2-4-4		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
56-3-1		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
56-3-2		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
56-3-3		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000

Building Segment Combinations

Structure Name	Sub-Structure Name	Vertical Offset from Line for Vertical Movement Calculations	Segment Start	Length	Curvature	Combined Segment
		[m]	[m]	[m]		

No structures have segments combined.

Utility Strain Calculation Options

Neglect beneficial contribution of axial strains : No

Warnings

1 Multiple excavations have been specified. The displacements resulting from these excavations are calculated by summing the displacements resulting from each individual excavation. No account has been taken of the interactions between excavations (e.g. overlapping zones of influence or 'shielding' of one excavation by another).

2 Embedded Wall Excavation PE1 : Lift Pit intersects PE2 : New Basement 1, , PE3 : New Basement 2, and PE4 : New Basement 3.

3 Embedded Wall Excavation PE2 : New Basement 1 intersects PE1 : Lift Pit, , PE3 : New Basement 2, and PE4 : New Basement 3.

4 Embedded Wall Excavation PE3 : New Basement 2 intersects PE1 : Lift Pit, , PE2 : New Basement 1, and PE4 : New Basement 3.

5 Embedded Wall Excavation PE4 : New Basement 3 intersects PE1 : Lift Pit, , PE2 : New Basement 1, and PE3 : New Basement 2.

6 If an embedded wall excavation is assigned a 'surface' ground movement curve and if the 'allow movement calculation to level' option is checked for the excavation then displacements induced by it are calculated for points at the surface, and points below the surface to the level specified. Others are ignored. An example of such a combination, for which displacements will not be calculated is Excavation XP1/Side 1/Line 1/Vertical. This is an example only. There are 131 others.

7 If an embedded wall excavation is assigned a 'sub-surface' ground movement curve then displacements induced by it can only be calculated for those points that are level with or below the embedded wall excavation's 'surface level'. Others are ignored. An example of such a combination, for which displacements will not be calculated is Excavation XP4/Side 3/Line 1/Vertical. This is an example only. There are 43 others.

Errors

None

Displacement and Strain Results

Type/No. Name	Dist.	Coordinates x	y	z	Displacements x	y	z	Horizontal displacement along Line	Horizontal displacement perpendicular to Line	Angle of Line to x Axis	
	[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	[mm]	[°]	
48-1	Line 1	70.00000	143.00000	22.50000	0.0	0.0	-0.14230	0.0	0.0	294.60	*
	1.9521	70.81250	141.22500	22.50000	0.0	0.0	-0.15463	0.0	0.0	294.60	*
	3.9042	71.62500	139.45000	22.50000	0.0	0.0	-0.16756	0.0	0.0	294.60	*
	5.8564	72.43750	137.67500	22.50000	0.0	0.0	-0.18083	0.0	0.0	294.60	*
	7.8085	73.25000	135.90000	22.50000	0.0	0.0	-0.19398	0.0	0.0	294.60	*
	9.7606	74.06250	134.12500	22.50000	0.0	0.0	-0.20631	0.0	0.0	294.60	*
	11.713	74.87500	132.35000	22.50000	0.0	0.0	-0.21678	0.0	0.0	294.60	*
	13.665	75.68750	130.57500	22.50000	0.0	0.0	-0.22388	0.0	0.0	294.60	*
	15.617	76.50000	128.80000	22.50000	0.0	0.0	-0.22561	0.0	0.0	294.60	*
48-2	Line 2	76.50000	128.80000	22.50000	0.0	0.0	-0.22561	0.0	0.0	24.249	*
	2.0290	78.35000	129.63333	22.50000	0.0	0.0	-0.23347	0.0	0.0	24.249	*
	4.0581	80.20000	130.46667	22.50000	0.0	0.0	-0.23835	0.0	0.0	24.249	*
	6.0871	82.05000	131.30000	22.50000	0.0	0.0	-0.24213	0.0	0.0	24.249	*
	8.1161	83.90000	132.13333	22.50000	0.23298	0.11217	-0.23340	0.25849	0.0065916	24.249	*
	10.145	85.75000	132.96667	22.50000	0.42872	0.20642	-0.23859	0.47567	0.012130	24.249	*
	12.174	87.60000	133.80000	22.50000	0.52970	0.25504	-0.24735	0.58771	0.014987	24.249	*
48-3	Line 3	87.60000	133.80000	22.50000	0.52970	0.25504	-0.24735	0.042928	-0.58633	111.52	*
	1.9080	86.90000	135.57500	22.50000	0.25721	0.12384	-0.27724	0.020845	-0.28471	111.52	*
	3.8161	86.20000	137.35000	22.50000	0.030337	0.014607	-0.28799	0.0024586	-0.033581	111.52	*
	5.7241	85.50000	139.12500	22.50000	0.0	0.0	-0.28088	0.0	0.0	111.52	*
	7.6322	84.80000	140.90000	22.50000	0.0	0.0	-0.26555	0.0	0.0	111.52	*
	9.5402	84.10000	142.67500	22.50000	0.0	0.0	-0.24759	0.0	0.0	111.52	*
	11.448	83.40000	144.45000	22.50000	0.0	0.0	-0.22868	0.0	0.0	111.52	*
	13.356	82.70000	146.22500	22.50000	0.0	0.0	-0.20986	0.0	0.0	111.52	*
	15.264	82.00000	148.00000	22.50000	0.0	0.0	-0.19178	0.0	0.0	111.52	*
48-4	Line 4	82.00000	148.00000	22.50000	0.0	0.0	-0.19178	0.0	0.0	202.62	*
	1.8571	80.28571	147.28571	22.50000	0.0	0.0	-0.18560	0.0	0.0	202.62	*
	3.7143	78.57143	146.57143	22.50000	0.0	0.0	-0.17893	0.0	0.0	202.62	*
	5.5714	76.85714	145.85714	22.50000	0.0	0.0	-0.17188	0.0	0.0	202.62	*
	7.4286	75.14286	145.14286	22.50000	0.0	0.0	-0.16460	0.0	0.0	202.62	*
	9.2857	73.42857	144.42857	22.50000	0.0	0.0	-0.15719	0.0	0.0	202.62	*
	11.143	71.71429	143.71429	22.50000	0.0	0.0	-0.14973	0.0	0.0	202.62	*
	13.000	70.00000	143.00000	22.50000	0.0	0.0	-0.14230	0.0	0.0	202.62	*
2-4-1	Line 5	66.00000	122.70000	22.50000	0.0	0.0	-0.15764	0.0	0.0	305.48	*
	2.1366	67.24000	120.96000	22.50000	0.0	0.0	-0.15725	0.0	0.0	305.48	*
	4.2733	68.48000	119.22000	22.50000	0.0	0.0	-0.14635	0.0	0.0	305.48	*
	6.4099	69.72000	117.48000	22.50000	0.0	0.0	-0.11616	0.0	0.0	305.48	*
	8.5465	70.96000	115.74000	22.50000	0.0	0.0	-0.050244	0.0	0.0	305.48	*
	10.683	72.20000	114.00000	22.50000	0.0	0.0	0.084829	0.0	0.0	305.48	*
2-4-2	Line 6	72.20000	114.00000	22.50000	0.0	0.0	0.084829	0.0	0.0	215.15	*
	1.9298	70.62222	112.88889	22.50000	0.0	0.0	-0.029865	0.0	0.0	215.15	*
	3.8595	69.04444	111.77778	22.50000	0.0	0.0	-0.090787	0.0	0.0	215.15	*
	5.7893	67.46667	110.66667	22.50000	0.0	0.0	-0.12050	0.0	0.0	215.15	*
	7.7190	65.88889	109.55556	22.50000	0.0	0.0	-0.13235	0.0	0.0	215.15	*
	9.6488	64.31111	108.44444	22.50000	0.0	0.0	-0.13412	0.0	0.0	215.15	*
	11.579	62.73333	107.33333	22.50000	0.0	0.0	-0.13033	0.0	0.0	215.15	*
	13.508	61.15556	106.22222	22.50000	0.0	0.0	-0.12364	0.0	0.0	215.15	*
	15.438	59.57778	105.11111	22.50000	0.0	0.0	-0.11561	0.0	0.0	215.15	*
	17.368	58.00000	104.00000	22.50000	0.0	0.0	-0.10715	0.0	0.0	215.15	*
2-4-3	Line 7	58.00000	104.00000	22.50000	0.0	0.0	-0.10715	0.0	0.0	124.91	*
	1.9511	56.88333	105.60000	22.50000	0.0	0.0	-0.10407	0.0	0.0	124.91	*

Type/No. Name	Dist.	Coordinates x	y	z	Displacements x	y	z	Horizontal displacement	Horizontal displacement	Angle of Line to x Axis	
	3.9023	55.76667	107.20000	22.50000	0.0	0.0	-0.10071	0.0	0.0	124.91	*
	5.8534	54.65000	108.80000	22.50000	0.0	0.0	-0.097118	0.0	0.0	124.91	*
	7.8046	53.53333	110.40000	22.50000	0.0	0.0	-0.093332	0.0	0.0	124.91	*
	9.7557	52.41667	112.00000	22.50000	0.0	0.0	-0.089403	0.0	0.0	124.91	*
	11.707	51.30000	113.60000	22.50000	0.0	0.0	-0.085382	0.0	0.0	124.91	*
2-4-4	Line 8	51.30000	113.60000	22.50000	0.0	0.0	-0.085382	0.0	0.0	31.759	*
	1.9210	52.93333	114.61111	22.50000	0.0	0.0	-0.092359	0.0	0.0	31.759	*
	3.8419	54.56667	115.62222	22.50000	0.0	0.0	-0.099755	0.0	0.0	31.759	*
	5.7629	56.20000	116.63333	22.50000	0.0	0.0	-0.10751	0.0	0.0	31.759	*
	7.6839	57.83333	117.64444	22.50000	0.0	0.0	-0.11554	0.0	0.0	31.759	*
	9.6048	59.46667	118.65556	22.50000	0.0	0.0	-0.12374	0.0	0.0	31.759	*
	11.526	61.10000	119.66667	22.50000	0.0	0.0	-0.13204	0.0	0.0	31.759	*
	13.447	62.73333	120.67778	22.50000	0.0	0.0	-0.14038	0.0	0.0	31.759	*
	15.368	64.36667	121.68889	22.50000	0.0	0.0	-0.14885	0.0	0.0	31.759	*
	17.289	66.00000	122.70000	22.50000	0.0	0.0	-0.15764	0.0	0.0	31.759	*
56-3-1	Line 9	87.60000	133.80000	22.50000	0.52970	0.25504	-0.24735	0.58769	0.015948	24.156	*
	2.0093	89.43333	134.62222	22.50000	0.53322	0.25674	-0.25015	0.59159	0.016054	24.156	*
	4.0185	91.26667	135.44444	22.50000	0.44472	0.21412	-0.24243	0.49340	0.013389	24.156	*
	6.0278	93.10000	136.26667	22.50000	0.28014	0.13488	-0.22449	0.31081	0.0084343	24.156	*
	8.0371	94.93333	137.08889	22.50000	0.067979	0.032730	-0.20182	0.075420	0.0020467	24.156	*
	10.046	96.76667	137.91111	22.50000	0.0	0.0	-0.16916	0.0	0.0	24.156	*
	12.056	98.60000	138.73333	22.50000	0.0	0.0	-0.14187	0.0	0.0	24.156	*
	14.065	100.43333	139.55556	22.50000	0.0	0.0	-0.12894	0.0	0.0	24.156	*
	16.074	102.26667	140.37778	22.50000	0.0	0.0	-0.13040	0.0	0.0	24.156	*
	18.083	104.10000	141.20000	22.50000	0.0	0.0	-0.14204	0.0	0.0	24.156	*
56-3-2	Line 10	104.10000	141.20000	22.50000	0.0	0.0	-0.14204	0.0	0.0	114.51	*
	1.8683	103.32500	142.90000	22.50000	0.0	0.0	-0.22632	0.0	0.0	114.51	*
	3.7366	102.55000	144.60000	22.50000	0.0	0.0	-0.26408	0.0	0.0	114.51	*
	5.6050	101.77500	146.30000	22.50000	0.0	0.0	-0.27523	0.0	0.0	114.51	*
	7.4733	101.00000	148.00000	22.50000	0.0	0.0	-0.27121	0.0	0.0	114.51	*
56-3-3	Line 11	101.00000	148.00000	22.50000	0.0	0.0	-0.27121	0.0	0.0	203.63	*
	1.9405	99.22222	147.22222	22.50000	0.0	0.0	-0.27563	0.0	0.0	203.63	*
	3.8809	97.44444	146.44444	22.50000	0.0	0.0	-0.27943	0.0	0.0	203.63	*
	5.8214	95.66667	145.66667	22.50000	0.0	0.0	-0.28244	0.0	0.0	203.63	*
	7.7619	93.88889	144.88889	22.50000	0.0	0.0	-0.28440	0.0	0.0	203.63	*
	9.7024	92.11111	144.11111	22.50000	0.0	0.0	-0.28492	0.0	0.0	203.63	*
	11.643	90.33333	143.33333	22.50000	0.0	0.0	-0.28359	0.0	0.0	203.63	*
	13.583	88.55556	142.55556	22.50000	0.0	0.0	-0.28009	0.0	0.0	203.63	*
	15.524	86.77778	141.77778	22.50000	0.0	0.0	-0.27431	0.0	0.0	203.63	*
	17.464	85.00000	141.00000	22.50000	0.0	0.0	-0.26646	0.0	0.0	203.63	*

* Result includes imported displacement(s).

Specific Building Damage Results - Horizontal Displacements

Structure: 48-1 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	70.00000	143.00000	22.50000	0.0	0.0	0.0	0.0	d
1.9521	70.81250	141.22500	22.50000	0.0	0.0	0.0	0.0	d
3.9042	71.62500	139.45000	22.50000	0.0	0.0	0.0	0.0	d
5.8564	72.43750	137.67500	22.50000	0.0	0.0	0.0	0.0	d
7.8085	73.25000	135.90000	22.50000	0.0	0.0	0.0	0.0	d
9.7606	74.06250	134.12500	22.50000	0.0	0.0	0.0	0.0	d
11.713	74.87500	132.35000	22.50000	0.0	0.0	0.0	0.0	d
13.665	75.68750	130.57500	22.50000	0.0	0.0	0.0	0.0	d
15.617	76.50000	128.80000	22.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Structure: 48-2 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	76.50000	128.80000	22.50000	0.0	0.0	0.0	0.0	d
2.0290	78.35000	129.63333	22.50000	0.0	0.0	0.0	0.0	d
4.0581	80.20000	130.46667	22.50000	0.0	0.0	0.0	0.0	d
6.0871	82.05000	131.30000	22.50000	0.0	0.0	0.0	0.0	d
8.1161	83.90000	132.13333	22.50000	0.23298	0.11217	0.25849	0.0065916	d
10.145	85.75000	132.96667	22.50000	0.42872	0.20642	0.47567	0.012130	d
12.174	87.60000	133.80000	22.50000	0.52970	0.25504	0.58771	0.014987	d

d - Displacements include imported displacements.

Structure: 48-3 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	87.60000	133.80000	22.50000	0.52970	0.25504	0.042928	-0.58633	d
1.9080	86.90000	135.57500	22.50000	0.25721	0.12384	0.020845	-0.28471	d
3.8161	86.20000	137.35000	22.50000	0.030337	0.014607	0.0024586	-0.033581	d
5.7241	85.50000	139.12500	22.50000	0.0	0.0	0.0	0.0	d
7.6322	84.80000	140.90000	22.50000	0.0	0.0	0.0	0.0	d
9.5402	84.10000	142.67500	22.50000	0.0	0.0	0.0	0.0	d
11.448	83.40000	144.45000	22.50000	0.0	0.0	0.0	0.0	d
13.356	82.70000	146.22500	22.50000	0.0	0.0	0.0	0.0	d
15.264	82.00000	148.00000	22.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Structure: 48-4 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	82.00000	148.00000	22.50000	0.0	0.0	0.0	0.0	d
1.8571	80.28571	147.28571	22.50000	0.0	0.0	0.0	0.0	d
3.7143	78.57143	146.57143	22.50000	0.0	0.0	0.0	0.0	d
5.5714	76.85714	145.85714	22.50000	0.0	0.0	0.0	0.0	d
7.4286	75.14286	145.14286	22.50000	0.0	0.0	0.0	0.0	d
9.2857	73.42857	144.42857	22.50000	0.0	0.0	0.0	0.0	d
11.143	71.71429	143.71429	22.50000	0.0	0.0	0.0	0.0	d
13.000	70.00000	143.00000	22.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Structure: 2-4-1 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	66.00000	122.70000	22.50000	0.0	0.0	0.0	0.0	d
2.1366	67.24000	120.96000	22.50000	0.0	0.0	0.0	0.0	d
4.2733	68.48000	119.22000	22.50000	0.0	0.0	0.0	0.0	d
6.4099	69.72000	117.48000	22.50000	0.0	0.0	0.0	0.0	d
8.5465	70.96000	115.74000	22.50000	0.0	0.0	0.0	0.0	d
10.683	72.20000	114.00000	22.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line

Structure: 2-4-2 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	72.20000	114.00000	22.50000	0.0	0.0	0.0	0.0 d
1.9298	70.62222	112.88889	22.50000	0.0	0.0	0.0	0.0 d
3.8595	69.04444	111.77778	22.50000	0.0	0.0	0.0	0.0 d
5.7893	67.46667	110.66667	22.50000	0.0	0.0	0.0	0.0 d
7.7190	65.88889	109.55556	22.50000	0.0	0.0	0.0	0.0 d
9.6488	64.31111	108.44444	22.50000	0.0	0.0	0.0	0.0 d
11.579	62.73333	107.33333	22.50000	0.0	0.0	0.0	0.0 d
13.508	61.15556	106.22222	22.50000	0.0	0.0	0.0	0.0 d
15.438	59.57778	105.11111	22.50000	0.0	0.0	0.0	0.0 d
17.368	58.00000	104.00000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 2-4-3 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	58.00000	104.00000	22.50000	0.0	0.0	0.0	0.0 d
1.9511	56.88333	105.60000	22.50000	0.0	0.0	0.0	0.0 d
3.9023	55.76667	107.20000	22.50000	0.0	0.0	0.0	0.0 d
5.8534	54.65000	108.80000	22.50000	0.0	0.0	0.0	0.0 d
7.8046	53.53333	110.40000	22.50000	0.0	0.0	0.0	0.0 d
9.7557	52.41667	112.00000	22.50000	0.0	0.0	0.0	0.0 d
11.707	51.30000	113.60000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 2-4-4 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	51.30000	113.60000	22.50000	0.0	0.0	0.0	0.0 d
1.9210	52.93333	114.61111	22.50000	0.0	0.0	0.0	0.0 d
3.8419	54.56667	115.62222	22.50000	0.0	0.0	0.0	0.0 d
5.7629	56.20000	116.63333	22.50000	0.0	0.0	0.0	0.0 d
7.6839	57.83333	117.64444	22.50000	0.0	0.0	0.0	0.0 d
9.6048	59.46667	118.65556	22.50000	0.0	0.0	0.0	0.0 d
11.526	61.10000	119.66667	22.50000	0.0	0.0	0.0	0.0 d
13.447	62.73333	120.67778	22.50000	0.0	0.0	0.0	0.0 d
15.368	64.36667	121.68889	22.50000	0.0	0.0	0.0	0.0 d
17.289	66.00000	122.70000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 56-3-1 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	87.60000	133.80000	22.50000	0.52970	0.25504	0.58769	0.015948 d
2.0093	89.43333	134.62222	22.50000	0.53322	0.25674	0.59159	0.016054 d
4.0185	91.26667	135.44444	22.50000	0.44472	0.21412	0.49340	0.013389 d
6.0278	93.10000	136.26667	22.50000	0.28014	0.13488	0.31081	0.0084343 d
8.0371	94.93333	137.08889	22.50000	0.067979	0.032730	0.075420	0.0020467 d
10.046	96.76667	137.91111	22.50000	0.0	0.0	0.0	0.0 d
12.056	98.60000	138.73333	22.50000	0.0	0.0	0.0	0.0 d
14.065	100.43333	139.55556	22.50000	0.0	0.0	0.0	0.0 d
16.074	102.26667	140.37778	22.50000	0.0	0.0	0.0	0.0 d
18.083	104.10000	141.20000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 56-3-2 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	104.10000	141.20000	22.50000	0.0	0.0	0.0	0.0 d
1.8683	103.32500	142.90000	22.50000	0.0	0.0	0.0	0.0 d
3.7366	102.55000	144.60000	22.50000	0.0	0.0	0.0	0.0 d
5.6050	101.77500	146.30000	22.50000	0.0	0.0	0.0	0.0 d
7.4733	101.00000	148.00000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 56-3-3 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	101.00000	148.00000	22.50000	0.0	0.0	0.0	0.0 d
1.9405	99.22222	147.22222	22.50000	0.0	0.0	0.0	0.0 d
3.8809	97.44444	146.44444	22.50000	0.0	0.0	0.0	0.0 d
5.8214	95.66667	145.66667	22.50000	0.0	0.0	0.0	0.0 d
7.7619	93.88889	144.88889	22.50000	0.0	0.0	0.0	0.0 d
9.7024	92.11111	144.11111	22.50000	0.0	0.0	0.0	0.0 d
11.643	90.33333	143.33333	22.50000	0.0	0.0	0.0	0.0 d
13.583	88.55556	142.55556	22.50000	0.0	0.0	0.0	0.0 d
15.524	86.77778	141.77778	22.50000	0.0	0.0	0.0	0.0 d
17.464	85.00000	141.00000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Specific Building Damage Results - Vertical Displacements

Structure: 48-1 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]

Vertical Offset 1

0.0	70.00000	143.00000	22.50000	-0.14230 d
1.9521	70.81250	141.22500	22.50000	-0.15463 d
3.9042	71.62500	139.45000	22.50000	-0.16756 d
5.8564	72.43750	137.67500	22.50000	-0.18083 d
7.8085	73.25000	135.90000	22.50000	-0.19398 d
9.7606	74.06250	134.12500	22.50000	-0.20631 d
11.713	74.87500	132.35000	22.50000	-0.21678 d
13.665	75.68750	130.57500	22.50000	-0.22388 d
15.617	76.50000	128.80000	22.50000	-0.22561 d

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]

d - Displacements include imported displacements.

Structure: 48-2 | Sub-structure: 0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	76.50000	128.80000	22.50000	-0.22561 d
2.0290	78.35000	129.63333	22.50000	-0.23347 d
4.0581	80.20000	130.46667	22.50000	-0.23835 d
6.0871	82.05000	131.30000	22.50000	-0.24213 d
8.1161	83.90000	132.13333	22.50000	-0.23340 d
10.145	85.75000	132.96667	22.50000	-0.23859 d
12.174	87.60000	133.80000	22.50000	-0.24735 d

d - Displacements include imported displacements.

Structure: 48-3 | Sub-structure: 0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	87.60000	133.80000	22.50000	-0.24735 d
1.9080	86.90000	135.57500	22.50000	-0.27724 d
3.8161	86.20000	137.35000	22.50000	-0.28799 d
5.7241	85.50000	139.12500	22.50000	-0.28088 d
7.6322	84.80000	140.90000	22.50000	-0.26555 d
9.5402	84.10000	142.67500	22.50000	-0.24759 d
11.448	83.40000	144.45000	22.50000	-0.22868 d
13.356	82.70000	146.22500	22.50000	-0.20986 d
15.264	82.00000	148.00000	22.50000	-0.19178 d

d - Displacements include imported displacements.

Structure: 48-4 | Sub-structure: 0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	82.00000	148.00000	22.50000	-0.19178 d
1.8571	80.28571	147.28571	22.50000	-0.18560 d
3.7143	78.57143	146.57143	22.50000	-0.17893 d
5.5714	76.85714	145.85714	22.50000	-0.17188 d
7.4286	75.14286	145.14286	22.50000	-0.16460 d
9.2857	73.42857	144.42857	22.50000	-0.15719 d
11.143	71.71429	143.71429	22.50000	-0.14973 d
13.000	70.00000	143.00000	22.50000	-0.14230 d

d - Displacements include imported displacements.

Structure: 2-4-1 | Sub-structure: 0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	66.00000	122.70000	22.50000	-0.15764 d
2.1366	67.24000	120.96000	22.50000	-0.15725 d
4.2733	68.48000	119.22000	22.50000	-0.14635 d
6.4099	69.72000	117.48000	22.50000	-0.11616 d
8.5465	70.96000	115.74000	22.50000	-0.050244 d
10.683	72.20000	114.00000	22.50000	0.084829 d

d - Displacements include imported displacements.

Structure: 2-4-2 | Sub-structure: 0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	72.20000	114.00000	22.50000	0.084829 d
1.9298	70.62222	112.88889	22.50000	-0.029865 d
3.8595	69.04444	111.77778	22.50000	-0.090787 d
5.7893	67.46667	110.66667	22.50000	-0.12050 d
7.7190	65.88889	109.55556	22.50000	-0.13235 d
9.6488	64.31111	108.44444	22.50000	-0.13412 d
11.579	62.73333	107.33333	22.50000	-0.13033 d
13.508	61.15556	106.22222	22.50000	-0.12364 d
15.438	59.57778	105.11111	22.50000	-0.11561 d
17.368	58.00000	104.00000	22.50000	-0.10715 d

d - Displacements include imported displacements.

Structure: 2-4-3 | Sub-structure: 0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	58.00000	104.00000	22.50000	-0.10715 d
1.9511	56.88333	105.60000	22.50000	-0.10407 d
3.9023	55.76667	107.20000	22.50000	-0.10071 d
5.8534	54.65000	108.80000	22.50000	-0.097118 d
7.8046	53.53333	110.40000	22.50000	-0.093332 d
9.7557	52.41667	112.00000	22.50000	-0.089403 d
11.707	51.30000	113.60000	22.50000	-0.085382 d

d - Displacements include imported displacements.

Structure: 2-4-4 | Sub-structure: 0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	51.30000	113.60000	22.50000	-0.085382 d
1.9210	52.93333	114.61111	22.50000	-0.092359 d
3.8419	54.56667	115.62222	22.50000	-0.099755 d
5.7629	56.20000	116.63333	22.50000	-0.10751 d
7.6839	57.83333	117.64444	22.50000	-0.11554 d
9.6048	59.46667	118.65556	22.50000	-0.12374 d
11.526	61.10000	119.66667	22.50000	-0.13204 d
13.447	62.73333	120.67778	22.50000	-0.14038 d
15.368	64.36667	121.68889	22.50000	-0.14885 d
17.289	66.00000	122.70000	22.50000	-0.15764 d

d - Displacements include imported displacements.

Structure: 56-3-1 | Sub-structure: 0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	87.60000	133.80000	22.50000	-0.24735 d
2.0093	89.43333	134.62222	22.50000	-0.25015 d

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
4.0185	91.26667	135.44444	22.50000	-0.24243	d
6.0278	93.10000	136.26667	22.50000	-0.22449	d
8.0371	94.93333	137.08889	22.50000	-0.20182	d
10.046	96.76667	137.91111	22.50000	-0.16916	d
12.056	98.60000	138.73333	22.50000	-0.14187	d
14.065	100.43333	139.55556	22.50000	-0.12894	d
16.074	102.26667	140.37778	22.50000	-0.13040	d
18.083	104.10000	141.20000	22.50000	-0.14204	d

d - Displacements include imported displacements.

Structure: 56-3-2 | Sub-structure: 0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	104.10000	141.20000	22.50000	-0.14204	d
1.8683	103.32500	142.90000	22.50000	-0.22632	d
3.7366	102.55000	144.60000	22.50000	-0.26408	d
5.6050	101.77500	146.30000	22.50000	-0.27523	d
7.4733	101.00000	148.00000	22.50000	-0.27121	d

d - Displacements include imported displacements.

Structure: 56-3-3 | Sub-structure: 0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	101.00000	148.00000	22.50000	-0.27121	d
1.9405	99.22222	147.22222	22.50000	-0.27563	d
3.8809	97.44444	146.44444	22.50000	-0.27943	d
5.8214	95.66667	145.66667	22.50000	-0.28244	d
7.7619	93.88889	144.88889	22.50000	-0.28440	d
9.7024	92.11111	144.11111	22.50000	-0.28492	d
11.643	90.33333	143.33333	22.50000	-0.28359	d
13.583	88.55556	142.55556	22.50000	-0.28009	d
15.524	86.77778	141.77778	22.50000	-0.27431	d
17.464	85.00000	141.00000	22.50000	-0.26646	d

d - Displacements include imported displacements.

Specific Building Damage Results - All Segments

Structure: 48-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max Tensile Strain [%]	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature [m]	Damage Category	
0.0	1	0.0	5.1084	Sagging	8.8605E-6	0.0	8.3327E-6	0.0	6.7961E-6	5.6495E+6	(Negligible)	0
	2	5.1084	10.508	Hogging	92.084E-6	0.0	86.010E-6	0.0	6.7961E-6	648220.	(Negligible)	0

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

Structure: 48-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max Tensile Strain [%]	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature [m]	Damage Category	
0.0	1	0.0	6.8832	Hogging	72.864E-6	0.0014736	0.0015110	-127.38E-6	-4.3006E-6	936470.	(Negligible)	0
	2	6.8832	5.2899	Sagging	137.85E-6	0.0091916	0.0092963	-127.38E-6	4.3133E-6	669800.	(Negligible)	0

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

Structure: 48-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max Tensile Strain [%]	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature [m]	Damage Category	
0.0	1	0.0	11.473	Hogging	408.93E-6	-374.15E-6	289.21E-6	11.574E-6	15.666E-6	187140.	(Negligible)	0
	2	11.473	3.7899	Sagging	9.5944E-6	0.0	9.2626E-6	0.0	-9.8613E-6	4.0676E+6	(Negligible)	0

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

Structure: 48-4 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max Tensile Strain [%]	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature [m]	Damage Category	
0.0	1	0.0	10.740	Hogging	10.470E-6	0.0	9.7632E-6	0.0	-4.0156E-6	6.4846E+6	(Negligible)	0
	2	10.740	2.2587	Sagging	0.0	0.0	0.0	0.0	-4.0156E-6	68.898E+6	(Negligible)	0

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

Structure: 2-4-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max Tensile Strain [%]	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature [m]	Damage Category	
0.0	1	0.0	6.4099	Hogging	255.27E-6	0.0	248.73E-6	0.0	-30.850E-6	114190.	(Negligible)	0

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

Structure: 2-4-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max Tensile Strain [%]	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature [m]	Damage Category	
0.0	1	5.7893	11.578	Hogging	156.04E-6	0.0	143.66E-6	0.0	15.398E-6	193400.	(Negligible)	0

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

Structure: 2-4-3 | Sub-structure: 0

Vertical Offset	Segment	Start	Length	Curvature	Deflection	Average	Max	Max Gradient	Max Gradient	Min	Damage

from Line for Vertical Movement Calculations					Ratio	Horizontal Strain	Tensile Strain	of Horizontal Displacement Curve	of Vertical Displacement Curve	Radius of Curvature	Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	3.9023	Hogging	3.5181E-6	0.0	3.4690E-6	0.0	-1.8416E-6	13.228E+6	0 (Negligible)

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

Structure: 2-4-4 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	5.7629	11.525	Sagging	4.7361E-6	0.0	6.2585E-6	0.0	4.5753E-6	9.8906E+6	0 (Negligible)

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

Structure: 56-3-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	9.1647	Hogging	250.78E-6	-0.0060514	0.0012180	117.17E-6	-16.258E-6	381550.	0 (Negligible)
	2	9.1647	8.9177	Sagging	355.54E-6	-371.08E-6	221.41E-6	37.537E-6	-16.258E-6	303360.	0 (Negligible)

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

Structure: 56-3-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	7.4723	Hogging	767.34E-6	0.0	740.83E-6	0.0	45.113E-6	67780.	0 (Negligible)

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

Structure: 56-3-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	17.463	Hogging	93.595E-6	0.0	105.18E-6	0.0	-4.0461E-6	1.7129E+6	0 (Negligible)

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

Specific Building Damage Results - Critical Values for All Segments within Each Sub-Structure

Structure: 48-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	92.084E-6	0.0	6.7961E-6	0.22561	86.010E-6	0.0	6.7961E-6	648220.	5.6495E+6	0 (Negligible)

Structure: 48-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	137.85E-6	0.0091916	4.3133E-6	0.24734	0.0092963	-127.38E-6	4.3133E-6	936470.	669800.	0 (Negligible)

Structure: 48-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	408.93E-6	-374.15E-6	15.666E-6	0.28796	289.21E-6	11.574E-6	15.666E-6	187140.	4.0676E+6	0 (Negligible)

Structure: 48-4 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	10.470E-6	0.0	-4.0156E-6	0.19178	9.7632E-6	0.0	-4.0156E-6	6.4846E+6	68.898E+6	0 (Negligible)

Structure: 2-4-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	255.27E-6	0.0	-30.850E-6	0.15764	248.73E-6	0.0	-30.850E-6	114190.	-	0 (Negligible)

Structure: 2-4-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category

[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	156.04E-6	0.0	15.398E-6	0.13412	143.66E-6	0.0	15.398E-6	193400.	-	0 (Negligible)

Structure: 2-4-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	3.5181E-6	0.0	-1.8416E-6	0.10715	3.4690E-6	0.0	-1.8416E-6	13.228E+6	-	0 (Negligible)

Structure: 2-4-4 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	4.7361E-6	0.0	4.5753E-6	0.15763	6.2585E-6	0.0	4.5753E-6	-	9.8906E+6	0 (Negligible)

Structure: 56-3-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	355.54E-6	-0.0060514	-16.258E-6	0.25006	0.0012180	117.17E-6	-16.258E-6	381550.	303360.	0 (Negligible)

Structure: 56-3-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	767.34E-6	0.0	45.113E-6	0.27512	740.83E-6	0.0	45.113E-6	67780.	-	0 (Negligible)

Structure: 56-3-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	93.595E-6	0.0	-4.0461E-6	0.28492	105.18E-6	0.0	-4.0461E-6	1.7129E+6	-	0 (Negligible)

Specific Building Damage Results - Critical Segments within Each Structure

Structure Name	Parameter	Critical Sub-Structure	Critical Segment	Start	End	Curvature	Max Slope	Max Settlement	Max Tensile Strain	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
				[m]	[m]			[mm]	[%]	[m]	[m]	
48-1	Max Slope		0	1 0.0	5.1084	Sagging	**6.7961E-6**	0.17575	8.3327E-6	-	5.6495E+6	0 (Negligible)
	Max Settlement		0	2 5.1084	15.616	Hogging	6.7961E-6	**0.22561**	86.010E-6	648220.	-	0 (Negligible)
	Max Tensile Strain		0	2 5.1084	15.616	Hogging	6.7961E-6	0.22561	**86.010E-6**	648220.	-	0 (Negligible)
	Min Radius of Curvature (Hogging)		0	2 5.1084	15.616	Hogging	6.7961E-6	0.22561	86.010E-6	**648220.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)		0	1 0.0	5.1084	Sagging	6.7961E-6	0.17575	8.3327E-6	-	**5.6495E+6**	0 (Negligible)
48-2	Max Slope		0	2 6.8832	12.173	Sagging	**4.3133E-6**	0.24734	0.0092963	-	669800.	0 (Negligible)
	Max Settlement		0	2 6.8832	12.173	Sagging	4.3133E-6	**0.24734**	0.0092963	-	669800.	0 (Negligible)
	Max Tensile Strain		0	2 6.8832	12.173	Sagging	4.3133E-6	0.24734	**0.0092963**	-	669800.	0 (Negligible)
	Min Radius of Curvature (Hogging)		0	1 0.0	6.8832	Hogging	4.3006E-6	0.24206	0.0015110	**936470.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)		0	2 6.8832	12.173	Sagging	4.3133E-6	0.24734	0.0092963	-	**669800.**	0 (Negligible)
48-3	Max Slope		0	1 0.0	11.473	Hogging	**15.666E-6**	0.28796	289.21E-6	187140.	-	0 (Negligible)
	Max Settlement		0	1 0.0	11.473	Hogging	15.666E-6	**0.28796**	289.21E-6	187140.	-	0 (Negligible)
	Max Tensile Strain		0	1 0.0	11.473	Hogging	15.666E-6	0.28796	**289.21E-6**	187140.	-	0 (Negligible)
	Min Radius of Curvature (Hogging)		0	1 0.0	11.473	Hogging	15.666E-6	0.28796	289.21E-6	**187140.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)		0	2 11.473	15.263	Sagging	9.8613E-6	0.22843	9.2626E-6	-	**4.0676E+6**	0 (Negligible)
48-4	Max Slope		0	1 0.0	10.740	Hogging	**4.0156E-6**	0.19178	9.7632E-6	6.4846E+6	-	0 (Negligible)
	Max Settlement		0	1 0.0	10.740	Hogging	4.0156E-6	**0.19178**	9.7632E-6	6.4846E+6	-	0 (Negligible)
	Max Tensile Strain		0	1 0.0	10.740	Hogging	4.0156E-6	0.19178	**9.7632E-6**	6.4846E+6	-	0 (Negligible)
	Min Radius of Curvature (Hogging)		0	1 0.0	10.740	Hogging	4.0156E-6	0.19178	9.7632E-6	**6.4846E+6**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)		0	2 10.740	12.999	Sagging	4.0156E-6	0.15135	0.0	-	**68.898E+6**	0 (Negligible)
2-4-1	Max Slope		0	1 0.0	6.4099	Hogging	**30.850E-6**	0.15764	248.73E-6	114190.	-	0 (Negligible)
	Max Settlement		0	1 0.0	6.4099	Hogging	30.850E-6	**0.15764**	248.73E-6	114190.	-	0 (Negligible)
	Max Tensile Strain		0	1 0.0	6.4099	Hogging	30.850E-6	0.15764	**248.73E-6**	114190.	-	0 (Negligible)
	Min Radius of Curvature (Hogging)		0	1 0.0	6.4099	Hogging	30.850E-6	0.15764	248.73E-6	**114190.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)			- -	-	-	-	-	-	-	-	- -
2-4-2	Max Slope		0	1 5.7893	17.367	Hogging	**15.398E-6**	0.13412	143.66E-6	193400.	-	0 (Negligible)
	Max Settlement		0	1 5.7893	17.367	Hogging	15.398E-6	**0.13412**	143.66E-6	193400.	-	0 (Negligible)
	Max Tensile Strain		0	1 5.7893	17.367	Hogging	15.398E-6	0.13412	**143.66E-6**	193400.	-	0 (Negligible)
	Min Radius of Curvature (Hogging)		0	1 5.7893	17.367	Hogging	15.398E-6	0.13412	143.66E-6	**193400.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)			- -	-	-	-	-	-	-	-	- -
2-4-3	Max Slope		0	1 0.0	3.9023	Hogging	**1.8416E-6**	0.10715	3.4690E-6	13.228E+6	-	0 (Negligible)
	Max Settlement		0	1 0.0	3.9023	Hogging	1.8416E-6	**0.10715**	3.4690E-6	13.228E+6	-	0 (Negligible)
	Max Tensile Strain		0	1 0.0	3.9023	Hogging	1.8416E-6	0.10715	**3.4690E-6**	13.228E+6	-	0 (Negligible)
	Min Radius of		0	1 0.0	3.9023	Hogging	1.8416E-6	0.10715	3.4690E-6	**13.228E+6**	-	0 (Negligible)

Structure Name	Parameter	Critical Sub-Structure	Critical Segment	Start	End	Curvature	Max Slope	Max Settlement	Max Tensile Strain	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
	Curvature (Hogging)											
	Min Radius of Curvature (Sagging)		-	-	- -		-	-	-	-	- -	
2-4-4	Max Slope	0	1	5.7629	17.288	Sagging	**4.5753E-6**	0.15763	6.2585E-6	-	9.8906E+6	0 (Negligible)
	Max Settlement	0	1	5.7629	17.288	Sagging	4.5753E-6	**0.15763**	6.2585E-6	-	9.8906E+6	0 (Negligible)
	Max Tensile Strain	0	1	5.7629	17.288	Sagging	4.5753E-6	0.15763	**6.2585E-6**	-	9.8906E+6	0 (Negligible)
	Min Radius of Curvature (Hogging)		-	-	- -		-	-	-	-	- -	
	Min Radius of Curvature (Sagging)	0	1	5.7629	17.288	Sagging	4.5753E-6	0.15763	6.2585E-6	-	**9.8906E+6**	0 (Negligible)
56-3-1	Max Slope	0	1	0.0	9.1647	Hogging	**16.258E-6**	0.25006	0.0012180	381550.	-	0 (Negligible)
	Max Settlement	0	1	0.0	9.1647	Hogging	16.258E-6	**0.25006**	0.0012180	381550.	-	0 (Negligible)
	Max Tensile Strain	0	1	0.0	9.1647	Hogging	16.258E-6	0.25006	**0.0012180**	381550.	-	0 (Negligible)
	Min Radius of Curvature (Hogging)	0	1	0.0	9.1647	Hogging	16.258E-6	0.25006	0.0012180	**381550.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	0	2	9.1647	18.082	Sagging	16.258E-6	0.18349	221.41E-6	-	**303360.**	0 (Negligible)
56-3-2	Max Slope	0	1	0.0	7.4723	Hogging	**45.113E-6**	0.27512	740.83E-6	67780.	-	0 (Negligible)
	Max Settlement	0	1	0.0	7.4723	Hogging	45.113E-6	**0.27512**	740.83E-6	67780.	-	0 (Negligible)
	Max Tensile Strain	0	1	0.0	7.4723	Hogging	45.113E-6	0.27512	**740.83E-6**	67780.	-	0 (Negligible)
	Min Radius of Curvature (Hogging)	0	1	0.0	7.4723	Hogging	45.113E-6	0.27512	740.83E-6	**67780.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)		-	-	- -		-	-	-	-	- -	
56-3-3	Max Slope	0	1	0.0	17.463	Hogging	**4.0461E-6**	0.28492	105.18E-6	1.7129E+6	-	0 (Negligible)
	Max Settlement	0	1	0.0	17.463	Hogging	4.0461E-6	**0.28492**	105.18E-6	1.7129E+6	-	0 (Negligible)
	Max Tensile Strain	0	1	0.0	17.463	Hogging	4.0461E-6	0.28492	**105.18E-6**	1.7129E+6	-	0 (Negligible)
	Min Radius of Curvature (Hogging)	0	1	0.0	17.463	Hogging	4.0461E-6	0.28492	105.18E-6	**1.7129E+6**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)		-	-	- -		-	-	-	-	- -	

Problem Type

Problem Type : Tunnelling and Embedded Wall Excavations

Displacement Data

Type	Name	Direction of extrusion	Point/Line/Line for extrusion						No. of intervals across extrusion/line	Extrusion depth	No. of intervals along extrusion	Calculate	Surface type for tunnels
			First point			Second point							
			X [m]	Y [m]	Z(level) [m]	X [m]	Y [m]	Z(level) [m]		[m]			
Line	48-1	-	70.00000	143.00000	22.50000	76.50000	128.80000	22.50000	8	-	-	Yes	Surface
Line	48-2	-	76.50000	128.80000	22.50000	87.60000	133.80000	22.50000	6	-	-	Yes	Surface
Line	48-3	-	87.60000	133.80000	22.50000	82.00000	148.00000	22.50000	8	-	-	Yes	Surface
Line	48-4	-	82.00000	148.00000	22.50000	70.00000	143.00000	22.50000	7	-	-	Yes	Surface
Line	2-4-1	-	66.00000	122.70000	22.50000	72.20000	114.00000	22.50000	5	-	-	Yes	Surface
Line	2-4-2	-	72.20000	114.00000	22.50000	58.00000	104.00000	22.50000	9	-	-	Yes	Surface
Line	2-4-3	-	58.00000	104.00000	22.50000	51.30000	113.60000	22.50000	6	-	-	Yes	Surface
Line	2-4-4	-	51.30000	113.60000	22.50000	66.00000	122.70000	22.50000	9	-	-	Yes	Surface
Line	56-3-1	-	87.60000	133.80000	22.50000	104.10000	141.20000	22.50000	9	-	-	Yes	Surface
Line	56-3-2	-	104.10000	141.20000	22.50000	101.00000	148.00000	22.50000	4	-	-	Yes	Surface
Line	56-3-3	-	101.00000	148.00000	22.50000	85.00000	141.00000	22.50000	9	-	-	Yes	Surface

Imported Displacements

The following data points and displacements were found in the import file Short term NEW XDISP.csv.

Ref.	Coordinates			Displacements			
	x [m]	y [m]	z [m]	x [mm]	y [mm]	z [mm]	
1	70.00000	143.00000	22.50000	0.00000	0.00000	-0.20134	1,2,6
2	70.81250	141.22500	22.50000	0.00000	0.00000	-0.22016	1,2,6
3	71.62500	139.45000	22.50000	0.00000	0.00000	-0.24030	1,2,6
4	72.43750	137.67500	22.50000	0.00000	0.00000	-0.26154	1,2,6
5	73.25000	135.90000	22.50000	0.00000	0.00000	-0.28345	1,2,6
6	74.06250	134.12500	22.50000	0.00000	0.00000	-0.30534	1,2,6
7	74.87500	132.35000	22.50000	0.00000	0.00000	-0.32611	1,2,6
8	75.68750	130.57500	22.50000	0.00000	0.00000	-0.34419	1,2,6
9	76.50000	128.80000	22.50000	0.00000	0.00000	-0.35745	1,2,6
10	78.35000	129.63333	22.50000	0.00000	0.00000	-0.38653	1,2,6
11	80.20000	130.46667	22.50000	0.00000	0.00000	-0.41684	1,2,6
12	82.05000	131.30000	22.50000	0.00000	0.00000	-0.45118	1,2,6
13	83.90000	132.13333	22.50000	0.00000	0.00000	-0.49485	1,2,6
14	85.75000	132.96667	22.50000	0.00000	0.00000	-0.55216	1,2,6
15	87.60000	133.80000	22.50000	0.00000	0.00000	-0.62084	1,2,6
16	86.90000	135.57500	22.50000	0.00000	0.00000	-0.58722	1,2,6
17	86.20000	137.35000	22.50000	0.00000	0.00000	-0.54393	1,2,6
18	85.50000	139.12500	22.50000	0.00000	0.00000	-0.49739	1,2,6
19	84.80000	140.90000	22.50000	0.00000	0.00000	-0.45110	1,2,6
20	84.10000	142.67500	22.50000	0.00000	0.00000	-0.40696	1,2,6
21	83.40000	144.45000	22.50000	0.00000	0.00000	-0.36596	1,2,6
22	82.70000	146.22500	22.50000	0.00000	0.00000	-0.32852	1,2,6
23	82.00000	148.00000	22.50000	0.00000	0.00000	-0.29473	1,2,6
24	80.28571	147.28571	22.50000	0.00000	0.00000	-0.28155	1,2,6
25	78.57143	146.57143	22.50000	0.00000	0.00000	-0.26797	1,2,6
26	76.85714	145.85714	22.50000	0.00000	0.00000	-0.25424	1,2,6
27	75.14286	145.14286	22.50000	0.00000	0.00000	-0.24057	1,2,6
28	73.42857	144.42857	22.50000	0.00000	0.00000	-0.22712	1,2,6
29	71.71429	143.71429	22.50000	0.00000	0.00000	-0.21401	1,2,6
30	66.00000	122.70000	22.50000	0.00000	0.00000	-0.21894	1,2,6
31	67.24000	120.96000	22.50000	0.00000	0.00000	-0.22385	1,2,6
32	68.48000	119.22000	22.50000	0.00000	0.00000	-0.21849	1,2,6
33	69.72000	117.48000	22.50000	0.00000	0.00000	-0.19402	1,2,6
34	70.96000	115.74000	22.50000	0.00000	0.00000	-0.13394	1,2,6
35	72.20000	114.00000	22.50000	0.00000	0.00000	-0.00473	1,2,6
36	70.62222	112.88889	22.50000	0.00000	0.00000	-0.10860	1,2,6
37	69.04444	111.77778	22.50000	0.00000	0.00000	-0.16026	1,2,6
38	67.46667	110.66667	22.50000	0.00000	0.00000	-0.18203	1,2,6
39	65.88889	109.55556	22.50000	0.00000	0.00000	-0.18704	1,2,6
40	64.31111	108.44444	22.50000	0.00000	0.00000	-0.18289	1,2,6
41	62.73333	107.33333	22.50000	0.00000	0.00000	-0.17397	1,2,6
42	61.15556	106.22222	22.50000	0.00000	0.00000	-0.16281	1,2,6
43	59.57778	105.11111	22.50000	0.00000	0.00000	-0.15087	1,2,6
44	58.00000	104.00000	22.50000	0.00000	0.00000	-0.13898	1,2,6
45	56.88333	105.60000	22.50000	0.00000	0.00000	-0.13483	1,2,6
46	55.76667	107.20000	22.50000	0.00000	0.00000	-0.13035	1,2,6
47	54.65000	108.80000	22.50000	0.00000	0.00000	-0.12561	1,2,6
48	53.53333	110.40000	22.50000	0.00000	0.00000	-0.12066	1,2,6
49	52.41667	112.00000	22.50000	0.00000	0.00000	-0.11556	1,2,6
50	51.30000	113.60000	22.50000	0.00000	0.00000	-0.11037	1,2,6
51	52.93333	114.61111	22.50000	0.00000	0.00000	-0.11972	1,2,6
52	54.56667	115.62222	22.50000	0.00000	0.00000	-0.12977	1,2,6
53	56.20000	116.63333	22.50000	0.00000	0.00000	-0.14052	1,2,6
54	57.83333	117.64444	22.50000	0.00000	0.00000	-0.15192	1,2,6
55	59.46667	118.65556	22.50000	0.00000	0.00000	-0.16393	1,2,6
56	61.10000	119.66667	22.50000	0.00000	0.00000	-0.17653	1,2,6
57	62.73333	120.67778	22.50000	0.00000	0.00000	-0.18977	1,2,6
58	64.36667	121.68889	22.50000	0.00000	0.00000	-0.20381	1,2,6
59	89.43333	134.62222	22.50000	0.00000	0.00000	-0.69159	1,2,6
60	91.26667	135.44444	22.50000	0.00000	0.00000	-0.75614	1,2,6
61	93.10000	136.26667	22.50000	0.00000	0.00000	-0.80923	1,2,6
62	94.93333	137.08889	22.50000	0.00000	0.00000	-0.84971	1,2,6
63	96.76667	137.91111	22.50000	0.00000	0.00000	-0.87741	1,2,6
64	98.60000	138.73333	22.50000	0.00000	0.00000	-0.89085	1,2,6
65	100.43333	139.55556	22.50000	0.00000	0.00000	-0.89167	1,2,6
66	102.26667	140.37778	22.50000	0.00000	0.00000	-0.88384	1,2,6
67	104.10000	141.20000	22.50000	0.00000	0.00000	-0.86685	1,2,6
68	103.32500	142.90000	22.50000	0.00000	0.00000	-0.78718	1,2,6
69	102.55000	144.60000	22.50000	0.00000	0.00000	-0.70644	1,2,6
70	101.77500	146.30000	22.50000	0.00000	0.00000	-0.62951	1,2,6
71	101.00000	148.00000	22.50000	0.00000	0.00000	-0.55864	1,2,6
72	99.22222	147.22222	22.50000	0.00000	0.00000	-0.56745	1,2,6
73	97.44444	146.44444	22.50000	0.00000	0.00000	-0.57090	1,2,6
74	95.66667	145.66667	22.50000	0.00000	0.00000	-0.56869	1,2,6
75	93.88889	144.88889	22.50000	0.00000	0.00000	-0.56080	1,2,6
76	92.11111	144.11111	22.50000	0.00000	0.00000	-0.54747	1,2,6
77	90.33333	143.33333	22.50000	0.00000	0.00000	-0.52924	1,2,6
78	88.55556	142.55556	22.50000	0.00000	0.00000	-0.50690	1,2,6
79	86.77778	141.77778	22.50000	0.00000	0.00000	-0.48146	1,2,6
80	85.00000	141.00000	22.50000	0.00000	0.00000	-0.45405	1,2,6

1 - Data point coincident with displacement data. Its displacement has been added to those calculated by Xdisp.
2 - Data point coincident with horizontal movement calculation point for a specific building. Its displacement has been added before performing building damage calculations.
6 - Data point coincident with vertical movement calculation point for a specific building. Its displacement has been added before performing building damage calculations.

Vertical Ground Movement Curves (Excavations)

Curve Name: **No vertical ground movement**
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)(%)]
[0.000,0.000,0.000][1.000,0.000,0.000][0.000,1.000,0.000][1.000,1.000,0.000]
Curve Fitting Method: Polynomial
x Order: 1
y Order: 0

Ref.	Coordinates x [m]	y [m]	z [m]	Displacements x [mm]	y [mm]	z [mm]

Polynomial: z = 0.0x + 0.0
Coeff. of Determination: −2147483648.E+2147483647

Curve Name: **Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(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)(%)]
[0.000,0.000,0.050][2.000,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 1
y Order: 0
Polynomial: z = −2.5E−2x + 5.0E−2
Coeff. of Determination: 1.0

Curve Name: **Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(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]
[0.400,0.000,0.067][0.500,0.000,0.070][0.600,0.000,0.072][0.700,0.000,0.073]
[0.800,0.000,0.073][0.900,0.000,0.072][1.000,0.000,0.070][1.100,0.000,0.068]
[1.200,0.000,0.065][1.300,0.000,0.061][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]
[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]
[2.800,0.000,0.010][2.900,0.000,0.008][3.000,0.000,0.007][3.100,0.000,0.005]
[3.200,0.000,0.004][3.300,0.000,0.004][3.400,0.000,0.003][3.500,0.000,0.002]
[3.600,0.000,0.002][3.700,0.000,0.002][3.800,0.000,0.001][3.900,0.000,0.001]
[4.000,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 4
y Order: 0
Polynomial: z = $-2.6455E-3x^4 + 2.8495E-2x^3 - 1.0051E-1x^2 + 1.0569E-1x + 3.8990E-2$
Coeff. of Determination: 9.9991E−1

Curve Name: **Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(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)(%)]
[0.000,0.000,0.345][0.100,0.000,0.327][0.200,0.000,0.311][0.300,0.000,0.294]
[0.400,0.000,0.279][0.500,0.000,0.264][0.600,0.000,0.250][0.700,0.000,0.237]
[0.800,0.000,0.224][0.900,0.000,0.212][1.000,0.000,0.200][1.100,0.000,0.189]
[1.200,0.000,0.178][1.300,0.000,0.168][1.400,0.000,0.158][1.500,0.000,0.149]
[1.600,0.000,0.140][1.700,0.000,0.132][1.800,0.000,0.124][1.900,0.000,0.116]
[2.000,0.000,0.109][2.100,0.000,0.101][2.200,0.000,0.095][2.300,0.000,0.088]
[2.400,0.000,0.082][2.500,0.000,0.076][2.600,0.000,0.070][2.700,0.000,0.065]
[2.800,0.000,0.059][2.900,0.000,0.054][3.000,0.000,0.049][3.100,0.000,0.044]
[3.200,0.000,0.039][3.300,0.000,0.034][3.400,0.000,0.029][3.500,0.000,0.025]
[3.600,0.000,0.020][3.700,0.000,0.015][3.800,0.000,0.010][3.900,0.000,0.005]
[4.000,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 3
y Order: 0
Polynomial: z = $-3.5383E-3x^3 + 3.7194E-2x^2 - 1.7831E-1x + 3.4467E-1$
Coeff. of Determination: 9.9999E−1

Horizontal Ground Movement Curves (Excavations)

Curve Name: **No horizontal ground movement**
Coordinates: [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)(%)]
[0.000,0.000,0.000][1.000,0.000,0.000][0.000,1.000,0.000][1.000,1.000,0.000]
Curve Fitting Method: Polynomial
x Order: 0
y Order: 0
Polynomial: z = 0.0
Coeff. of Determination: −2147483648.E+2147483647

Curve Name: **Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(a))**
Coordinates: [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)(%)]
[0.000,0.000,0.081][0.050,0.000,0.076][0.100,0.000,0.072][0.150,0.000,0.067]
[0.200,0.000,0.063][0.250,0.000,0.059][0.300,0.000,0.056][0.350,0.000,0.052]
[0.400,0.000,0.049][0.450,0.000,0.045][0.500,0.000,0.043][0.550,0.000,0.040]
[0.600,0.000,0.037][0.650,0.000,0.034][0.700,0.000,0.032][0.750,0.000,0.029]
[0.800,0.000,0.027][0.850,0.000,0.024][0.900,0.000,0.022][0.950,0.000,0.020]
[1.000,0.000,0.018][1.050,0.000,0.016][1.100,0.000,0.014][1.150,0.000,0.012]
[1.200,0.000,0.011][1.250,0.000,0.009][1.300,0.000,0.007][1.350,0.000,0.005]
[1.400,0.000,0.004][1.450,0.000,0.002][1.500,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 3
y Order: 0
Polynomial: z = $-1.0610E-2x^3 + 4.4203E-2x^2 - 9.6358E-2x + 8.0901E-2$
Coeff. of Determination: 1.0000

Curve Name: **Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))**
Coordinates: [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)(%)]
[0.000,0.000,0.150][4.000,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 1
y Order: 0
Polynomial: z = −3.75E−2x + 1.50E−1
Coeff. of Determination: 1.00

Curve Name: **Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))**
Coordinates: [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)(%)]
[0.000,0.000,0.400][4.000,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 1
y Order: 0
Polynomial: z = −10.E−2x + 4.0E−1
Coeff. of Determination: 1.0

Polygonal Excavations

Excavation Name: **Lift Pit**
Surface level [m]: 17.500
Contribution: Positive
Enabled: Yes
Surface movement curves which are selected are applied between surface and [m]: 16.100

Corner	x	y	Base	Stiffened	Previous Side	Next Side

			Level		d	p1	p2*	d	p1	p2*
	[m]	[m]	[m]		[m]	[%]	[%]	[m]	[%]	[%]
1	104.50	122.40	16.100	Yes	0.0	67.000	25.000	0.0	67.000	25.000
2	107.00	123.50	16.100	Yes	0.0	67.000	25.000	0.0	67.000	25.000
3	107.90	121.50	16.100	Yes	0.0	67.000	25.000	0.0	67.000	25.000
4	105.50	120.30	16.100	Yes	0.0	67.000	25.000	0.0	67.000	25.000

Side	Corner 1		Corner 2		Ground Movement Curve	
	x	y	x	y	Vertical	Horizontal
	[m]	[m]	[m]	[m]		
1	104.50	122.40	107.00	123.50	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b))	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))
2	107.00	123.50	107.90	121.50	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b))	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))
3	107.90	121.50	105.50	120.30	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b))	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))
4	105.50	120.30	104.50	122.40	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b))	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))

Excavation Name: New Basement 1
Surface level [m]: 22.550
Contribution: Positive
Enabled: Yes
Surface movement curves which are selected are applied between surface and [m]: 17.500

Corner	x	y	Base Level	Stiffened	Previous Side d	p1	p2*	Next Side d	p1	p2*
	[m]	[m]	[m]		[m]	[%]	[%]	[m]	[%]	[%]
1	109.50	117.50	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
2	105.80	126.20	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
3	108.30	127.30	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
4	112.00	118.60	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000

Side	Corner 1		Corner 2		Ground Movement Curve	
	x	y	x	y	Vertical	Horizontal
	[m]	[m]	[m]	[m]		
1	109.50	117.50	105.80	126.20	No vertical ground movement	No horizontal ground movement
2	105.80	126.20	108.30	127.30	Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(b))	Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(a))
3	108.30	127.30	112.00	118.60	Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(b))	Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(a))
4	112.00	118.60	109.50	117.50	No vertical ground movement	No horizontal ground movement

Excavation Name: New Basement 2
Surface level [m]: 22.550
Contribution: Positive
Enabled: Yes
Surface movement curves which are selected are applied between surface and [m]: 17.500

Corner	x	y	Base Level	Stiffened	Previous Side d	p1	p2*	Next Side d	p1	p2*
	[m]	[m]	[m]		[m]	[%]	[%]	[m]	[%]	[%]
1	105.80	126.20	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
2	101.20	124.20	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
3	102.50	121.50	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
4	107.00	123.50	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000

Side	Corner 1		Corner 2		Ground Movement Curve	
	x	y	x	y	Vertical	Horizontal
	[m]	[m]	[m]	[m]		
1	105.80	126.20	101.20	124.20	Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(b))	Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(a))
2	101.20	124.20	102.50	121.50	Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b)	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))
3	102.50	121.50	107.00	123.50	No vertical ground movement	No horizontal ground movement
4	107.00	123.50	105.80	126.20	No vertical ground movement	No horizontal ground movement

Excavation Name: New Basement 3
Surface level [m]: 20.350
Contribution: Positive
Enabled: Yes
Surface movement curves which are selected are applied between surface and [m]: 17.500

Corner	x	y	Base Level	Stiffened	Previous Side d	p1	p2*	Next Side d	p1	p2*
	[m]	[m]	[m]		[m]	[%]	[%]	[m]	[%]	[%]
1	102.50	121.50	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
2	104.00	118.20	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
3	108.40	120.00	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
4	107.00	123.50	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000

Side	Corner 1		Corner 2		Ground Movement Curve	
	x	y	x	y	Vertical	Horizontal
	[m]	[m]	[m]	[m]		
1	102.50	121.50	104.00	118.20	Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b)	Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))
2	104.00	118.20	108.40	120.00	Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b)	Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))
3	108.40	120.00	107.00	123.50	No vertical ground movement	No horizontal ground movement
4	107.00	123.50	102.50	121.50	No vertical ground movement	No horizontal ground movement

Damage Category Strains

Name	0 (Negligible) to 1 (Very Slight)	1 (Very Slight) to 2 (Slight)	2 (Slight) to 3 (Moderate)	3 (Moderate) to 4 (Severe)
Burland Strain Limits	0.0	500.00E-6	750.00E-6	0.0015000

Specific Structures - Geometry

Structure Name	Sub-Structure Name	Displacement Line	Start Distance Along Line	End Distance Along Line	Vertical Offsets from Line for Vertical Movement Calculations	Vertical Displacement Limit Sensitivity	Damage Category Strains	Poisson's Ratio	E/G
			[m]	[m]	[m]	[mm]			
48-1		0 48-1	0.00000	15.61598	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
48-2		0 48-2	0.00000	12.17315	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
48-3		0 48-3	0.00000	15.26334	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
48-4		0 48-4	0.00000	12.99900	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
2-4-1		0 2-4-1	0.00000	10.68216	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
2-4-2		0 2-4-2	0.00000	17.36679	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
2-4-3		0 2-4-3	0.00000	11.70584	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
2-4-4		0 2-4-4	0.00000	17.28772	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
56-3-1		0 56-3-1	0.00000	18.08242	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
56-3-2		0 56-3-2	0.00000	7.47229	0.0	0.10000	Burland Strain Limits	0.20000	2.6000

Structure Name	Sub-Structure Name	Displacement Line	Start Distance Along Line	End Distance Along Line	Vertical Offsets from Line for Vertical	Vertical Displacement Limit Sensitivity	Damage Category Strains	Poisson's Ratio	E/G
56-3-3		0 56-3-3	0.00000	17.46325	0.0	0.10000	Burland Strain Limits	0.20000	2.6000

Specific Structures - Bending Parameters

Structure Name	Sub-Structure Name	Height	Default Properties	Hogging			Sagging		
				2nd Moment of Area (per unit width)	Distance of Bending Strain from N.A.	Distance of N.A. from Edge of Beam in Tension	2nd Moment of Area (per unit width)	Distance of Bending Strain from N.A.	Distance of N.A. from Edge of Beam in Tension
		[m]		[m³]	[m]	[m]	[m³]	[m]	[m]
48-1		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
48-2		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
48-3		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
48-4		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
2-4-1		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
2-4-2		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
2-4-3		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
2-4-4		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
56-3-1		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
56-3-2		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
56-3-3		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000

Building Segment Combinations

Structure Name	Sub-Structure Name	Vertical Offset from Line for Vertical Movement Calculations	Segment Start	Length	Curvature	Combined Segment
		[m]	[m]	[m]		

No structures have segments combined.

Utility Strain Calculation Options

Neglect beneficial contribution of axial strains : No

Warnings

1 Multiple excavations have been specified. The displacements resulting from these excavations are calculated by summing the displacements resulting from each individual excavation. No account has been taken of the interactions between excavations (e.g. overlapping zones of influence or 'shielding' of one excavation by another).
2 Embedded Wall Excavation PE1 : Lift Pit intersects PE2 : New Basement 1, , PE3 : New Basement 2, and PE4 : New Basement 3.
3 Embedded Wall Excavation PE2 : New Basement 1 intersects PE1 : Lift Pit, , PE3 : New Basement 2, and PE4 : New Basement 3.
4 Embedded Wall Excavation PE3 : New Basement 2 intersects PE1 : Lift Pit, , PE2 : New Basement 1, and PE4 : New Basement 3.
5 Embedded Wall Excavation PE4 : New Basement 3 intersects PE1 : Lift Pit, , PE2 : New Basement 1, and PE3 : New Basement 2.
6 If an embedded wall excavation is assigned a 'surface' ground movement curve and if the 'allow movement calculation to level' option is checked for the excavation then displacements induced by it are calculated for points at the surface, and points below the surface to the level specified. Others are ignored. An example of such a combination, for which displacements will not be calculated is Excavation XP1/Side 1/Line 1/Vertical. This is an example only. There are 131 others.
7 If an embedded wall excavation is assigned a 'sub-surface' ground movement curve then displacements induced by it can only be calculated for those points that are level with or below the embedded wall excavation's 'surface level'. Others are ignored. An example of such a combination, for which displacements will not be calculated is Excavation XP4/Side 3/Line 1/Vertical. This is an example only. There are 43 others.

Errors

None

Displacement and Strain Results

Type/No. Name	Dist.	Coordinates x	y	z	Displacements x	y	z	Horizontal displacement along Line	Horizontal displacement perpendicular to Line	Angle of Line to x Axis	
	[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	[mm]	[°]	
48-1	Line 1	70.00000	143.00000	22.50000	0.0	0.0	-0.20134	0.0	0.0	294.60	*
	1.9521	70.81250	141.22500	22.50000	0.0	0.0	-0.22016	0.0	0.0	294.60	*
	3.9042	71.62500	139.45000	22.50000	0.0	0.0	-0.24030	0.0	0.0	294.60	*
	5.8564	72.43750	137.67500	22.50000	0.0	0.0	-0.26154	0.0	0.0	294.60	*
	7.8085	73.25000	135.90000	22.50000	0.0	0.0	-0.28345	0.0	0.0	294.60	*
	9.7606	74.06250	134.12500	22.50000	0.0	0.0	-0.30534	0.0	0.0	294.60	*
	11.713	74.87500	132.35000	22.50000	0.0	0.0	-0.32611	0.0	0.0	294.60	*
	13.665	75.68750	130.57500	22.50000	0.0	0.0	-0.34419	0.0	0.0	294.60	*
	15.617	76.50000	128.80000	22.50000	0.0	0.0	-0.35745	0.0	0.0	294.60	*
48-2	Line 2	76.50000	128.80000	22.50000	0.0	0.0	-0.35745	0.0	0.0	24.249	*
	2.0290	78.35000	129.63333	22.50000	0.0	0.0	-0.38653	0.0	0.0	24.249	*
	4.0581	80.20000	130.46667	22.50000	0.0	0.0	-0.41684	0.0	0.0	24.249	*
	6.0871	82.05000	131.30000	22.50000	0.0	0.0	-0.45118	0.0	0.0	24.249	*
	8.1161	83.90000	132.13333	22.50000	0.23298	0.11217	-0.47926	0.25849	0.0065916	24.249	*
	10.145	85.75000	132.96667	22.50000	0.42872	0.20642	-0.52884	0.47567	0.012130	24.249	*
	12.174	87.60000	133.80000	22.50000	0.52970	0.25504	-0.59098	0.58771	0.014987	24.249	*
48-3	Line 3	87.60000	133.80000	22.50000	0.52970	0.25504	-0.59098	0.042928	-0.58633	111.52	*
	1.9080	86.90000	135.57500	22.50000	0.25721	0.12384	-0.57250	0.020845	-0.28471	111.52	*
	3.8161	86.20000	137.35000	22.50000	0.030337	0.014607	-0.54090	0.0024586	-0.033581	111.52	*
	5.7241	85.50000	139.12500	22.50000	0.0	0.0	-0.49739	0.0	0.0	111.52	*
	7.6322	84.80000	140.90000	22.50000	0.0	0.0	-0.45110	0.0	0.0	111.52	*
	9.5402	84.10000	142.67500	22.50000	0.0	0.0	-0.40696	0.0	0.0	111.52	*
	11.448	83.40000	144.45000	22.50000	0.0	0.0	-0.36596	0.0	0.0	111.52	*
	13.356	82.70000	146.22500	22.50000	0.0	0.0	-0.32852	0.0	0.0	111.52	*
	15.264	82.00000	148.00000	22.50000	0.0	0.0	-0.29473	0.0	0.0	111.52	*
48-4	Line 4	82.00000	148.00000	22.50000	0.0	0.0	-0.29473	0.0	0.0	202.62	*
	1.8571	80.28571	147.28571	22.50000	0.0	0.0	-0.28155	0.0	0.0	202.62	*
	3.7143	78.57143	146.57143	22.50000	0.0	0.0	-0.26797	0.0	0.0	202.62	*
	5.5714	76.85714	145.85714	22.50000	0.0	0.0	-0.25424	0.0	0.0	202.62	*
	7.4286	75.14286	145.14286	22.50000	0.0	0.0	-0.24057	0.0	0.0	202.62	*
	9.2857	73.42857	144.42857	22.50000	0.0	0.0	-0.22712	0.0	0.0	202.62	*
	11.143	71.71429	143.71429	22.50000	0.0	0.0	-0.21401	0.0	0.0	202.62	*
	13.000	70.00000	143.00000	22.50000	0.0	0.0	-0.20134	0.0	0.0	202.62	*
2-4-1	Line 5	66.00000	122.70000	22.50000	0.0	0.0	-0.21894	0.0	0.0	305.48	*
	2.1366	67.24000	120.96000	22.50000	0.0	0.0	-0.22385	0.0	0.0	305.48	*
	4.2733	68.48000	119.22000	22.50000	0.0	0.0	-0.21849	0.0	0.0	305.48	*
	6.4099	69.72000	117.48000	22.50000	0.0	0.0	-0.19402	0.0	0.0	305.48	*
	8.5465	70.96000	115.74000	22.50000	0.0	0.0	-0.13394	0.0	0.0	305.48	*
	10.683	72.20000	114.00000	22.50000	0.0	0.0	-0.0047338	0.0	0.0	305.48	*
2-4-2	Line 6	72.20000	114.00000	22.50000	0.0	0.0	-0.0047338	0.0	0.0	215.15	*
	1.9298	70.62222	112.88889	22.50000	0.0	0.0	-0.10860	0.0	0.0	215.15	*
	3.8595	69.04444	111.77778	22.50000	0.0	0.0	-0.16026	0.0	0.0	215.15	*
	5.7893	67.46667	110.66667	22.50000	0.0	0.0	-0.18203	0.0	0.0	215.15	*
	7.7190	65.88889	109.55556	22.50000	0.0	0.0	-0.18704	0.0	0.0	215.15	*
	9.6488	64.31111	108.44444	22.50000	0.0	0.0	-0.18289	0.0	0.0	215.15	*
	11.579	62.73333	107.33333	22.50000	0.0	0.0	-0.17397	0.0	0.0	215.15	*
	13.508	61.15556	106.22222	22.50000	0.0	0.0	-0.16281	0.0	0.0	215.15	*
	15.438	59.57778	105.11111	22.50000	0.0	0.0	-0.15087	0.0	0.0	215.15	*
	17.368	58.00000	104.00000	22.50000	0.0	0.0	-0.13898	0.0	0.0	215.15	*
2-4-3	Line 7	58.00000	104.00000	22.50000	0.0	0.0	-0.13898	0.0	0.0	124.91	*
	1.9511	56.88333	105.60000	22.50000	0.0	0.0	-0.13483	0.0	0.0	124.91	*

Name	Type/No.	Dist.	Coordinates x	y	z	Displacements x	y	z	Horizontal displacement	Horizontal displacement	Angle of Line to x Axis	
		3.9023	55.76667	107.20000	22.50000	0.0	0.0	-0.13035	0.0	0.0	124.91	*
		5.8534	54.65000	108.80000	22.50000	0.0	0.0	-0.12561	0.0	0.0	124.91	*
		7.8046	53.53333	110.40000	22.50000	0.0	0.0	-0.12066	0.0	0.0	124.91	*
		9.7557	52.41667	112.00000	22.50000	0.0	0.0	-0.11556	0.0	0.0	124.91	*
		11.707	51.30000	113.60000	22.50000	0.0	0.0	-0.11037	0.0	0.0	124.91	*
2-4-4	Line 8		51.30000	113.60000	22.50000	0.0	0.0	-0.11037	0.0	0.0	31.759	*
		1.9210	52.93333	114.61111	22.50000	0.0	0.0	-0.11972	0.0	0.0	31.759	*
		3.8419	54.56667	115.62222	22.50000	0.0	0.0	-0.12977	0.0	0.0	31.759	*
		5.7629	56.20000	116.63333	22.50000	0.0	0.0	-0.14052	0.0	0.0	31.759	*
		7.6839	57.83333	117.64444	22.50000	0.0	0.0	-0.15192	0.0	0.0	31.759	*
		9.6048	59.46667	118.65556	22.50000	0.0	0.0	-0.16393	0.0	0.0	31.759	*
		11.526	61.10000	119.66667	22.50000	0.0	0.0	-0.17653	0.0	0.0	31.759	*
		13.447	62.73333	120.67778	22.50000	0.0	0.0	-0.18977	0.0	0.0	31.759	*
		15.368	64.36667	121.68889	22.50000	0.0	0.0	-0.20381	0.0	0.0	31.759	*
		17.289	66.00000	122.70000	22.50000	0.0	0.0	-0.21894	0.0	0.0	31.759	*
56-3-1	Line 9		87.60000	133.80000	22.50000	0.52970	0.25504	-0.59098	0.58769	0.015948	24.156	*
		2.0093	89.43333	134.62222	22.50000	0.53322	0.25674	-0.65687	0.59159	0.016054	24.156	*
		4.0185	91.26667	135.44444	22.50000	0.44472	0.21412	-0.72259	0.49340	0.013389	24.156	*
		6.0278	93.10000	136.26667	22.50000	0.28014	0.13488	-0.78579	0.31081	0.0084343	24.156	*
		8.0371	94.93333	137.08889	22.50000	0.067979	0.032730	-0.84376	0.075420	0.0020467	24.156	*
		10.046	96.76667	137.91111	22.50000	0.0	0.0	-0.87741	0.0	0.0	24.156	*
		12.056	98.60000	138.73333	22.50000	0.0	0.0	-0.89085	0.0	0.0	24.156	*
		14.065	100.43333	139.55556	22.50000	0.0	0.0	-0.89167	0.0	0.0	24.156	*
		16.074	102.26667	140.37778	22.50000	0.0	0.0	-0.88384	0.0	0.0	24.156	*
		18.083	104.10000	141.20000	22.50000	0.0	0.0	-0.86685	0.0	0.0	24.156	*
56-3-2	Line 10		104.10000	141.20000	22.50000	0.0	0.0	-0.86685	0.0	0.0	114.51	*
		1.8683	103.32500	142.90000	22.50000	0.0	0.0	-0.78718	0.0	0.0	114.51	*
		3.7366	102.55000	144.60000	22.50000	0.0	0.0	-0.70644	0.0	0.0	114.51	*
		5.6050	101.77500	146.30000	22.50000	0.0	0.0	-0.62951	0.0	0.0	114.51	*
		7.4733	101.00000	148.00000	22.50000	0.0	0.0	-0.55864	0.0	0.0	114.51	*
56-3-3	Line 11		101.00000	148.00000	22.50000	0.0	0.0	-0.55864	0.0	0.0	203.63	*
		1.9405	99.22222	147.22222	22.50000	0.0	0.0	-0.56745	0.0	0.0	203.63	*
		3.8809	97.44444	146.44444	22.50000	0.0	0.0	-0.57090	0.0	0.0	203.63	*
		5.8214	95.66667	145.66667	22.50000	0.0	0.0	-0.56869	0.0	0.0	203.63	*
		7.7619	93.88889	144.88889	22.50000	0.0	0.0	-0.56080	0.0	0.0	203.63	*
		9.7024	92.11111	144.11111	22.50000	0.0	0.0	-0.54747	0.0	0.0	203.63	*
		11.643	90.33333	143.33333	22.50000	0.0	0.0	-0.52924	0.0	0.0	203.63	*
		13.583	88.55556	142.55556	22.50000	0.0	0.0	-0.50690	0.0	0.0	203.63	*
		15.524	86.77778	141.77778	22.50000	0.0	0.0	-0.48146	0.0	0.0	203.63	*
		17.464	85.00000	141.00000	22.50000	0.0	0.0	-0.45405	0.0	0.0	203.63	*

* Result includes imported displacement(s).

Specific Building Damage Results - Horizontal Displacements

Structure: 48-1 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	70.00000	143.00000	22.50000	0.0	0.0	0.0	0.0	d
1.9521	70.81250	141.22500	22.50000	0.0	0.0	0.0	0.0	d
3.9042	71.62500	139.45000	22.50000	0.0	0.0	0.0	0.0	d
5.8564	72.43750	137.67500	22.50000	0.0	0.0	0.0	0.0	d
7.8085	73.25000	135.90000	22.50000	0.0	0.0	0.0	0.0	d
9.7606	74.06250	134.12500	22.50000	0.0	0.0	0.0	0.0	d
11.713	74.87500	132.35000	22.50000	0.0	0.0	0.0	0.0	d
13.665	75.68750	130.57500	22.50000	0.0	0.0	0.0	0.0	d
15.617	76.50000	128.80000	22.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Structure: 48-2 | Sub-structure: 0

Dist.	Coordinates x	y	z	x	y	Displacements Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	76.50000	128.80000	22.50000	0.0	0.0	0.0	0.0	d
2.0290	78.35000	129.63333	22.50000	0.0	0.0	0.0	0.0	d
4.0581	80.20000	130.46667	22.50000	0.0	0.0	0.0	0.0	d
6.0871	82.05000	131.30000	22.50000	0.0	0.0	0.0	0.0	d
8.1161	83.90000	132.13333	22.50000	0.23298	0.11217	0.25849	0.0065916	d
10.145	85.75000	132.96667	22.50000	0.42872	0.20642	0.47567	0.012130	d
12.174	87.60000	133.80000	22.50000	0.52970	0.25504	0.58771	0.014987	d

d - Displacements include imported displacements.

Structure: 48-3 | Sub-structure: 0

Dist.	Coordinates x	y	z	x	y	Displacements Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	87.60000	133.80000	22.50000	0.52970	0.25504	0.042928	-0.58633	d
1.9080	86.90000	135.57500	22.50000	0.25721	0.12384	0.020845	-0.28471	d
3.8161	86.20000	137.35000	22.50000	0.030337	0.014607	0.0024586	-0.033581	d
5.7241	85.50000	139.12500	22.50000	0.0	0.0	0.0	0.0	d
7.6322	84.80000	140.90000	22.50000	0.0	0.0	0.0	0.0	d
9.5402	84.10000	142.67500	22.50000	0.0	0.0	0.0	0.0	d
11.448	83.40000	144.45000	22.50000	0.0	0.0	0.0	0.0	d
13.356	82.70000	146.22500	22.50000	0.0	0.0	0.0	0.0	d
15.264	82.00000	148.00000	22.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Structure: 48-4 | Sub-structure: 0

Dist.	Coordinates x	y	z	x	y	Displacements Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	82.00000	148.00000	22.50000	0.0	0.0	0.0	0.0	d
1.8571	80.28571	147.28571	22.50000	0.0	0.0	0.0	0.0	d
3.7143	78.57143	146.57143	22.50000	0.0	0.0	0.0	0.0	d
5.5714	76.85714	145.85714	22.50000	0.0	0.0	0.0	0.0	d
7.4286	75.14286	145.14286	22.50000	0.0	0.0	0.0	0.0	d
9.2857	73.42857	144.42857	22.50000	0.0	0.0	0.0	0.0	d
11.143	71.71429	143.71429	22.50000	0.0	0.0	0.0	0.0	d
13.000	70.00000	143.00000	22.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Structure: 2-4-1 | Sub-structure: 0

Dist.	Coordinates x	y	z	x	y	Displacements Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	66.00000	122.70000	22.50000	0.0	0.0	0.0	0.0	d
2.1366	67.24000	120.96000	22.50000	0.0	0.0	0.0	0.0	d
4.2733	68.48000	119.22000	22.50000	0.0	0.0	0.0	0.0	d
6.4099	69.72000	117.48000	22.50000	0.0	0.0	0.0	0.0	d
8.5465	70.96000	115.74000	22.50000	0.0	0.0	0.0	0.0	d
10.683	72.20000	114.00000	22.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	72.20000	114.00000	22.50000	0.0	0.0	0.0	0.0 d
1.9298	70.62222	112.88889	22.50000	0.0	0.0	0.0	0.0 d
3.8595	69.04444	111.77778	22.50000	0.0	0.0	0.0	0.0 d
5.7893	67.46667	110.66667	22.50000	0.0	0.0	0.0	0.0 d
7.7190	65.88889	109.55556	22.50000	0.0	0.0	0.0	0.0 d
9.6488	64.31111	108.44444	22.50000	0.0	0.0	0.0	0.0 d
11.579	62.73333	107.33333	22.50000	0.0	0.0	0.0	0.0 d
13.508	61.15556	106.22222	22.50000	0.0	0.0	0.0	0.0 d
15.438	59.57778	105.11111	22.50000	0.0	0.0	0.0	0.0 d
17.368	58.00000	104.00000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 2-4-3 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	58.00000	104.00000	22.50000	0.0	0.0	0.0	0.0 d
1.9511	56.88333	105.60000	22.50000	0.0	0.0	0.0	0.0 d
3.9023	55.76667	107.20000	22.50000	0.0	0.0	0.0	0.0 d
5.8534	54.65000	108.80000	22.50000	0.0	0.0	0.0	0.0 d
7.8046	53.53333	110.40000	22.50000	0.0	0.0	0.0	0.0 d
9.7557	52.41667	112.00000	22.50000	0.0	0.0	0.0	0.0 d
11.707	51.30000	113.60000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 2-4-4 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	51.30000	113.60000	22.50000	0.0	0.0	0.0	0.0 d
1.9210	52.93333	114.61111	22.50000	0.0	0.0	0.0	0.0 d
3.8419	54.56667	115.62222	22.50000	0.0	0.0	0.0	0.0 d
5.7629	56.20000	116.63333	22.50000	0.0	0.0	0.0	0.0 d
7.6839	57.83333	117.64444	22.50000	0.0	0.0	0.0	0.0 d
9.6048	59.46667	118.65556	22.50000	0.0	0.0	0.0	0.0 d
11.526	61.10000	119.66667	22.50000	0.0	0.0	0.0	0.0 d
13.447	62.73333	120.67778	22.50000	0.0	0.0	0.0	0.0 d
15.368	64.36667	121.68889	22.50000	0.0	0.0	0.0	0.0 d
17.289	66.00000	122.70000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 56-3-1 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	87.60000	133.80000	22.50000	0.52970	0.25504	0.58769	0.015948 d
2.0093	89.43333	134.62222	22.50000	0.53322	0.25674	0.59159	0.016054 d
4.0185	91.26667	135.44444	22.50000	0.44472	0.21412	0.49340	0.013389 d
6.0278	93.10000	136.26667	22.50000	0.28014	0.13488	0.31081	0.0084343 d
8.0371	94.93333	137.08889	22.50000	0.067979	0.032730	0.075420	0.0020467 d
10.046	96.76667	137.91111	22.50000	0.0	0.0	0.0	0.0 d
12.056	98.60000	138.73333	22.50000	0.0	0.0	0.0	0.0 d
14.065	100.43333	139.55556	22.50000	0.0	0.0	0.0	0.0 d
16.074	102.26667	140.37778	22.50000	0.0	0.0	0.0	0.0 d
18.083	104.10000	141.20000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 56-3-2 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	104.10000	141.20000	22.50000	0.0	0.0	0.0	0.0 d
1.8683	103.32500	142.90000	22.50000	0.0	0.0	0.0	0.0 d
3.7366	102.55000	144.60000	22.50000	0.0	0.0	0.0	0.0 d
5.6050	101.77500	146.30000	22.50000	0.0	0.0	0.0	0.0 d
7.4733	101.00000	148.00000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 56-3-3 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	101.00000	148.00000	22.50000	0.0	0.0	0.0	0.0 d
1.9405	99.22222	147.22222	22.50000	0.0	0.0	0.0	0.0 d
3.8809	97.44444	146.44444	22.50000	0.0	0.0	0.0	0.0 d
5.8214	95.66667	145.66667	22.50000	0.0	0.0	0.0	0.0 d
7.7619	93.88889	144.88889	22.50000	0.0	0.0	0.0	0.0 d
9.7024	92.11111	144.11111	22.50000	0.0	0.0	0.0	0.0 d
11.643	90.33333	143.33333	22.50000	0.0	0.0	0.0	0.0 d
13.583	88.55556	142.55556	22.50000	0.0	0.0	0.0	0.0 d
15.524	86.77778	141.77778	22.50000	0.0	0.0	0.0	0.0 d
17.464	85.00000	141.00000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Specific Building Damage Results - Vertical Displacements

Structure: 48-1 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements z
	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	70.00000	143.00000	22.50000	-0.20134 d
1.9521	70.81250	141.22500	22.50000	-0.22016 d
3.9042	71.62500	139.45000	22.50000	-0.24030 d
5.8564	72.43750	137.67500	22.50000	-0.26154 d
7.8085	73.25000	135.90000	22.50000	-0.28345 d
9.7606	74.06250	134.12500	22.50000	-0.30534 d
11.713	74.87500	132.35000	22.50000	-0.32611 d
13.665	75.68750	130.57500	22.50000	-0.34419 d
15.617	76.50000	128.80000	22.50000	-0.35745 d

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]

d - Displacements include imported displacements.

Structure: 48-2 | Sub-structure: 0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]

Vertical Offset 1

0.0	76.50000	128.80000	22.50000	-0.35745 d
2.0290	78.35000	129.63333	22.50000	-0.38653 d
4.0581	80.20000	130.46667	22.50000	-0.41684 d
6.0871	82.05000	131.30000	22.50000	-0.45118 d
8.1161	83.90000	132.13333	22.50000	-0.47926 d
10.145	85.75000	132.96667	22.50000	-0.52884 d
12.174	87.60000	133.80000	22.50000	-0.59098 d

d - Displacements include imported displacements.

Structure: 48-3 | Sub-structure: 0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]

Vertical Offset 1

0.0	87.60000	133.80000	22.50000	-0.59098 d
1.9080	86.90000	135.57500	22.50000	-0.57250 d
3.8161	86.20000	137.35000	22.50000	-0.54090 d
5.7241	85.50000	139.12500	22.50000	-0.49739 d
7.6322	84.80000	140.90000	22.50000	-0.45110 d
9.5402	84.10000	142.67500	22.50000	-0.40696 d
11.448	83.40000	144.45000	22.50000	-0.36596 d
13.356	82.70000	146.22500	22.50000	-0.32852 d
15.264	82.00000	148.00000	22.50000	-0.29473 d

d - Displacements include imported displacements.

Structure: 48-4 | Sub-structure: 0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]

Vertical Offset 1

0.0	82.00000	148.00000	22.50000	-0.29473 d
1.8571	80.28571	147.28571	22.50000	-0.28155 d
3.7143	78.57143	146.57143	22.50000	-0.26797 d
5.5714	76.85714	145.85714	22.50000	-0.25424 d
7.4286	75.14286	145.14286	22.50000	-0.24057 d
9.2857	73.42857	144.42857	22.50000	-0.22712 d
11.143	71.71429	143.71429	22.50000	-0.21401 d
13.000	70.00000	143.00000	22.50000	-0.20134 d

d - Displacements include imported displacements.

Structure: 2-4-1 | Sub-structure: 0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]

Vertical Offset 1

0.0	66.00000	122.70000	22.50000	-0.21894 d
2.1366	67.24000	120.96000	22.50000	-0.22385 d
4.2733	68.48000	119.22000	22.50000	-0.21849 d
6.4099	69.72000	117.48000	22.50000	-0.19402 d
8.5465	70.96000	115.74000	22.50000	-0.13394 d
10.683	72.20000	114.00000	22.50000	-0.0047338 d

d - Displacements include imported displacements.

Structure: 2-4-2 | Sub-structure: 0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]

Vertical Offset 1

0.0	72.20000	114.00000	22.50000	-0.0047338 d
1.9298	70.62222	112.88889	22.50000	-0.10860 d
3.8595	69.04444	111.77778	22.50000	-0.16026 d
5.7893	67.46667	110.66667	22.50000	-0.18203 d
7.7190	65.88889	109.55556	22.50000	-0.18704 d
9.6488	64.31111	108.44444	22.50000	-0.18289 d
11.579	62.73333	107.33333	22.50000	-0.17397 d
13.508	61.15556	106.22222	22.50000	-0.16281 d
15.438	59.57778	105.11111	22.50000	-0.15087 d
17.368	58.00000	104.00000	22.50000	-0.13898 d

d - Displacements include imported displacements.

Structure: 2-4-3 | Sub-structure: 0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]

Vertical Offset 1

0.0	58.00000	104.00000	22.50000	-0.13898 d
1.9511	56.88333	105.60000	22.50000	-0.13483 d
3.9023	55.76667	107.20000	22.50000	-0.13035 d
5.8534	54.65000	108.80000	22.50000	-0.12561 d
7.8046	53.53333	110.40000	22.50000	-0.12066 d
9.7557	52.41667	112.00000	22.50000	-0.11556 d
11.707	51.30000	113.60000	22.50000	-0.11037 d

d - Displacements include imported displacements.

Structure: 2-4-4 | Sub-structure: 0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]

Vertical Offset 1

0.0	51.30000	113.60000	22.50000	-0.11037 d
1.9210	52.93333	114.61111	22.50000	-0.11972 d
3.8419	54.56667	115.62222	22.50000	-0.12977 d
5.7629	56.20000	116.63333	22.50000	-0.14052 d
7.6839	57.83333	117.64444	22.50000	-0.15192 d
9.6048	59.46667	118.65556	22.50000	-0.16393 d
11.526	61.10000	119.66667	22.50000	-0.17653 d
13.447	62.73333	120.67778	22.50000	-0.18977 d
15.368	64.36667	121.68889	22.50000	-0.20381 d
17.289	66.00000	122.70000	22.50000	-0.21894 d

d - Displacements include imported displacements.

Structure: 56-3-1 | Sub-structure: 0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]

Vertical Offset 1

0.0	87.60000	133.80000	22.50000	-0.59098 d
2.0093	89.43333	134.62222	22.50000	-0.65687 d

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]	
4.0185	91.26667	135.44444	22.50000	-0.72259 d
6.0278	93.10000	136.26667	22.50000	-0.78579 d
8.0371	94.93333	137.08889	22.50000	-0.84376 d
10.046	96.76667	137.91111	22.50000	-0.87741 d
12.056	98.60000	138.73333	22.50000	-0.89085 d
14.065	100.43333	139.55556	22.50000	-0.89167 d
16.074	102.26667	140.37778	22.50000	-0.88384 d
18.083	104.10000	141.20000	22.50000	-0.86685 d

d - Displacements include imported displacements.

Structure: 56-3-2 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]	
Vertical Offset 1				
0.0	104.10000	141.20000	22.50000	-0.86685 d
1.8683	103.32500	142.90000	22.50000	-0.78718 d
3.7366	102.55000	144.60000	22.50000	-0.70644 d
5.6050	101.77500	146.30000	22.50000	-0.62951 d
7.4733	101.00000	148.00000	22.50000	-0.55864 d

d - Displacements include imported displacements.

Structure: 56-3-3 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]	
Vertical Offset 1				
0.0	101.00000	148.00000	22.50000	-0.55864 d
1.9405	99.22222	147.22222	22.50000	-0.56745 d
3.8809	97.44444	146.44444	22.50000	-0.57090 d
5.8214	95.66667	145.66667	22.50000	-0.56869 d
7.7619	93.88889	144.88889	22.50000	-0.56080 d
9.7024	92.11111	144.11111	22.50000	-0.54747 d
11.643	90.33333	143.33333	22.50000	-0.52924 d
13.583	88.55556	142.55556	22.50000	-0.50690 d
15.524	86.77778	141.77778	22.50000	-0.48146 d
17.464	85.00000	141.00000	22.50000	-0.45405 d

d - Displacements include imported displacements.

Specific Building Damage Results - All Segments

Structure: 48-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	7.4717	Sagging	26.328E-6	0.0	26.500E-6	0.0	11.226E-6	2.7449E+6	0 (Negligible)
	2	7.4717	8.1443	Hogging	72.744E-6	0.0	69.773E-6	0.0	11.226E-6	710900.	0 (Negligible)

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

Structure: 48-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	12.173	Sagging	278.20E-6	0.0048275	0.0052050	-127.38E-6	30.627E-6	279600.	0 (Negligible)

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

Structure: 48-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	7.1861	Hogging	256.07E-6	-597.37E-6	196.80E-6	11.574E-6	-24.262E-6	271620.	0 (Negligible)
	2	7.1861	8.0773	Sagging	95.676E-6	0.0	101.89E-6	0.0	-24.262E-6	994040.	0 (Negligible)

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

Structure: 48-4 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	5.1467	Hogging	5.7830E-6	0.0	5.6863E-6	0.0	-7.3932E-6	7.4208E+6	0 (Negligible)
	2	5.1467	7.8523	Sagging	9.2509E-6	0.0	9.6202E-6	0.0	-7.3932E-6	7.5738E+6	0 (Negligible)

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

Structure: 2-4-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	8.5465	Hogging	491.20E-6	0.0	469.24E-6	0.0	-60.472E-6	75132.	0 (Negligible)

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

Structure: 2-4-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	1.9298	14.253	Hogging	443.61E-6	0.0	430.33E-6	0.0	53.823E-6	79872.	0 (Negligible)
	2	16.183	1.1841	None	0.0	0.0	0.0	0.0	-6.1609E-6	14.700E+6	0 (Negligible)

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

Structure: 2-4-3 | Sub-structure: 0

Vertical Offset	Segment	Start	Length	Curvature	Deflection	Average	Max	Max Gradient	Max Gradient	Min	Damage

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	11.706	Hogging	7.9492E-6	0.0	7.3314E-6	0.0	-2.6596E-6	11.523E+6	0 (Negligible)

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

Structure: 2-4-4 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	17.288	Sagging	39.094E-6	0.0	58.901E-6	0.0	7.8793E-6	3.1272E+6	0 (Negligible)

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

Structure: 56-3-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	0.70327	Sagging	0.0	194.47E-6	194.44E-6	-1.9447E-6	32.793E-6	9.8951E+6	0 (Negligible)
	2	0.70327	17.379	Hogging	732.89E-6	-0.0033894	768.58E-6	117.17E-6	32.793E-6	208900.	0 (Negligible)

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

Structure: 56-3-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	1.7524	None	0.0	0.0	0.0	0.0	-42.643E-6	1.5252E+6	0 (Negligible)
	2	1.7524	5.7199	Sagging	93.761E-6	0.0	86.510E-6	0.0	-43.215E-6	527270.	0 (Negligible)

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

Structure: 56-3-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	17.463	Hogging	278.52E-6	0.0	312.96E-6	0.0	-14.126E-6	670640.	0 (Negligible)

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

Specific Building Damage Results - Critical Values for All Segments within Each Sub-Structure

Structure: 48-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	72.744E-6	0.0	11.226E-6	0.35744	69.773E-6	0.0	11.226E-6	710900.	2.7449E+6	0 (Negligible)

Structure: 48-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	278.20E-6	0.0048275	30.627E-6	0.59095	0.0052050	-127.38E-6	30.627E-6	-	279600.	0 (Negligible)

Structure: 48-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	256.07E-6	-597.37E-6	-24.262E-6	0.59098	196.80E-6	11.574E-6	-24.262E-6	271620.	994040.	0 (Negligible)

Structure: 48-4 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	9.2509E-6	0.0	-7.3932E-6	0.29473	9.6202E-6	0.0	-7.3932E-6	7.4208E+6	7.5738E+6	0 (Negligible)

Structure: 2-4-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	491.20E-6	0.0	-60.472E-6	0.22379	469.24E-6	0.0	-60.472E-6	75132.	-	0 (Negligible)

Structure: 2-4-2 | Sub-structure: 0

Vertical Offset from Line for Vertical	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category

Movement Calculations							Curve				
[m]	[%]	[%]		[mm]	[%]				[m]	[m]	
0.0	443.61E-6	0.0	53.823E-6	0.18696	430.33E-6		0.0	53.823E-6	79872.	- 0	(Negligible)

Structure: 2-4-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	7.9492E-6	0.0	-2.6596E-6	0.13898	7.3314E-6	0.0	-2.6596E-6	11.523E+6	- 0	(Negligible)

Structure: 2-4-4 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	39.094E-6	0.0	7.8793E-6	0.21893	58.901E-6	0.0	7.8793E-6	- 3.1272E+6	0	(Negligible)

Structure: 56-3-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	732.89E-6	-0.0033894	32.793E-6	0.89166	768.58E-6	117.17E-6	32.793E-6	208900.	9.8951E+6	0 (Negligible)

Structure: 56-3-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	93.761E-6	0.0	-43.215E-6	0.86685	86.510E-6	0.0	-43.215E-6	-	527270.	0 (Negligible)

Structure: 56-3-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	278.52E-6	0.0	-14.126E-6	0.57090	312.96E-6	0.0	-14.126E-6	670640.	- 0	(Negligible)

Specific Building Damage Results - Critical Segments within Each Structure

Structure Name	Parameter	Critical Sub-Structure	Critical Segment	Start	End	Curvature	Max Slope	Max Settlement	Max Tensile Strain	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
				[m]	[m]			[mm]	[%]	[m]	[m]	
48-1	Max Slope	0	1	0.0	7.4717	Sagging	**11.226E-6**	0.27967	26.500E-6	-	2.7449E+6	0 (Negligible)
	Max Settlement	0	2	7.4717	15.616	Hogging	11.226E-6	**0.35744**	69.773E-6	710900.	-	0 (Negligible)
	Max Tensile Strain	0	2	7.4717	15.616	Hogging	11.226E-6	0.35744	**69.773E-6**	710900.	-	0 (Negligible)
	Min Radius of Curvature (Hogging)	0	2	7.4717	15.616	Hogging	11.226E-6	0.35744	69.773E-6	**710900.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	0	1	0.0	7.4717	Sagging	11.226E-6	0.27967	26.500E-6	-	**2.7449E+6**	0 (Negligible)
48-2	Max Slope	0	1	0.0	12.173	Sagging	**30.627E-6**	0.59095	0.0052050	-	279600.	0 (Negligible)
	Max Settlement	0	1	0.0	12.173	Sagging	30.627E-6	**0.59095**	0.0052050	-	279600.	0 (Negligible)
	Max Tensile Strain	0	1	0.0	12.173	Sagging	30.627E-6	0.59095	**0.0052050**	-	279600.	0 (Negligible)
	Min Radius of Curvature (Hogging)	-	-	-	-	-	-	-	-	-	-	-
	Min Radius of Curvature (Sagging)	0	1	0.0	12.173	Sagging	30.627E-6	0.59095	0.0052050	-	**279600.**	0 (Negligible)
48-3	Max Slope	0	1	0.0	7.1861	Hogging	**24.262E-6**	0.59098	196.80E-6	271620.	-	0 (Negligible)
	Max Settlement	0	1	0.0	7.1861	Hogging	24.262E-6	**0.59098**	196.80E-6	271620.	-	0 (Negligible)
	Max Tensile Strain	0	1	0.0	7.1861	Hogging	24.262E-6	0.59098	**196.80E-6**	271620.	-	0 (Negligible)
	Min Radius of Curvature (Hogging)	0	1	0.0	7.1861	Hogging	24.262E-6	0.59098	196.80E-6	**271620.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	0	2	7.1861	15.263	Sagging	24.262E-6	0.46192	101.89E-6	-	**994040.**	0 (Negligible)
48-4	Max Slope	0	1	0.0	5.1467	Hogging	**7.3932E-6**	0.29473	5.6863E-6	7.4208E+6	-	0 (Negligible)
	Max Settlement	0	1	0.0	5.1467	Hogging	7.3932E-6	**0.29473**	5.6863E-6	7.4208E+6	-	0 (Negligible)
	Max Tensile Strain	0	2	5.1467	12.999	Sagging	7.3932E-6	0.25738	**9.6202E-6**	-	7.5738E+6	0 (Negligible)
	Min Radius of Curvature (Hogging)	0	1	0.0	5.1467	Hogging	7.3932E-6	0.29473	5.6863E-6	**7.4208E+6**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	0	2	5.1467	12.999	Sagging	7.3932E-6	0.25738	9.6202E-6	-	**7.5738E+6**	0 (Negligible)
2-4-1	Max Slope	0	1	0.0	8.5465	Hogging	**60.472E-6**	0.22379	469.24E-6	75132.	-	0 (Negligible)
	Max Settlement	0	1	0.0	8.5465	Hogging	60.472E-6	**0.22379**	469.24E-6	75132.	-	0 (Negligible)
	Max Tensile Strain	0	1	0.0	8.5465	Hogging	60.472E-6	0.22379	**469.24E-6**	75132.	-	0 (Negligible)
	Min Radius of Curvature (Hogging)	0	1	0.0	8.5465	Hogging	60.472E-6	0.22379	469.24E-6	**75132.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	-	-	-	-	-	-	-	-	-	-	-
2-4-2	Max Slope	0	1	1.9298	16.183	Hogging	**53.823E-6**	0.18696	430.33E-6	79872.	-	0 (Negligible)
	Max Settlement	0	1	1.9298	16.183	Hogging	53.823E-6	**0.18696**	430.33E-6	79872.	-	0 (Negligible)
	Max Tensile Strain	0	1	1.9298	16.183	Hogging	53.823E-6	0.18696	**430.33E-6**	79872.	-	0 (Negligible)
	Min Radius of Curvature (Hogging)	0	1	1.9298	16.183	Hogging	53.823E-6	0.18696	430.33E-6	**79872.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	-	-	-	-	-	-	-	-	-	-	-
2-4-3	Max Slope	0	1	0.0	11.706	Hogging	**2.6596E-6**	0.13898	7.3314E-6	11.523E+6	-	0 (Negligible)
	Max Settlement	0	1	0.0	11.706	Hogging	2.6596E-6	**0.13898**	7.3314E-6	11.523E+6	-	0 (Negligible)
	Max Tensile	0	1	0.0	11.706	Hogging	2.6596E-6	0.13898	**7.3314E-6**	11.523E+6	-	0 (Negligible)

Structure Name	Parameter	Critical Sub-Structure	Critical Segment	Start	End	Curvature	Max Slope	Max Settlement	Max Tensile Strain	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
	Strain											
	Min Radius of Curvature (Hogging)	0	1	0.0	11.706	Hogging	2.6596E-6	0.13898	7.3314E-6	**11.523E+6**	- 0	(Negligible)
	Min Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
2-4-4	Max Slope	0	1	0.0	17.288	Sagging	**7.8793E-6**	0.21893	58.901E-6	-	3.1272E+6	0 (Negligible)
	Max Settlement	0	1	0.0	17.288	Sagging	7.8793E-6	**0.21893**	58.901E-6	-	3.1272E+6	0 (Negligible)
	Max Tensile Strain	0	1	0.0	17.288	Sagging	7.8793E-6	0.21893	**58.901E-6**	-	3.1272E+6	0 (Negligible)
	Min Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-
	Min Radius of Curvature (Sagging)	0	1	0.0	17.288	Sagging	7.8793E-6	0.21893	58.901E-6	-	**3.1272E+6**	0 (Negligible)
56-3-1	Max Slope	0	1	0.0	0.70327	Sagging	**32.793E-6**	0.61405	194.44E-6	-	9.8951E+6	0 (Negligible)
	Max Settlement	0	2	0.70327	18.082	Hogging	32.793E-6	**0.89166**	768.58E-6	208900.	-	0 (Negligible)
	Max Tensile Strain	0	2	0.70327	18.082	Hogging	32.793E-6	0.89166	**768.58E-6**	208900.	-	0 (Negligible)
	Min Radius of Curvature (Hogging)	0	2	0.70327	18.082	Hogging	32.793E-6	0.89166	768.58E-6	**208900.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	0	1	0.0	0.70327	Sagging	32.793E-6	0.61405	194.44E-6	-	**9.8951E+6**	0 (Negligible)
56-3-2	Max Slope	0	2	1.7524	7.4723	Sagging	**43.215E-6**	0.79212	86.510E-6	-	527270.	0 (Negligible)
	Max Settlement	0	1	0.0	1.7524	Sagging	42.643E-6	**0.86685**	0.0	-	1.5252E+6	0 (Negligible)
	Max Tensile Strain	0	2	1.7524	7.4723	Sagging	43.215E-6	0.79212	**86.510E-6**	-	527270.	0 (Negligible)
	Min Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-
	Min Radius of Curvature (Sagging)	0	2	1.7524	7.4723	Sagging	43.215E-6	0.79212	86.510E-6	-	**527270.**	0 (Negligible)
56-3-3	Max Slope	0	1	0.0	17.463	Hogging	**14.126E-6**	0.57090	312.96E-6	670640.	-	0 (Negligible)
	Max Settlement	0	1	0.0	17.463	Hogging	14.126E-6	**0.57090**	312.96E-6	670640.	-	0 (Negligible)
	Max Tensile Strain	0	1	0.0	17.463	Hogging	14.126E-6	0.57090	**312.96E-6**	670640.	-	0 (Negligible)
	Min Radius of Curvature (Hogging)	0	1	0.0	17.463	Hogging	14.126E-6	0.57090	312.96E-6	**670640.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-

Hope Project
Proposed Loading - Old - Option B
Drained

Problem Type

Problem Type : Tunnelling and Embedded Wall Excavations

Displacement Data

Type	Name	Direction of extrusion	Point/Line/Line for extrusion						No. of intervals across extrusion/line	Extrusion depth	No. of intervals along extrusion	Calculate	Surface type for tunnels
			First point			Second point							
			X [m]	Y [m]	Z(level) [m]	X [m]	Y [m]	Z(level) [m]		[m]			
Line	48-1	-	70.00000	143.00000	22.50000	76.50000	128.80000	22.50000	8	-	-	Yes	Surface
Line	48-2	-	76.50000	128.80000	22.50000	87.60000	133.80000	22.50000	6	-	-	Yes	Surface
Line	48-3	-	87.60000	133.80000	22.50000	82.00000	148.00000	22.50000	8	-	-	Yes	Surface
Line	48-4	-	82.00000	148.00000	22.50000	70.00000	143.00000	22.50000	7	-	-	Yes	Surface
Line	2-4-1	-	66.00000	122.70000	22.50000	72.20000	114.00000	22.50000	5	-	-	Yes	Surface
Line	2-4-2	-	72.20000	114.00000	22.50000	58.00000	104.00000	22.50000	9	-	-	Yes	Surface
Line	2-4-3	-	58.00000	104.00000	22.50000	51.30000	113.60000	22.50000	6	-	-	Yes	Surface
Line	2-4-4	-	51.30000	113.60000	22.50000	66.00000	122.70000	22.50000	9	-	-	Yes	Surface
Line	56-3-1	-	87.60000	133.80000	22.50000	104.10000	141.20000	22.50000	9	-	-	Yes	Surface
Line	56-3-2	-	104.10000	141.20000	22.50000	101.00000	148.00000	22.50000	4	-	-	Yes	Surface
Line	56-3-3	-	101.00000	148.00000	22.50000	85.00000	141.00000	22.50000	9	-	-	Yes	Surface
Line	Line 12	-	98.00000	131.00000	22.50000	110.00000	136.00000	22.50000	10	-	-	Yes	Surface

Imported Displacements

The following data points and displacements were found in the import file Final OLD XDISP.csv.

Ref.	Coordinates			Displacements			
	x [m]	y [m]	z [m]	x [mm]	y [mm]	z [mm]	
1	70.00000	143.00000	22.50000	0.00000	0.00000	-0.06640	1,2,6
2	70.81250	141.22500	22.50000	0.00000	0.00000	-0.06737	1,2,6
3	71.62500	139.45000	22.50000	0.00000	0.00000	-0.06667	1,2,6
4	72.43750	137.67500	22.50000	0.00000	0.00000	-0.06348	1,2,6
5	73.25000	135.90000	22.50000	0.00000	0.00000	-0.05660	1,2,6
6	74.06250	134.12500	22.50000	0.00000	0.00000	-0.04436	1,2,6
7	74.87500	132.35000	22.50000	0.00000	0.00000	-0.02444	1,2,6
8	75.68750	130.57500	22.50000	0.00000	0.00000	0.00626	1,2,6
9	76.50000	128.80000	22.50000	0.00000	0.00000	0.05173	1,2,6
10	78.35000	129.63333	22.50000	0.00000	0.00000	0.08373	1,2,6
11	80.20000	130.46667	22.50000	0.00000	0.00000	0.12561	1,2,6
12	82.05000	131.30000	22.50000	0.00000	0.00000	0.17348	1,2,6
13	83.90000	132.13333	22.50000	0.00000	0.00000	0.21865	1,2,6
14	85.75000	132.96667	22.50000	0.00000	0.00000	0.25477	1,2,6
15	87.60000	133.80000	22.50000	0.00000	0.00000	0.28886	1,2,6
16	86.90000	135.57500	22.50000	0.00000	0.00000	0.16066	1,2,6
17	86.20000	137.35000	22.50000	0.00000	0.00000	0.07439	1,2,6
18	85.50000	139.12500	22.50000	0.00000	0.00000	0.01663	1,2,6
19	84.80000	140.90000	22.50000	0.00000	0.00000	-0.02137	1,2,6
20	84.10000	142.67500	22.50000	0.00000	0.00000	-0.04559	1,2,6
21	83.40000	144.45000	22.50000	0.00000	0.00000	-0.06029	1,2,6
22	82.70000	146.22500	22.50000	0.00000	0.00000	-0.06843	1,2,6
23	82.00000	148.00000	22.50000	0.00000	0.00000	-0.07212	1,2,6
24	80.28571	147.28571	22.50000	0.00000	0.00000	-0.07239	1,2,6
25	78.57143	146.57143	22.50000	0.00000	0.00000	-0.07223	1,2,6
26	76.85714	145.85714	22.50000	0.00000	0.00000	-0.07167	1,2,6
27	75.14286	145.14286	22.50000	0.00000	0.00000	-0.07076	1,2,6
28	73.42857	144.42857	22.50000	0.00000	0.00000	-0.06955	1,2,6
29	71.71429	143.71429	22.50000	0.00000	0.00000	-0.06809	1,2,6
30	66.00000	122.70000	22.50000	0.00000	0.00000	-0.01543	1,2,6
31	67.24000	120.96000	22.50000	0.00000	0.00000	0.01947	1,2,6
32	68.48000	119.22000	22.50000	0.00000	0.00000	0.07896	1,2,6
33	69.72000	117.48000	22.50000	0.00000	0.00000	0.18058	1,2,6
34	70.96000	115.74000	22.50000	0.00000	0.00000	0.35644	1,2,6
35	72.20000	114.00000	22.50000	0.00000	0.00000	0.66260	1,2,6
36	70.62222	112.88889	22.50000	0.00000	0.00000	0.38781	1,2,6
37	69.04444	111.77778	22.50000	0.00000	0.00000	0.21613	1,2,6
38	67.46667	110.66667	22.50000	0.00000	0.00000	0.11145	1,2,6
39	65.88889	109.55556	22.50000	0.00000	0.00000	0.04764	1,2,6
40	64.31111	108.44444	22.50000	0.00000	0.00000	0.00873	1,2,6
41	62.73333	107.33333	22.50000	0.00000	0.00000	-0.01480	1,2,6
42	61.15556	106.22222	22.50000	0.00000	0.00000	-0.02871	1,2,6
43	59.57778	105.11111	22.50000	0.00000	0.00000	-0.03655	1,2,6
44	58.00000	104.00000	22.50000	0.00000	0.00000	-0.04052	1,2,6
45	56.88333	105.60000	22.50000	0.00000	0.00000	-0.04151	1,2,6
46	55.76667	107.20000	22.50000	0.00000	0.00000	-0.04231	1,2,6
47	54.65000	108.80000	22.50000	0.00000	0.00000	-0.04288	1,2,6
48	53.53333	110.40000	22.50000	0.00000	0.00000	-0.04316	1,2,6
49	52.41667	112.00000	22.50000	0.00000	0.00000	-0.04312	1,2,6
50	51.30000	113.60000	22.50000	0.00000	0.00000	-0.04277	1,2,6
51	52.93333	114.61111	22.50000	0.00000	0.00000	-0.04399	1,2,6
52	54.56667	115.62222	22.50000	0.00000	0.00000	-0.04464	1,2,6
53	56.20000	116.63333	22.50000	0.00000	0.00000	-0.04447	1,2,6
54	57.83333	117.64444	22.50000	0.00000	0.00000	-0.04321	1,2,6
55	59.46667	118.65556	22.50000	0.00000	0.00000	-0.04060	1,2,6
56	61.10000	119.66667	22.50000	0.00000	0.00000	-0.03643	1,2,6
57	62.73333	120.67778	22.50000	0.00000	0.00000	-0.03066	1,2,6
58	64.36667	121.68889	22.50000	0.00000	0.00000	-0.02348	1,2,6
59	89.43333	134.62222	22.50000	0.00000	0.00000	0.33958	1,2,6
60	91.26667	135.44444	22.50000	0.00000	0.00000	0.42362	1,2,6
61	93.10000	136.26667	22.50000	0.00000	0.00000	0.54305	1,2,6
62	94.93333	137.08889	22.50000	0.00000	0.00000	0.67867	1,2,6
63	96.76667	137.91111	22.50000	0.00000	0.00000	0.79705	1,2,6
64	98.60000	138.73333	22.50000	0.00000	0.00000	0.87381	1,2,6
65	100.43333	139.55556	22.50000	0.00000	0.00000	0.90094	1,2,6
66	102.26667	140.37778	22.50000	0.00000	0.00000	0.87864	1,2,6
67	104.10000	141.20000	22.50000	0.00000	0.00000	0.81688	1,2,6
68	103.32500	142.90000	22.50000	0.00000	0.00000	0.48698	1,2,6
69	102.55000	144.60000	22.50000	0.00000	0.00000	0.27824	1,2,6
70	101.77500	146.30000	22.50000	0.00000	0.00000	0.14473	1,2,6
71	101.00000	148.00000	22.50000	0.00000	0.00000	0.05926	1,2,6
72	99.22222	147.22222	22.50000	0.00000	0.00000	0.06363	1,2,6
73	97.44444	146.44444	22.50000	0.00000	0.00000	0.06282	1,2,6
74	95.66667	145.66667	22.50000	0.00000	0.00000	0.05690	1,2,6
75	93.88889	144.88889	22.50000	0.00000	0.00000	0.04660	1,2,6
76	92.11111	144.11111	22.50000	0.00000	0.00000	0.03320	1,2,6
77	90.33333	143.33333	22.50000	0.00000	0.00000	0.01836	1,2,6
78	88.55556	142.55556	22.50000	0.00000	0.00000	0.00374	1,2,6
79	86.77778	141.77778	22.50000	0.00000	0.00000	-0.00939	1,2,6
80	85.00000	141.00000	22.50000	0.00000	0.00000	-0.02042	1,2,6

1 - Data point coincident with displacement data. Its displacement has been added to those calculated by Xdisp.
2 - Data point coincident with horizontal movement calculation point for a specific building. Its displacement has been added before performing building damage calculations.
6 - Data point coincident with vertical movement calculation point for a specific building. Its displacement has been added before performing building damage calculations.

Vertical Ground Movement Curves (Excavations)

Curve Name: **No vertical ground movement**
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)(%)]
[0.000,0.000,0.000][1.000,0.000,0.000][0.000,1.000,0.000][1.000,1.000,0.000]
Curve Fitting Method: Polynomial
x Order: 1

Ref.	Coordinates x [m]	y [m]	z [m]	Displacements x [mm]	y [mm]	z [mm]

y Order: 0
Polynomial: z = 0.0x + 0.0
Coeff. of Determination: −2147483648.E+2147483647

Curve Name: **Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(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)(%)]
[0.000,0.000,0.050][2.000,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 1
y Order: 0
Polynomial: z = −2.5E-2x + 5.0E-2
Coeff. of Determination: 1.0

Curve Name: **Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(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]
[0.400,0.000,0.067][0.500,0.000,0.070][0.600,0.000,0.072][0.700,0.000,0.073]
[0.800,0.000,0.073][0.900,0.000,0.072][1.000,0.000,0.070][1.100,0.000,0.068]
[1.200,0.000,0.065][1.300,0.000,0.061][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]
[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]
[2.800,0.000,0.010][2.900,0.000,0.008][3.000,0.000,0.007][3.100,0.000,0.005]
[3.200,0.000,0.004][3.300,0.000,0.004][3.400,0.000,0.003][3.500,0.000,0.002]
[3.600,0.000,0.002][3.700,0.000,0.002][3.800,0.000,0.001][3.900,0.000,0.001]
[4.000,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 4
y Order: 0
Polynomial: z = $-2.6455E-3x^4 + 2.8495E-2x^3 - 1.0051E-1x^2 + 1.0569E-1x + 3.8990E-2$
Coeff. of Determination: 9.9991E-1

Curve Name: **Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(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)(%)]
[0.000,0.000,0.345][0.100,0.000,0.327][0.200,0.000,0.311][0.300,0.000,0.294]
[0.400,0.000,0.279][0.500,0.000,0.264][0.600,0.000,0.250][0.700,0.000,0.237]
[0.800,0.000,0.224][0.900,0.000,0.212][1.000,0.000,0.200][1.100,0.000,0.189]
[1.200,0.000,0.178][1.300,0.000,0.168][1.400,0.000,0.158][1.500,0.000,0.149]
[1.600,0.000,0.140][1.700,0.000,0.132][1.800,0.000,0.124][1.900,0.000,0.116]
[2.000,0.000,0.109][2.100,0.000,0.101][2.200,0.000,0.095][2.300,0.000,0.088]
[2.400,0.000,0.082][2.500,0.000,0.076][2.600,0.000,0.070][2.700,0.000,0.065]
[2.800,0.000,0.059][2.900,0.000,0.054][3.000,0.000,0.049][3.100,0.000,0.044]
[3.200,0.000,0.039][3.300,0.000,0.034][3.400,0.000,0.029][3.500,0.000,0.025]
[3.600,0.000,0.020][3.700,0.000,0.015][3.800,0.000,0.010][3.900,0.000,0.005]
[4.000,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 3
y Order: 0
Polynomial: z = $-3.5383E-3x^3 + 3.7194E-2x^2 - 1.7831E-1x + 3.4467E-1$
Coeff. of Determination: 9.9999E-1

Horizontal Ground Movement Curves (Excavations)

Curve Name: **No horizontal ground movement**
Coordinates: [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)(%)]
[0.000,0.000,0.000][1.000,0.000,0.000][0.000,1.000,0.000][1.000,1.000,0.000]
Curve Fitting Method: Polynomial
x Order: 0
y Order: 0
Polynomial: z = 0.0
Coeff. of Determination: −2147483648.E+2147483647

Curve Name: **Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(a))**
Coordinates: [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)(%)]
[0.000,0.000,0.081][0.050,0.000,0.076][0.100,0.000,0.072][0.150,0.000,0.067]
[0.200,0.000,0.063][0.250,0.000,0.059][0.300,0.000,0.056][0.350,0.000,0.052]
[0.400,0.000,0.049][0.450,0.000,0.045][0.500,0.000,0.043][0.550,0.000,0.040]
[0.600,0.000,0.037][0.650,0.000,0.034][0.700,0.000,0.032][0.750,0.000,0.029]
[0.800,0.000,0.027][0.850,0.000,0.024][0.900,0.000,0.022][0.950,0.000,0.020]
[1.000,0.000,0.018][1.050,0.000,0.016][1.100,0.000,0.014][1.150,0.000,0.012]
[1.200,0.000,0.011][1.250,0.000,0.009][1.300,0.000,0.007][1.350,0.000,0.005]
[1.400,0.000,0.004][1.450,0.000,0.002][1.500,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 3
y Order: 0
Polynomial: z = $-1.0610E-2x^3 + 4.4203E-2x^2 - 9.6358E-2x + 8.0901E-2$
Coeff. of Determination: 1.0000

Curve Name: **Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))**
Coordinates: [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)(%)]
[0.000,0.000,0.150][4.000,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 1
y Order: 0
Polynomial: z = −3.75E-2x + 1.50E-1
Coeff. of Determination: 1.00

Curve Name: **Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))**
Coordinates: [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)(%)]
[0.000,0.000,0.400][4.000,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 1
y Order: 0
Polynomial: z = −10.E-2x + 4.0E-1
Coeff. of Determination: 1.0

Polygonal Excavations

Excavation Name:	**Lift Pit**
Surface level [m]:	17.500
Contribution:	Positive
Enabled:	Yes
Surface movement curves which are selected are applied between surface and [m]:	16.100

Corner	x [m]	y [m]	Base Level [m]	Stiffened	Previous Side d [m]	Previous Side p1 [%]	Previous Side p2* [%]	Next Side d [m]	Next Side p1 [%]	Next Side p2* [%]
1	104.50	122.40	16.100	Yes	0.0	67.000	25.000	0.0	67.000	25.000
2	107.00	123.50	16.100	Yes	0.0	67.000	25.000	0.0	67.000	25.000
3	107.90	121.50	16.100	Yes	0.0	67.000	25.000	0.0	67.000	25.000
4	105.50	120.30	16.100	Yes	0.0	67.000	25.000	0.0	67.000	25.000

Side	Corner 1 x [m]	Corner 1 y [m]	Corner 2 x [m]	Corner 2 y [m]	Ground Movement Curve Vertical	Ground Movement Curve Horizontal
1	104.50	122.40	107.00	123.50	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b))	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))
2	107.00	123.50	107.90	121.50	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b))	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))
3	107.90	121.50	105.50	120.30	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b))	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))
4	105.50	120.30	104.50	122.40	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b))	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))

Excavation Name: New Basement 1
Surface level [m]: 22.550
Contribution: Positive
Enabled: Yes
Surface movement curves which are selected are applied between surface and [m]: 17.500

Corner	x [m]	y [m]	Base Level [m]	Stiffened	Previous Side d [m]	Previous Side p1 [%]	Previous Side p2* [%]	Next Side d [m]	Next Side p1 [%]	Next Side p2* [%]
1	109.50	117.50	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
2	105.80	126.20	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
3	108.30	127.30	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
4	112.00	118.60	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000

Side	Corner 1 x [m]	Corner 1 y [m]	Corner 2 x [m]	Corner 2 y [m]	Ground Movement Curve Vertical	Ground Movement Curve Horizontal
1	109.50	117.50	105.80	126.20	No vertical ground movement	No horizontal ground movement
2	105.80	126.20	108.30	127.30	Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(b))	Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(a))
3	108.30	127.30	112.00	118.60	Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(b))	Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(a))
4	112.00	118.60	109.50	117.50	No vertical ground movement	No horizontal ground movement

Excavation Name: New Basement 2
Surface level [m]: 22.550
Contribution: Positive
Enabled: Yes
Surface movement curves which are selected are applied between surface and [m]: 17.500

Corner	x [m]	y [m]	Base Level [m]	Stiffened	Previous Side d [m]	Previous Side p1 [%]	Previous Side p2* [%]	Next Side d [m]	Next Side p1 [%]	Next Side p2* [%]
1	105.80	126.20	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
2	101.20	124.20	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
3	102.50	121.50	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
4	107.00	123.50	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000

Side	Corner 1 x [m]	Corner 1 y [m]	Corner 2 x [m]	Corner 2 y [m]	Ground Movement Curve Vertical	Ground Movement Curve Horizontal
1	105.80	126.20	101.20	124.20	Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(b))	Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(a))
2	101.20	124.20	102.50	121.50	Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b)	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))
3	102.50	121.50	107.00	123.50	No vertical ground movement	No horizontal ground movement
4	107.00	123.50	105.80	126.20	No vertical ground movement	No horizontal ground movement

Excavation Name: New Basement 3
Surface level [m]: 20.350
Contribution: Positive
Enabled: Yes
Surface movement curves which are selected are applied between surface and [m]: 17.500

Corner	x [m]	y [m]	Base Level [m]	Stiffened	Previous Side d [m]	Previous Side p1 [%]	Previous Side p2* [%]	Next Side d [m]	Next Side p1 [%]	Next Side p2* [%]
1	102.50	121.50	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
2	104.00	118.20	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
3	108.40	120.00	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
4	107.00	123.50	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000

Side	Corner 1 x [m]	Corner 1 y [m]	Corner 2 x [m]	Corner 2 y [m]	Ground Movement Curve Vertical	Ground Movement Curve Horizontal
1	102.50	121.50	104.00	118.20	Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b)	Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))
2	104.00	118.20	108.40	120.00	Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b)	Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))
3	108.40	120.00	107.00	123.50	No vertical ground movement	No horizontal ground movement
4	107.00	123.50	102.50	121.50	No vertical ground movement	No horizontal ground movement

Damage Category Strains

Name	0 (Negligible) to 1 (Very Slight)	1 (Very Slight) to 2 (Slight)	2 (Slight) to 3 (Moderate)	3 (Moderate) to 4 (Severe)
Burland Strain Limits	0.0	500.00E-6	750.00E-6	0.0015000

Specific Structures - Geometry

Structure Name	Sub-Structure Name	Displacement Line	Start Distance Along Line [m]	End Distance Along Line [m]	Vertical Offsets from Line for Vertical Movement Calculations [m]	Vertical Displacement Limit Sensitivity [mm]	Damage Category Strains	Poisson's Ratio	E/G
48-1		0 48-1	0.00000	15.61598	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
48-2		0 48-2	0.00000	12.17315	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
48-3		0 48-3	0.00000	15.26334	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
48-4		0 48-4	0.00000	12.99900	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
2-4-1		0 2-4-1	0.00000	10.68216	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
2-4-2		0 2-4-2	0.00000	17.36679	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
2-4-3		0 2-4-3	0.00000	11.70584	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
2-4-4		0 2-4-4	0.00000	17.28772	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
56-3-1		0 56-3-1	0.00000	18.08242	0.0	0.10000	Burland Strain Limits	0.20000	2.6000

Structure Name	Sub-Structure Name	Displacement Line	Start Distance Along Line	End Distance Along Line	Vertical Offsets from Line for Vertical	Vertical Displacement Limit Sensitivity	Damage Category Strains	Poisson's Ratio	E/G
56-3-2		0 56-3-2	0.00000	7.47229	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
56-3-3		0 56-3-3	0.00000	17.46325	0.0	0.10000	Burland Strain Limits	0.20000	2.6000

Specific Structures - Bending Parameters

Structure Name	Sub-Structure Name	Height	Default Properties	Hogging			Sagging		
				2nd Moment of Area (per unit width)	Distance of Bending Strain from N.A.	Distance of N.A. from Edge of Beam in Tension	2nd Moment of Area (per unit width)	Distance of Bending Strain from N.A.	Distance of N.A. from Edge of Beam in Tension
		[m]		[m³]	[m]	[m]	[m³]	[m]	[m]
48-1		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
48-2		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
48-3		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
48-4		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
2-4-1		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
2-4-2		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
2-4-3		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
2-4-4		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
56-3-1		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
56-3-2		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
56-3-3		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000

Building Segment Combinations

Structure Name	Sub-Structure Name	Vertical Offset from Line for Vertical Movement Calculations	Segment Start	Length	Curvature	Combined Segment
		[m]	[m]	[m]		

No structures have segments combined.

Utility Strain Calculation Options

Neglect beneficial contribution of axial strains : No

Warnings

1 Multiple excavations have been specified. The displacements resulting from these excavations are calculated by summing the displacements resulting from each individual excavation. No account has been taken of the interactions between excavations (e.g. overlapping zones of influence or 'shielding' of one excavation by another).

2 Embedded Wall Excavation PE1 : Lift Pit intersects PE2 : New Basement 1, , PE3 : New Basement 2, and PE4 : New Basement 3.

3 Embedded Wall Excavation PE2 : New Basement 1 intersects PE1 : Lift Pit, , PE3 : New Basement 2, and PE4 : New Basement 3.

4 Embedded Wall Excavation PE3 : New Basement 2 intersects PE1 : Lift Pit, , PE2 : New Basement 1, and PE4 : New Basement 3.

5 Embedded Wall Excavation PE4 : New Basement 3 intersects PE1 : Lift Pit, , PE2 : New Basement 1, and PE3 : New Basement 2.

6 If an embedded wall excavation is assigned a 'surface' ground movement curve and if the 'allow movement calculation to level' option is checked for the excavation then displacements induced by it are calculated for points at the surface, and points below the surface to the level specified. Others are ignored. An example of such a combination, for which displacements will not be calculated is Excavation XP1/Side 1/Line 1/Vertical. This is an example only. There are 143 others.

7 If an embedded wall excavation is assigned a 'sub-surface' ground movement curve then displacements induced by it can only be calculated for those points that are level with or below the embedded wall excavation's 'surface level'. Others are ignored. An example of such a combination, for which displacements will not be calculated is Excavation XP4/Side 3/Line 1/Vertical. This is an example only. There are 47 others.

Errors

None

Displacement and Strain Results

Type/No. Name	Dist.	Coordinates x	y	z	Displacements x	y	z	Horizontal displacement along Line	Horizontal displacement perpendicular to Line	Angle of Line to x Axis	
	[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	[mm]	[°]	
48-1	Line 1	70.00000	143.00000	22.50000	0.0	0.0	-0.066401	0.0	0.0	294.60	*
	1.9521	70.81250	141.22500	22.50000	0.0	0.0	-0.067366	0.0	0.0	294.60	*
	3.9042	71.62500	139.45000	22.50000	0.0	0.0	-0.066674	0.0	0.0	294.60	*
	5.8564	72.43750	137.67500	22.50000	0.0	0.0	-0.063484	0.0	0.0	294.60	*
	7.8085	73.25000	135.90000	22.50000	0.0	0.0	-0.056602	0.0	0.0	294.60	*
	9.7606	74.06250	134.12500	22.50000	0.0	0.0	-0.044358	0.0	0.0	294.60	*
	11.713	74.87500	132.35000	22.50000	0.0	0.0	-0.024442	0.0	0.0	294.60	*
	13.665	75.68750	130.57500	22.50000	0.0	0.0	0.0062554	0.0	0.0	294.60	*
	15.617	76.50000	128.80000	22.50000	0.0	0.0	0.051727	0.0	0.0	294.60	*
48-2	Line 2	76.50000	128.80000	22.50000	0.0	0.0	0.051727	0.0	0.0	24.249	*
	2.0290	78.35000	129.63333	22.50000	0.0	0.0	0.083729	0.0	0.0	24.249	*
	4.0581	80.20000	130.46667	22.50000	0.0	0.0	0.12561	0.0	0.0	24.249	*
	6.0871	82.05000	131.30000	22.50000	0.0	0.0	0.17348	0.0	0.0	24.249	*
	8.1161	83.90000	132.13333	22.50000	0.23298	0.11217	0.23424	0.25849	0.0065916	24.249	*
	10.145	85.75000	132.96667	22.50000	0.42872	0.20642	0.27810	0.47567	0.012130	24.249	*
	12.174	87.60000	133.80000	22.50000	0.52970	0.25504	0.31871	0.58771	0.014987	24.249	*
48-3	Line 3	87.60000	133.80000	22.50000	0.52970	0.25504	0.31871	0.042928	-0.58633	111.52	*
	1.9080	86.90000	135.57500	22.50000	0.25721	0.12384	0.17539	0.020845	-0.28471	111.52	*
	3.8161	86.20000	137.35000	22.50000	0.030337	0.014607	0.077414	0.0024586	-0.033581	111.52	*
	5.7241	85.50000	139.12500	22.50000	0.0	0.0	0.016625	0.0	0.0	111.52	*
	7.6322	84.80000	140.90000	22.50000	0.0	0.0	-0.021367	0.0	0.0	111.52	*
	9.5402	84.10000	142.67500	22.50000	0.0	0.0	-0.045595	0.0	0.0	111.52	*
	11.448	83.40000	144.45000	22.50000	0.0	0.0	-0.060286	0.0	0.0	111.52	*
	13.356	82.70000	146.22500	22.50000	0.0	0.0	-0.068425	0.0	0.0	111.52	*
	15.264	82.00000	148.00000	22.50000	0.0	0.0	-0.072122	0.0	0.0	111.52	*
48-4	Line 4	82.00000	148.00000	22.50000	0.0	0.0	-0.072122	0.0	0.0	202.62	*
	1.8571	80.28571	147.28571	22.50000	0.0	0.0	-0.072389	0.0	0.0	202.62	*
	3.7143	78.57143	146.57143	22.50000	0.0	0.0	-0.072226	0.0	0.0	202.62	*
	5.5714	76.85714	145.85714	22.50000	0.0	0.0	-0.071668	0.0	0.0	202.62	*
	7.4286	75.14286	145.14286	22.50000	0.0	0.0	-0.070761	0.0	0.0	202.62	*
	9.2857	73.42857	144.42857	22.50000	0.0	0.0	-0.069553	0.0	0.0	202.62	*
	11.143	71.71429	143.71429	22.50000	0.0	0.0	-0.068087	0.0	0.0	202.62	*
	13.000	70.00000	143.00000	22.50000	0.0	0.0	-0.066401	0.0	0.0	202.62	*
2-4-1	Line 5	66.00000	122.70000	22.50000	0.0	0.0	-0.015434	0.0	0.0	305.48	*
	2.1366	67.24000	120.96000	22.50000	0.0	0.0	0.019471	0.0	0.0	305.48	*
	4.2733	68.48000	119.22000	22.50000	0.0	0.0	0.078956	0.0	0.0	305.48	*
	6.4099	69.72000	117.48000	22.50000	0.0	0.0	0.18058	0.0	0.0	305.48	*
	8.5465	70.96000	115.74000	22.50000	0.0	0.0	0.35644	0.0	0.0	305.48	*
	10.683	72.20000	114.00000	22.50000	0.0	0.0	0.66260	0.0	0.0	305.48	*
2-4-2	Line 6	72.20000	114.00000	22.50000	0.0	0.0	0.66260	0.0	0.0	215.15	*
	1.9298	70.62222	112.88889	22.50000	0.0	0.0	0.38781	0.0	0.0	215.15	*
	3.8595	69.04444	111.77778	22.50000	0.0	0.0	0.21613	0.0	0.0	215.15	*
	5.7893	67.46667	110.66667	22.50000	0.0	0.0	0.11145	0.0	0.0	215.15	*
	7.7190	65.88889	109.55556	22.50000	0.0	0.0	0.047638	0.0	0.0	215.15	*
	9.6488	64.31111	108.44444	22.50000	0.0	0.0	0.0087311	0.0	0.0	215.15	*
	11.579	62.73333	107.33333	22.50000	0.0	0.0	-0.014800	0.0	0.0	215.15	*
	13.508	61.15556	106.22222	22.50000	0.0	0.0	-0.028711	0.0	0.0	215.15	*
	15.438	59.57778	105.11111	22.50000	0.0	0.0	-0.036546	0.0	0.0	215.15	*
	17.368	58.00000	104.00000	22.50000	0.0	0.0	-0.040522	0.0	0.0	215.15	*
2-4-3	Line 7	58.00000	104.00000	22.50000	0.0	0.0	-0.040522	0.0	0.0	124.91	*

Type/No. Name	Dist.	Coordinates x	y	z	Displacements x	y	z	Horizontal displacement	Horizontal displacement	Angle of Line to x Axis
	1.9511	56.88333	105.60000	22.50000	0.0	0.0	-0.041507	0.0	0.0	124.91 *
	3.9023	55.76667	107.20000	22.50000	0.0	0.0	-0.042314	0.0	0.0	124.91 *
	5.8534	54.65000	108.80000	22.50000	0.0	0.0	-0.042882	0.0	0.0	124.91 *
	7.8046	53.53333	110.40000	22.50000	0.0	0.0	-0.043160	0.0	0.0	124.91 *
	9.7557	52.41667	112.00000	22.50000	0.0	0.0	-0.043122	0.0	0.0	124.91 *
	11.707	51.30000	113.60000	22.50000	0.0	0.0	-0.042768	0.0	0.0	124.91 *
2-4-4	Line 8	51.30000	113.60000	22.50000	0.0	0.0	-0.042768	0.0	0.0	31.759 *
	1.9210	52.93333	114.61111	22.50000	0.0	0.0	-0.043994	0.0	0.0	31.759 *
	3.8419	54.56667	115.62222	22.50000	0.0	0.0	-0.044641	0.0	0.0	31.759 *
	5.7629	56.20000	116.63333	22.50000	0.0	0.0	-0.044470	0.0	0.0	31.759 *
	7.6839	57.83333	117.64444	22.50000	0.0	0.0	-0.043213	0.0	0.0	31.759 *
	9.6048	59.46667	118.65556	22.50000	0.0	0.0	-0.040603	0.0	0.0	31.759 *
	11.526	61.10000	119.66667	22.50000	0.0	0.0	-0.036434	0.0	0.0	31.759 *
	13.447	62.73333	120.67778	22.50000	0.0	0.0	-0.030657	0.0	0.0	31.759 *
	15.368	64.36667	121.68889	22.50000	0.0	0.0	-0.023483	0.0	0.0	31.759 *
	17.289	66.00000	122.70000	22.50000	0.0	0.0	-0.015434	0.0	0.0	31.759 *
56-3-1	Line 9	87.60000	133.80000	22.50000	0.52970	0.25504	0.31871	0.58769	0.015948	24.156 *
	2.0093	89.43333	134.62222	22.50000	0.53322	0.25674	0.37430	0.59159	0.016054	24.156 *
	4.0185	91.26667	135.44444	22.50000	0.44472	0.21412	0.45718	0.49340	0.013389	24.156 *
	6.0278	93.10000	136.26667	22.50000	0.28014	0.13488	0.56650	0.31081	0.0084343	24.156 *
	8.0371	94.93333	137.08889	22.50000	0.067979	0.032730	0.68462	0.075420	0.0020467	24.156 *
	10.046	96.76667	137.91111	22.50000	0.0	0.0	0.79705	0.0	0.0	24.156 *
	12.056	98.60000	138.73333	22.50000	0.0	0.0	0.87381	0.0	0.0	24.156 *
	14.065	100.43333	139.55556	22.50000	0.0	0.0	0.90094	0.0	0.0	24.156 *
	16.074	102.26667	140.37778	22.50000	0.0	0.0	0.87864	0.0	0.0	24.156 *
	18.083	104.10000	141.20000	22.50000	0.0	0.0	0.81688	0.0	0.0	24.156 *
56-3-2	Line 10	104.10000	141.20000	22.50000	0.0	0.0	0.81688	0.0	0.0	114.51 *
	1.8683	103.32500	142.90000	22.50000	0.0	0.0	0.48698	0.0	0.0	114.51 *
	3.7366	102.55000	144.60000	22.50000	0.0	0.0	0.27824	0.0	0.0	114.51 *
	5.6050	101.77500	146.30000	22.50000	0.0	0.0	0.14473	0.0	0.0	114.51 *
	7.4733	101.00000	148.00000	22.50000	0.0	0.0	0.059257	0.0	0.0	114.51 *
56-3-3	Line 11	101.00000	148.00000	22.50000	0.0	0.0	0.059257	0.0	0.0	203.63 *
	1.9405	99.22222	147.22222	22.50000	0.0	0.0	0.063630	0.0	0.0	203.63 *
	3.8809	97.44444	146.44444	22.50000	0.0	0.0	0.062815	0.0	0.0	203.63 *
	5.8214	95.66667	145.66667	22.50000	0.0	0.0	0.056904	0.0	0.0	203.63 *
	7.7619	93.88889	144.88889	22.50000	0.0	0.0	0.046604	0.0	0.0	203.63 *
	9.7024	92.11111	144.11111	22.50000	0.0	0.0	0.033205	0.0	0.0	203.63 *
	11.643	90.33333	143.33333	22.50000	0.0	0.0	0.018364	0.0	0.0	203.63 *
	13.583	88.55556	142.55556	22.50000	0.0	0.0	0.0037443	0.0	0.0	203.63 *
	15.524	86.77778	141.77778	22.50000	0.0	0.0	-0.0093890	0.0	0.0	203.63 *
	17.464	85.00000	141.00000	22.50000	0.0	0.0	-0.020420	0.0	0.0	203.63 *
Line 12	Line 12	98.00000	131.00000	22.50000	0.11075	0.037883	0.51921	0.11680	-0.0076280	22.620
	1.3000	99.20000	131.50000	22.50000	0.011932	-0.027443	0.82110	458.91E-6	-0.029921	22.620
	2.6000	100.40000	132.00000	22.50000	0.014734	-0.033887	0.92435	566.67E-6	-0.036947	22.620
	3.9000	101.60000	132.50000	22.50000	0.017958	-0.041292	1.0279	695.15E-6	-0.045023	22.620
	5.2000	102.80000	133.00000	22.50000	0.034124	-0.078108	1.1151	0.0014571	-0.085224	22.620
	6.5000	104.00000	133.50000	22.50000	0.028914	-0.065843	1.0483	0.0013654	-0.071899	22.620
	7.8000	105.20000	134.00000	22.50000	0.027781	-0.063139	0.95998	0.0013599	-0.068967	22.620
	9.1000	106.40000	134.50000	22.50000	0.0087100	-0.025394	0.60210	-0.0017270	-0.026791	22.620
	10.400	107.60000	135.00000	22.50000	0.0	0.0	0.44840	0.0	0.0	22.620
	11.700	108.80000	135.50000	22.50000	0.0	0.0	0.28870	0.0	0.0	22.620
	13.000	110.00000	136.00000	22.50000	0.0	0.0	0.16533	0.0	0.0	22.620

* Result includes imported displacement(s).

Specific Building Damage Results - Horizontal Displacements

Structure: 48-1 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	70.00000	143.00000	22.50000	0.0	0.0	0.0	0.0	d
1.9521	70.81250	141.22500	22.50000	0.0	0.0	0.0	0.0	d
3.9042	71.62500	139.45000	22.50000	0.0	0.0	0.0	0.0	d
5.8564	72.43750	137.67500	22.50000	0.0	0.0	0.0	0.0	d
7.8085	73.25000	135.90000	22.50000	0.0	0.0	0.0	0.0	d
9.7606	74.06250	134.12500	22.50000	0.0	0.0	0.0	0.0	d
11.713	74.87500	132.35000	22.50000	0.0	0.0	0.0	0.0	d
13.665	75.68750	130.57500	22.50000	0.0	0.0	0.0	0.0	d
15.617	76.50000	128.80000	22.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Structure: 48-2 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	76.50000	128.80000	22.50000	0.0	0.0	0.0	0.0	d
2.0290	78.35000	129.63333	22.50000	0.0	0.0	0.0	0.0	d
4.0581	80.20000	130.46667	22.50000	0.0	0.0	0.0	0.0	d
6.0871	82.05000	131.30000	22.50000	0.0	0.0	0.0	0.0	d
8.1161	83.90000	132.13333	22.50000	0.23298	0.11217	0.25849	0.0065916	d
10.145	85.75000	132.96667	22.50000	0.42872	0.20642	0.47567	0.012130	d
12.174	87.60000	133.80000	22.50000	0.52970	0.25504	0.58771	0.014987	d

d - Displacements include imported displacements.

Structure: 48-3 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	87.60000	133.80000	22.50000	0.52970	0.25504	0.042928	-0.58633	d
1.9080	86.90000	135.57500	22.50000	0.25721	0.12384	0.020845	-0.28471	d
3.8161	86.20000	137.35000	22.50000	0.030337	0.014607	0.0024586	-0.033581	d
5.7241	85.50000	139.12500	22.50000	0.0	0.0	0.0	0.0	d
7.6322	84.80000	140.90000	22.50000	0.0	0.0	0.0	0.0	d
9.5402	84.10000	142.67500	22.50000	0.0	0.0	0.0	0.0	d
11.448	83.40000	144.45000	22.50000	0.0	0.0	0.0	0.0	d
13.356	82.70000	146.22500	22.50000	0.0	0.0	0.0	0.0	d
15.264	82.00000	148.00000	22.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Structure: 48-4 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	82.00000	148.00000	22.50000	0.0	0.0	0.0	0.0	d
1.8571	80.28571	147.28571	22.50000	0.0	0.0	0.0	0.0	d
3.7143	78.57143	146.57143	22.50000	0.0	0.0	0.0	0.0	d
5.5714	76.85714	145.85714	22.50000	0.0	0.0	0.0	0.0	d
7.4286	75.14286	145.14286	22.50000	0.0	0.0	0.0	0.0	d
9.2857	73.42857	144.42857	22.50000	0.0	0.0	0.0	0.0	d
11.143	71.71429	143.71429	22.50000	0.0	0.0	0.0	0.0	d
13.000	70.00000	143.00000	22.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Structure: 2-4-1 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal

						Displacements	
						Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	66.00000	122.70000	22.50000	0.0	0.0	0.0	0.0 d
2.1366	67.24000	120.96000	22.50000	0.0	0.0	0.0	0.0 d
4.2733	68.48000	119.22000	22.50000	0.0	0.0	0.0	0.0 d
6.4099	69.72000	117.48000	22.50000	0.0	0.0	0.0	0.0 d
8.5465	70.96000	115.74000	22.50000	0.0	0.0	0.0	0.0 d
10.683	72.20000	114.00000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 2-4-2 | Sub-structure: 0

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	72.20000	114.00000	22.50000	0.0	0.0	0.0	0.0 d
1.9298	70.62222	112.88889	22.50000	0.0	0.0	0.0	0.0 d
3.8595	69.04444	111.77778	22.50000	0.0	0.0	0.0	0.0 d
5.7893	67.46667	110.66667	22.50000	0.0	0.0	0.0	0.0 d
7.7190	65.88889	109.55556	22.50000	0.0	0.0	0.0	0.0 d
9.6488	64.31111	108.44444	22.50000	0.0	0.0	0.0	0.0 d
11.579	62.73333	107.33333	22.50000	0.0	0.0	0.0	0.0 d
13.508	61.15556	106.22222	22.50000	0.0	0.0	0.0	0.0 d
15.438	59.57778	105.11111	22.50000	0.0	0.0	0.0	0.0 d
17.368	58.00000	104.00000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 2-4-3 | Sub-structure: 0

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	58.00000	104.00000	22.50000	0.0	0.0	0.0	0.0 d
1.9511	56.88333	105.60000	22.50000	0.0	0.0	0.0	0.0 d
3.9023	55.76667	107.20000	22.50000	0.0	0.0	0.0	0.0 d
5.8534	54.65000	108.80000	22.50000	0.0	0.0	0.0	0.0 d
7.8046	53.53333	110.40000	22.50000	0.0	0.0	0.0	0.0 d
9.7557	52.41667	112.00000	22.50000	0.0	0.0	0.0	0.0 d
11.707	51.30000	113.60000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 2-4-4 | Sub-structure: 0

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	51.30000	113.60000	22.50000	0.0	0.0	0.0	0.0 d
1.9210	52.93333	114.61111	22.50000	0.0	0.0	0.0	0.0 d
3.8419	54.56667	115.62222	22.50000	0.0	0.0	0.0	0.0 d
5.7629	56.20000	116.63333	22.50000	0.0	0.0	0.0	0.0 d
7.6839	57.83333	117.64444	22.50000	0.0	0.0	0.0	0.0 d
9.6048	59.46667	118.65556	22.50000	0.0	0.0	0.0	0.0 d
11.526	61.10000	119.66667	22.50000	0.0	0.0	0.0	0.0 d
13.447	62.73333	120.67778	22.50000	0.0	0.0	0.0	0.0 d
15.368	64.36667	121.68889	22.50000	0.0	0.0	0.0	0.0 d
17.289	66.00000	122.70000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 56-3-1 | Sub-structure: 0

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	87.60000	133.80000	22.50000	0.52970	0.25504	0.58769	0.015948 d
2.0093	89.43333	134.62222	22.50000	0.53322	0.25674	0.59159	0.016054 d
4.0185	91.26667	135.44444	22.50000	0.44472	0.21412	0.49340	0.013389 d
6.0278	93.10000	136.26667	22.50000	0.28014	0.13488	0.31081	0.0084343 d
8.0371	94.93333	137.08889	22.50000	0.067979	0.032730	0.075420	0.0020467 d
10.046	96.76667	137.91111	22.50000	0.0	0.0	0.0	0.0 d
12.056	98.60000	138.73333	22.50000	0.0	0.0	0.0	0.0 d
14.065	100.43333	139.55556	22.50000	0.0	0.0	0.0	0.0 d
16.074	102.26667	140.37778	22.50000	0.0	0.0	0.0	0.0 d
18.083	104.10000	141.20000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 56-3-2 | Sub-structure: 0

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	104.10000	141.20000	22.50000	0.0	0.0	0.0	0.0 d
1.8683	103.32500	142.90000	22.50000	0.0	0.0	0.0	0.0 d
3.7366	102.55000	144.60000	22.50000	0.0	0.0	0.0	0.0 d
5.6050	101.77500	146.30000	22.50000	0.0	0.0	0.0	0.0 d
7.4733	101.00000	148.00000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 56-3-3 | Sub-structure: 0

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	101.00000	148.00000	22.50000	0.0	0.0	0.0	0.0 d
1.9405	99.22222	147.22222	22.50000	0.0	0.0	0.0	0.0 d
3.8809	97.44444	146.44444	22.50000	0.0	0.0	0.0	0.0 d
5.8214	95.66667	145.66667	22.50000	0.0	0.0	0.0	0.0 d
7.7619	93.88889	144.88889	22.50000	0.0	0.0	0.0	0.0 d
9.7024	92.11111	144.11111	22.50000	0.0	0.0	0.0	0.0 d
11.643	90.33333	143.33333	22.50000	0.0	0.0	0.0	0.0 d
13.583	88.55556	142.55556	22.50000	0.0	0.0	0.0	0.0 d
15.524	86.77778	141.77778	22.50000	0.0	0.0	0.0	0.0 d
17.464	85.00000	141.00000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Specific Building Damage Results - Vertical Displacements

Structure: 48-1 | Sub-structure: 0

Dist.	Coordinates			Displacements
	x	y	z	

[m]	[m]	[m]	[m]	[mm]	
Vertical Offset 1					
0.0	70.00000	143.00000	22.50000	-0.066401	d
1.9521	70.81250	141.22500	22.50000	-0.067366	d
3.9042	71.62500	139.45000	22.50000	-0.066674	d
5.8564	72.43750	137.67500	22.50000	-0.063484	d
7.8085	73.25000	135.90000	22.50000	-0.056602	d
9.7606	74.06250	134.12500	22.50000	-0.044358	d
11.713	74.87500	132.35000	22.50000	-0.024442	d
13.665	75.68750	130.57500	22.50000	0.0062554	d
15.617	76.50000	128.80000	22.50000	0.051727	d

d - Displacements include imported displacements.

Structure: 48-2 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements z	
[m]	[m]	[m]	[m]	[mm]	
Vertical Offset 1					
0.0	76.50000	128.80000	22.50000	0.051727	d
2.0290	78.35000	129.63333	22.50000	0.083729	d
4.0581	80.20000	130.46667	22.50000	0.12561	d
6.0871	82.05000	131.30000	22.50000	0.17348	d
8.1161	83.90000	132.13333	22.50000	0.23424	d
10.145	85.75000	132.96667	22.50000	0.27810	d
12.174	87.60000	133.80000	22.50000	0.31871	d

d - Displacements include imported displacements.

Structure: 48-3 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements z	
[m]	[m]	[m]	[m]	[mm]	
Vertical Offset 1					
0.0	87.60000	133.80000	22.50000	0.31871	d
1.9080	86.90000	135.57500	22.50000	0.17539	d
3.8161	86.20000	137.35000	22.50000	0.077414	d
5.7241	85.50000	139.12500	22.50000	0.016625	d
7.6322	84.80000	140.90000	22.50000	-0.021367	d
9.5402	84.10000	142.67500	22.50000	-0.045595	d
11.448	83.40000	144.45000	22.50000	-0.060286	d
13.356	82.70000	146.22500	22.50000	-0.068425	d
15.264	82.00000	148.00000	22.50000	-0.072122	d

d - Displacements include imported displacements.

Structure: 48-4 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements z	
[m]	[m]	[m]	[m]	[mm]	
Vertical Offset 1					
0.0	82.00000	148.00000	22.50000	-0.072122	d
1.8571	80.28571	147.28571	22.50000	-0.072389	d
3.7143	78.57143	146.57143	22.50000	-0.072226	d
5.5714	76.85714	145.85714	22.50000	-0.071668	d
7.4286	75.14286	145.14286	22.50000	-0.070761	d
9.2857	73.42857	144.42857	22.50000	-0.069553	d
11.143	71.71429	143.71429	22.50000	-0.068087	d
13.000	70.00000	143.00000	22.50000	-0.066401	d

d - Displacements include imported displacements.

Structure: 2-4-1 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements z	
[m]	[m]	[m]	[m]	[mm]	
Vertical Offset 1					
0.0	66.00000	122.70000	22.50000	-0.015434	d
2.1366	67.24000	120.96000	22.50000	0.019471	d
4.2733	68.48000	119.22000	22.50000	0.078956	d
6.4099	69.72000	117.48000	22.50000	0.18058	d
8.5465	70.96000	115.74000	22.50000	0.35644	d
10.683	72.20000	114.00000	22.50000	0.66260	d

d - Displacements include imported displacements.

Structure: 2-4-2 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements z	
[m]	[m]	[m]	[m]	[mm]	
Vertical Offset 1					
0.0	72.20000	114.00000	22.50000	0.66260	d
1.9298	70.62222	112.88889	22.50000	0.38781	d
3.8595	69.04444	111.77778	22.50000	0.21613	d
5.7893	67.46667	110.66667	22.50000	0.11145	d
7.7190	65.88889	109.55556	22.50000	0.047638	d
9.6488	64.31111	108.44444	22.50000	0.0087311	d
11.579	62.73333	107.33333	22.50000	-0.014800	d
13.508	61.15556	106.22222	22.50000	-0.028711	d
15.438	59.57778	105.11111	22.50000	-0.036546	d
17.368	58.00000	104.00000	22.50000	-0.040522	d

d - Displacements include imported displacements.

Structure: 2-4-3 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements z	
[m]	[m]	[m]	[m]	[mm]	
Vertical Offset 1					
0.0	58.00000	104.00000	22.50000	-0.040522	d
1.9511	56.88333	105.60000	22.50000	-0.041507	d
3.9023	55.76667	107.20000	22.50000	-0.042314	d
5.8534	54.65000	108.80000	22.50000	-0.042882	d
7.8046	53.53333	110.40000	22.50000	-0.043160	d
9.7557	52.41667	112.00000	22.50000	-0.043122	d
11.707	51.30000	113.60000	22.50000	-0.042768	d

d - Displacements include imported displacements.

Structure: 2-4-4 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements z	
[m]	[m]	[m]	[m]	[mm]	
Vertical Offset 1					
0.0	51.30000	113.60000	22.50000	-0.042768	d
1.9210	52.93333	114.61111	22.50000	-0.043994	d
3.8419	54.56667	115.62222	22.50000	-0.044641	d
5.7629	56.20000	116.63333	22.50000	-0.044470	d
7.6839	57.83333	117.64444	22.50000	-0.043213	d
9.6048	59.46667	118.65556	22.50000	-0.040603	d
11.526	61.10000	119.66667	22.50000	-0.036434	d
13.447	62.73333	120.67778	22.50000	-0.030657	d
15.368	64.36667	121.68889	22.50000	-0.023483	d
17.289	66.00000	122.70000	22.50000	-0.015434	d

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]

d - Displacements include imported displacements.

Structure: 56-3-1 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	87.60000	133.80000	22.50000	0.31871 d
2.0093	89.43333	134.62222	22.50000	0.37430 d
4.0185	91.26667	135.44444	22.50000	0.45718 d
6.0278	93.10000	136.26667	22.50000	0.56650 d
8.0371	94.93333	137.08889	22.50000	0.68462 d
10.046	96.76667	137.91111	22.50000	0.79705 d
12.056	98.60000	138.73333	22.50000	0.87381 d
14.065	100.43333	139.55556	22.50000	0.90094 d
16.074	102.26667	140.37778	22.50000	0.87864 d
18.083	104.10000	141.20000	22.50000	0.81688 d

d - Displacements include imported displacements.

Structure: 56-3-2 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	104.10000	141.20000	22.50000	0.81688 d
1.8683	103.32500	142.90000	22.50000	0.48698 d
3.7366	102.55000	144.60000	22.50000	0.27824 d
5.6050	101.77500	146.30000	22.50000	0.14473 d
7.4733	101.00000	148.00000	22.50000	0.059257 d

d - Displacements include imported displacements.

Structure: 56-3-3 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	101.00000	148.00000	22.50000	0.059257 d
1.9405	99.22222	147.22222	22.50000	0.063630 d
3.8809	97.44444	146.44444	22.50000	0.062815 d
5.8214	95.66667	145.66667	22.50000	0.056904 d
7.7619	93.88889	144.88889	22.50000	0.046604 d
9.7024	92.11111	144.11111	22.50000	0.033205 d
11.643	90.33333	143.33333	22.50000	0.018364 d
13.583	88.55556	142.55556	22.50000	0.0037443 d
15.524	86.77778	141.77778	22.50000	-0.0093890 d
17.464	85.00000	141.00000	22.50000	-0.020420 d

d - Displacements include imported displacements.

Specific Building Damage Results - All Segments

Structure: 48-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.										

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

Structure: 48-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	4.0581	2.8016	Hogging	125.52E-6	0.0035132	0.0035401	-127.38E-6	-29.939E-6	474160.	0 (Negligible)
	2	6.8597	5.2653	Sagging	165.08E-6	0.0092411	0.0093659	-127.38E-6	-29.939E-6	619600.	0 (Negligible)
	3	12.125	0.048141	Sagging	0.0	0.0055218	0.0055218	-55.215E-6	-20.014E-6	25.434E+6	0 (Negligible)

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

Structure: 48-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	1.9080	None	0.0	-0.0011574	231.49E-6	11.574E-6	75.117E-6	76810.	0 (Negligible)

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

Structure: 48-4 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.										

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

Structure: 2-4-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	6.4099	4.2723	Hogging	0.0015097	0.0	0.0014923	0.0	-143.29E-6	31620.	0 (Negligible)

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

Structure: 2-4-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	5.7893	Hogging	0.0015732	0.0	0.0015401	0.0	142.40E-6	33203.	0 (Negligible)

Vertical Offset from Line for Vertical Movement	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.										

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

Structure: 2-4-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.										

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

Structure: 2-4-4 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.										

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

Structure: 56-3-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	7.0336	Hogging	523.12E-6	-0.0056117	0.0011603	117.17E-6	-58.797E-6	146800.	0 (Negligible)
	2	7.0336	11.049	Sagging	0.0014593	-0.0017466	828.95E-6	117.17E-6	-58.797E-6	85917.	0 (Negligible)

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

Structure: 56-3-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	5.6050	Hogging	0.0018886	0.0	0.0018513	0.0	176.58E-6	26315.	0 (Negligible)

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

Structure: 56-3-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.										

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

Specific Building Damage Results - Critical Values for All Segments within Each Sub-Structure

Structure: 48-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	

Structure: 48-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	165.08E-6	0.0092411	-29.939E-6	0.31869	0.0093659	-127.38E-6	-29.939E-6	474160.	619600.	0 (Negligible)

Structure: 48-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	0.0	-0.0011574	75.117E-6	0.31871	231.49E-6	11.574E-6	75.117E-6	-	-	0 (Negligible)

Structure: 48-4 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	

Structure: 2-4-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	0.0015097		0.0	-143.29E-6	0.66246	0.0014923	0.0	-143.29E-6	31620.	-	0 (Negligible)

Structure: 2-4-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category

Calculations

[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	0.0015732		0.0	142.40E-6	0.66260	0.0015401	0.0	142.40E-6	33203.	- 0 (Negligible)

Structure: 2-4-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	

Structure: 2-4-4 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	

Structure: 56-3-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	0.0014593	-0.0056117	-58.797E-6	0.90094	0.0011603	117.17E-6	-58.797E-6	146800.	85917.	0 (Negligible)

Structure: 56-3-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	0.0018886		0.0	176.58E-6	0.81688	0.0018513	0.0	176.58E-6	26315.	- 0 (Negligible)

Structure: 56-3-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	

Specific Building Damage Results - Critical Segments within Each Structure

Structure Name	Parameter	Critical Sub-Structure	Critical Segment	Start [m]	End [m]	Curvature	Max Slope	Max Settlement [mm]	Max Tensile Strain [%]	Min Radius of Curvature (Hogging) [m]	Min Radius of Curvature (Sagging) [m]	Damage Category
48-1	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
48-2	Max Slope	0	1	4.0581	6.8597	Hogging	**29.939E-6**	0.19662	0.0035401	474160.	-	0 (Negligible)
	Max Settlement	0	3	12.125	12.173	Sagging	20.014E-6	**0.31869**	0.0055218	-	25.434E+6	0 (Negligible)
	Max Tensile Strain	0	2	6.8597	12.125	Sagging	29.939E-6	0.31773	**0.0093659**	-	619600.	0 (Negligible)
	Min Radius of Curvature (Hogging)	0	1	4.0581	6.8597	Hogging	29.939E-6	0.19662	0.0035401	**474160.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	0	2	6.8597	12.125	Sagging	29.939E-6	0.31773	0.0093659	-	**619600.**	0 (Negligible)
48-3	Max Slope	0	1	0.0	1.9080	Sagging	**75.117E-6**	0.31871	231.49E-6	-	76810.	0 (Negligible)
	Max Settlement	0	1	0.0	1.9080	Sagging	75.117E-6	**0.31871**	231.49E-6	-	76810.	0 (Negligible)
	Max Tensile Strain	0	1	0.0	1.9080	Sagging	75.117E-6	0.31871	**231.49E-6**	-	76810.	0 (Negligible)
	Min Radius of Curvature (Hogging)	-	-	-	-		-	-	-	-	-	-
	Min Radius of Curvature (Sagging)	-	-	-	-		-	-	-	-	-	-
48-4	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
2-4-1	Max Slope	0	1	6.4099	10.682	Hogging	**143.29E-6**	0.66246	0.0014923	31620.	-	0 (Negligible)
	Max Settlement	0	1	6.4099	10.682	Hogging	143.29E-6	**0.66246**	0.0014923	31620.	-	0 (Negligible)
	Max Tensile Strain	0	1	6.4099	10.682	Hogging	143.29E-6	0.66246	**0.0014923**	31620.	-	0 (Negligible)
	Min Radius of Curvature (Hogging)	0	1	6.4099	10.682	Hogging	143.29E-6	0.66246	0.0014923	**31620.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	-	-	-	-		-	-	-	-	-	-
2-4-2	Max Slope	0	1	0.0	5.7893	Hogging	**142.40E-6**	0.66260	0.0015401	33203.	-	0 (Negligible)
	Max Settlement	0	1	0.0	5.7893	Hogging	142.40E-6	**0.66260**	0.0015401	33203.	-	0 (Negligible)
	Max Tensile Strain	0	1	0.0	5.7893	Hogging	142.40E-6	0.66260	**0.0015401**	33203.	-	0 (Negligible)
	Min Radius of Curvature (Hogging)	0	1	0.0	5.7893	Hogging	142.40E-6	0.66260	0.0015401	**33203.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	-	-	-	-		-	-	-	-	-	-
2-4-3	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
2-4-4	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
56-3-1	Max Slope	0	1	0.0	7.0336	Hogging	**58.797E-6**	0.62563	0.0011603	146800.	-	0 (Negligible)
	Max Settlement	0	2	7.0336	18.082	Sagging	58.797E-6	**0.90094**	828.95E-6	-	85917.	0 (Negligible)
	Max Tensile Strain	0	1	0.0	7.0336	Hogging	58.797E-6	0.62563	**0.0011603**	146800.	-	0 (Negligible)
	Min Radius of Curvature (Hogging)	0	1	0.0	7.0336	Hogging	58.797E-6	0.62563	0.0011603	**146800.**	-	0 (Negligible)

Structure Name	Parameter	Critical Sub-Structure	Critical Segment	Start	End	Curvature	Max Slope	Max Settlement	Max Tensile Strain	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
	Min Radius of Curvature (Sagging)	0	2	7.0336	18.082	Sagging	58.797E-6	0.90094	828.95E-6	-	**85917.**	0 (Negligible)
56-3-2	Max Slope	0	1	0.0	5.6050	Hogging	**176.58E-6**	0.81688	0.0018513	26315.	-	0 (Negligible)
	Max Settlement	0	1	0.0	5.6050	Hogging	176.58E-6	**0.81688**	0.0018513	26315.	-	0 (Negligible)
	Max Tensile Strain	0	1	0.0	5.6050	Hogging	176.58E-6	0.81688	**0.0018513**	26315.	-	0 (Negligible)
	Min Radius of Curvature (Hogging)	0	1	0.0	5.6050	Hogging	176.58E-6	0.81688	0.0018513	**26315.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	-	-	-	-	-	-	-	-	-	-	-
56-3-3	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											

Hope Project
Proposed Loading - New - Option B
Drained

Problem Type

Problem Type : Tunnelling and Embedded Wall Excavations

Displacement Data

Type	Name	Direction of extrusion	Point/Line/Line for extrusion						No. of intervals across extrusion/line	Extrusion depth	No. of intervals along extrusion	Calculate	Surface type for tunnels
			First point			Second point							
			X [m]	Y [m]	Z(level) [m]	X [m]	Y [m]	Z(level) [m]		[m]			
Line	48-1	-	70.00000	143.00000	22.50000	76.50000	128.80000	22.50000	8	-	-	Yes	Surface
Line	48-2	-	76.50000	128.80000	22.50000	87.60000	133.80000	22.50000	6	-	-	Yes	Surface
Line	48-3	-	87.60000	133.80000	22.50000	82.00000	148.00000	22.50000	8	-	-	Yes	Surface
Line	48-4	-	82.00000	148.00000	22.50000	70.00000	143.00000	22.50000	7	-	-	Yes	Surface
Line	2-4-1	-	66.00000	122.70000	22.50000	72.20000	114.00000	22.50000	5	-	-	Yes	Surface
Line	2-4-2	-	72.20000	114.00000	22.50000	58.00000	104.00000	22.50000	9	-	-	Yes	Surface
Line	2-4-3	-	58.00000	104.00000	22.50000	51.30000	113.60000	22.50000	6	-	-	Yes	Surface
Line	2-4-4	-	51.30000	113.60000	22.50000	66.00000	122.70000	22.50000	9	-	-	Yes	Surface
Line	56-3-1	-	87.60000	133.80000	22.50000	104.10000	141.20000	22.50000	9	-	-	Yes	Surface
Line	56-3-2	-	104.10000	141.20000	22.50000	101.00000	148.00000	22.50000	4	-	-	Yes	Surface
Line	56-3-3	-	101.00000	148.00000	22.50000	85.00000	141.00000	22.50000	9	-	-	Yes	Surface

Imported Displacements

The following data points and displacements were found in the import file Final NEW XDISP.csv.

Ref.	Coordinates			Displacements			
	x [m]	y [m]	z [m]	x [mm]	y [mm]	z [mm]	
1	70.00000	143.00000	22.50000	0.00000	0.00000	-0.12544	1,2,6
2	70.81250	141.22500	22.50000	0.00000	0.00000	-0.13289	1,2,6
3	71.62500	139.45000	22.50000	0.00000	0.00000	-0.13941	1,2,6
4	72.43750	137.67500	22.50000	0.00000	0.00000	-0.14419	1,2,6
5	73.25000	135.90000	22.50000	0.00000	0.00000	-0.14608	1,2,6
6	74.06250	134.12500	22.50000	0.00000	0.00000	-0.14338	1,2,6
7	74.87500	132.35000	22.50000	0.00000	0.00000	-0.13377	1,2,6
8	75.68750	130.57500	22.50000	0.00000	0.00000	-0.11406	1,2,6
9	76.50000	128.80000	22.50000	0.00000	0.00000	-0.08012	1,2,6
10	78.35000	129.63333	22.50000	0.00000	0.00000	-0.06934	1,2,6
11	80.20000	130.46667	22.50000	0.00000	0.00000	-0.05288	1,2,6
12	82.05000	131.30000	22.50000	0.00000	0.00000	-0.03556	1,2,6
13	83.90000	132.13333	22.50000	0.00000	0.00000	-0.02721	1,2,6
14	85.75000	132.96667	22.50000	0.00000	0.00000	-0.03547	1,2,6
15	87.60000	133.80000	22.50000	0.00000	0.00000	-0.05478	1,2,6
16	86.90000	135.57500	22.50000	0.00000	0.00000	-0.13460	1,2,6
17	86.20000	137.35000	22.50000	0.00000	0.00000	-0.17852	1,2,6
18	85.50000	139.12500	22.50000	0.00000	0.00000	-0.19989	1,2,6
19	84.80000	140.90000	22.50000	0.00000	0.00000	-0.20692	1,2,6
20	84.10000	142.67500	22.50000	0.00000	0.00000	-0.20496	1,2,6
21	83.40000	144.45000	22.50000	0.00000	0.00000	-0.19757	1,2,6
22	82.70000	146.22500	22.50000	0.00000	0.00000	-0.18709	1,2,6
23	82.00000	148.00000	22.50000	0.00000	0.00000	-0.17507	1,2,6
24	80.28571	147.28571	22.50000	0.00000	0.00000	-0.16834	1,2,6
25	78.57143	146.57143	22.50000	0.00000	0.00000	-0.16127	1,2,6
26	76.85714	145.85714	22.50000	0.00000	0.00000	-0.15402	1,2,6
27	75.14286	145.14286	22.50000	0.00000	0.00000	-0.14673	1,2,6
28	73.42857	144.42857	22.50000	0.00000	0.00000	-0.13948	1,2,6
29	71.71429	143.71429	22.50000	0.00000	0.00000	-0.13237	1,2,6
30	66.00000	122.70000	22.50000	0.00000	0.00000	-0.07674	1,2,6
31	67.24000	120.96000	22.50000	0.00000	0.00000	-0.04713	1,2,6
32	68.48000	119.22000	22.50000	0.00000	0.00000	0.00682	1,2,6
33	69.72000	117.48000	22.50000	0.00000	0.00000	0.10272	1,2,6
34	70.96000	115.74000	22.50000	0.00000	0.00000	0.27274	1,2,6
35	72.20000	114.00000	22.50000	0.00000	0.00000	0.57304	1,2,6
36	70.62222	112.88889	22.50000	0.00000	0.00000	0.30907	1,2,6
37	69.04444	111.77778	22.50000	0.00000	0.00000	0.14666	1,2,6
38	67.46667	110.66667	22.50000	0.00000	0.00000	0.04992	1,2,6
39	65.88889	109.55556	22.50000	0.00000	0.00000	-0.00705	1,2,6
40	64.31111	108.44444	22.50000	0.00000	0.00000	-0.04004	1,2,6
41	62.73333	107.33333	22.50000	0.00000	0.00000	-0.05844	1,2,6
42	61.15556	106.22222	22.50000	0.00000	0.00000	-0.06788	1,2,6
43	59.57778	105.11111	22.50000	0.00000	0.00000	-0.07181	1,2,6
44	58.00000	104.00000	22.50000	0.00000	0.00000	-0.07236	1,2,6
45	56.88333	105.60000	22.50000	0.00000	0.00000	-0.07226	1,2,6
46	55.76667	107.20000	22.50000	0.00000	0.00000	-0.07195	1,2,6
47	54.65000	108.80000	22.50000	0.00000	0.00000	-0.07137	1,2,6
48	53.53333	110.40000	22.50000	0.00000	0.00000	-0.07049	1,2,6
49	52.41667	112.00000	22.50000	0.00000	0.00000	-0.06928	1,2,6
50	51.30000	113.60000	22.50000	0.00000	0.00000	-0.06776	1,2,6
51	52.93333	114.61111	22.50000	0.00000	0.00000	-0.07135	1,2,6
52	54.56667	115.62222	22.50000	0.00000	0.00000	-0.07466	1,2,6
53	56.20000	116.63333	22.50000	0.00000	0.00000	-0.07748	1,2,6
54	57.83333	117.64444	22.50000	0.00000	0.00000	-0.07959	1,2,6
55	59.46667	118.65556	22.50000	0.00000	0.00000	-0.08079	1,2,6
56	61.10000	119.66667	22.50000	0.00000	0.00000	-0.08093	1,2,6
57	62.73333	120.67778	22.50000	0.00000	0.00000	-0.08005	1,2,6
58	64.36667	121.68889	22.50000	0.00000	0.00000	-0.07844	1,2,6
59	89.43333	134.62222	22.50000	0.00000	0.00000	-0.06715	1,2,6
60	91.26667	135.44444	22.50000	0.00000	0.00000	-0.05653	1,2,6
61	93.10000	136.26667	22.50000	0.00000	0.00000	-0.01824	1,2,6
62	94.93333	137.08889	22.50000	0.00000	0.00000	0.03674	1,2,6
63	96.76667	137.91111	22.50000	0.00000	0.00000	0.08880	1,2,6
64	98.60000	138.73333	22.50000	0.00000	0.00000	0.12483	1,2,6
65	100.43333	139.55556	22.50000	0.00000	0.00000	0.13821	1,2,6
66	102.26667	140.37778	22.50000	0.00000	0.00000	0.12519	1,2,6
67	104.10000	141.20000	22.50000	0.00000	0.00000	0.09207	1,2,6
68	103.32500	142.90000	22.50000	0.00000	0.00000	-0.07388	1,2,6
69	102.55000	144.60000	22.50000	0.00000	0.00000	-0.16412	1,2,6
70	101.77500	146.30000	22.50000	0.00000	0.00000	-0.20956	1,2,6
71	101.00000	148.00000	22.50000	0.00000	0.00000	-0.22818	1,2,6
72	99.22222	147.22222	22.50000	0.00000	0.00000	-0.22819	1,2,6
73	97.44444	146.44444	22.50000	0.00000	0.00000	-0.22865	1,2,6
74	95.66667	145.66667	22.50000	0.00000	0.00000	-0.22935	1,2,6
75	93.88889	144.88889	22.50000	0.00000	0.00000	-0.22980	1,2,6
76	92.11111	144.11111	22.50000	0.00000	0.00000	-0.22935	1,2,6
77	90.33333	143.33333	22.50000	0.00000	0.00000	-0.22728	1,2,6
78	88.55556	142.55556	22.50000	0.00000	0.00000	-0.22307	1,2,6
79	86.77778	141.77778	22.50000	0.00000	0.00000	-0.21654	1,2,6
80	85.00000	141.00000	22.50000	0.00000	0.00000	-0.20801	1,2,6

1 - Data point coincident with displacement data. Its displacement has been added to those calculated by Xdisp.
2 - Data point coincident with horizontal movement calculation point for a specific building. Its displacement has been added before performing building damage calculations.
6 - Data point coincident with vertical movement calculation point for a specific building. Its displacement has been added before performing building damage calculations.

Vertical Ground Movement Curves (Excavations)

Curve Name: **No vertical ground movement**
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)(%)]
[0.000,0.000,0.000][1.000,0.000,0.000][0.000,1.000,0.000][1.000,1.000,0.000]
Curve Fitting Method: Polynomial
x Order: 1
y Order: 0

Ref.	Coordinates			Displacements		
	x [m]	y [m]	z [m]	x [mm]	y [mm]	z [mm]

Polynomial: z = 0.0x + 0.0
Coeff. of Determination: −2147483648.E+2147483647

Curve Name: **Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(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)(%)]
[0.000,0.000,0.050][2.000,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 1
y Order: 0
Polynomial: z = −2.5E−2x + 5.0E−2
Coeff. of Determination: 1.0

Curve Name: **Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(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]
[0.400,0.000,0.067][0.500,0.000,0.070][0.600,0.000,0.072][0.700,0.000,0.073]
[0.800,0.000,0.073][0.900,0.000,0.072][1.000,0.000,0.070][1.100,0.000,0.068]
[1.200,0.000,0.065][1.300,0.000,0.061][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]
[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]
[2.800,0.000,0.010][2.900,0.000,0.008][3.000,0.000,0.007][3.100,0.000,0.005]
[3.200,0.000,0.004][3.300,0.000,0.004][3.400,0.000,0.003][3.500,0.000,0.002]
[3.600,0.000,0.002][3.700,0.000,0.002][3.800,0.000,0.001][3.900,0.000,0.001]
[4.000,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 4
y Order: 0
Polynomial: z = $-2.6455E-3x^4 + 2.8495E-2x^3 - 1.0051E-1x^2 + 1.0569E-1x + 3.8990E-2$
Coeff. of Determination: 9.9991E−1

Curve Name: **Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(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)(%)]
[0.000,0.000,0.345][0.100,0.000,0.327][0.200,0.000,0.311][0.300,0.000,0.294]
[0.400,0.000,0.279][0.500,0.000,0.264][0.600,0.000,0.250][0.700,0.000,0.237]
[0.800,0.000,0.224][0.900,0.000,0.212][1.000,0.000,0.200][1.100,0.000,0.189]
[1.200,0.000,0.178][1.300,0.000,0.168][1.400,0.000,0.158][1.500,0.000,0.149]
[1.600,0.000,0.140][1.700,0.000,0.132][1.800,0.000,0.124][1.900,0.000,0.116]
[2.000,0.000,0.109][2.100,0.000,0.101][2.200,0.000,0.095][2.300,0.000,0.088]
[2.400,0.000,0.082][2.500,0.000,0.076][2.600,0.000,0.070][2.700,0.000,0.065]
[2.800,0.000,0.059][2.900,0.000,0.054][3.000,0.000,0.049][3.100,0.000,0.044]
[3.200,0.000,0.039][3.300,0.000,0.034][3.400,0.000,0.029][3.500,0.000,0.025]
[3.600,0.000,0.020][3.700,0.000,0.015][3.800,0.000,0.010][3.900,0.000,0.005]
[4.000,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 3
y Order: 0
Polynomial: z = $-3.5383E-3x^3 + 3.7194E-2x^2 - 1.7831E-1x + 3.4467E-1$
Coeff. of Determination: 9.9999E−1

Horizontal Ground Movement Curves (Excavations)

Curve Name: **No horizontal ground movement**
Coordinates: [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)(%)]
[0.000,0.000,0.000][1.000,0.000,0.000][0.000,1.000,0.000][1.000,1.000,0.000]
Curve Fitting Method: Polynomial
x Order: 0
y Order: 0
Polynomial: z = 0.0
Coeff. of Determination: −2147483648.E+2147483647

Curve Name: **Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(a))**
Coordinates: [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)(%)]
[0.000,0.000,0.081][0.050,0.000,0.076][0.100,0.000,0.072][0.150,0.000,0.067]
[0.200,0.000,0.063][0.250,0.000,0.059][0.300,0.000,0.056][0.350,0.000,0.052]
[0.400,0.000,0.049][0.450,0.000,0.045][0.500,0.000,0.043][0.550,0.000,0.040]
[0.600,0.000,0.037][0.650,0.000,0.034][0.700,0.000,0.032][0.750,0.000,0.029]
[0.800,0.000,0.027][0.850,0.000,0.024][0.900,0.000,0.022][0.950,0.000,0.020]
[1.000,0.000,0.018][1.050,0.000,0.016][1.100,0.000,0.014][1.150,0.000,0.012]
[1.200,0.000,0.011][1.250,0.000,0.009][1.300,0.000,0.007][1.350,0.000,0.005]
[1.400,0.000,0.004][1.450,0.000,0.002][1.500,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 3
y Order: 0
Polynomial: z = $-1.0610E-2x^3 + 4.4203E-2x^2 - 9.6358E-2x + 8.0901E-2$
Coeff. of Determination: 1.0000

Curve Name: **Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))**
Coordinates: [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)(%)]
[0.000,0.000,0.150][4.000,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 1
y Order: 0
Polynomial: z = −3.75E−2x + 1.50E−1
Coeff. of Determination: 1.00

Curve Name: **Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))**
Coordinates: [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)(%)]
[0.000,0.000,0.400][4.000,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 1
y Order: 0
Polynomial: z = −10.E−2x + 4.0E−1
Coeff. of Determination: 1.0

Polygonal Excavations

Excavation Name: **Lift Pit**
Surface level [m]: 17.500
Contribution: Positive
Enabled: Yes
Surface movement curves which are selected are applied between surface and [m]: 16.100

Corner	x	y	Base	Stiffened	Previous Side	Next Side

			Level		d	p1	p2*	d	p1	p2*
	[m]	[m]	[m]		[m]	[%]	[%]	[m]	[%]	[%]
1	104.50	122.40	16.100	Yes	0.0	67.000	25.000	0.0	67.000	25.000
2	107.00	123.50	16.100	Yes	0.0	67.000	25.000	0.0	67.000	25.000
3	107.90	121.50	16.100	Yes	0.0	67.000	25.000	0.0	67.000	25.000
4	105.50	120.30	16.100	Yes	0.0	67.000	25.000	0.0	67.000	25.000

Side	Corner 1		Corner 2		Ground Movement Curve	
	x	y	x	y	Vertical	Horizontal
	[m]	[m]	[m]	[m]		
1	104.50	122.40	107.00	123.50	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b))	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))
2	107.00	123.50	107.90	121.50	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b))	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))
3	107.90	121.50	105.50	120.30	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b))	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))
4	105.50	120.30	104.50	122.40	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b))	Excavation in front of low stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))

Excavation Name: New Basement 1
Surface level [m]: 22.550
Contribution: Positive
Enabled: Yes
Surface movement curves which are selected are applied between surface and [m]: 17.500

Corner	x	y	Base Level	Stiffened	Previous Side d	p1	p2*	Next Side d	p1	p2*
	[m]	[m]	[m]		[m]	[%]	[%]	[m]	[%]	[%]
1	109.50	117.50	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
2	105.80	126.20	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
3	108.30	127.30	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
4	112.00	118.60	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000

Side	Corner 1		Corner 2		Ground Movement Curve	
	x	y	x	y	Vertical	Horizontal
	[m]	[m]	[m]	[m]		
1	109.50	117.50	105.80	126.20	No vertical ground movement	No horizontal ground movement
2	105.80	126.20	108.30	127.30	Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(b))	Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(a))
3	108.30	127.30	112.00	118.60	Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(b))	Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(a))
4	112.00	118.60	109.50	117.50	No vertical ground movement	No horizontal ground movement

Excavation Name: New Basement 2
Surface level [m]: 22.550
Contribution: Positive
Enabled: Yes
Surface movement curves which are selected are applied between surface and [m]: 17.500

Corner	x	y	Base Level	Stiffened	Previous Side d	p1	p2*	Next Side d	p1	p2*
	[m]	[m]	[m]		[m]	[%]	[%]	[m]	[%]	[%]
1	105.80	126.20	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
2	101.20	124.20	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
3	102.50	121.50	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
4	107.00	123.50	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000

Side	Corner 1		Corner 2		Ground Movement Curve	
	x	y	x	y	Vertical	Horizontal
	[m]	[m]	[m]	[m]		
1	105.80	126.20	101.20	124.20	Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(b))	Installation of secant bored pile wall in stiff clay (CIRIA 580 Fig. 2.8(a))
2	101.20	124.20	102.50	121.50	Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b)	Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))
3	102.50	121.50	107.00	123.50	No vertical ground movement	No horizontal ground movement
4	107.00	123.50	105.80	126.20	No vertical ground movement	No horizontal ground movement

Excavation Name: New Basement 3
Surface level [m]: 20.350
Contribution: Positive
Enabled: Yes
Surface movement curves which are selected are applied between surface and [m]: 17.500

Corner	x	y	Base Level	Stiffened	Previous Side d	p1	p2*	Next Side d	p1	p2*
	[m]	[m]	[m]		[m]	[%]	[%]	[m]	[%]	[%]
1	102.50	121.50	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
2	104.00	118.20	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
3	108.40	120.00	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000
4	107.00	123.50	17.500	Yes	0.0	67.000	25.000	0.0	67.000	25.000

Side	Corner 1		Corner 2		Ground Movement Curve	
	x	y	x	y	Vertical	Horizontal
	[m]	[m]	[m]	[m]		
1	102.50	121.50	104.00	118.20	Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b)	Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))
2	104.00	118.20	108.40	120.00	Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b)	Excavation in front of high stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a))
3	108.40	120.00	107.00	123.50	No vertical ground movement	No horizontal ground movement
4	107.00	123.50	102.50	121.50	No vertical ground movement	No horizontal ground movement

Damage Category Strains

Name	0 (Negligible) to 1 (Very Slight)	1 (Very Slight) to 2 (Slight)	2 (Slight) to 3 (Moderate)	3 (Moderate) to 4 (Severe)
Burland Strain Limits	0.0	500.00E-6	750.00E-6	0.0015000

Specific Structures - Geometry

Structure Name	Sub-Structure Name	Displacement Line	Start Distance Along Line	End Distance Along Line	Vertical Offsets from Line for Vertical Movement Calculations	Vertical Displacement Limit Sensitivity	Damage Category Strains	Poisson's Ratio	E/G
			[m]	[m]	[m]	[mm]			
48-1		0 48-1	0.00000	15.61598	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
48-2		0 48-2	0.00000	12.17315	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
48-3		0 48-3	0.00000	15.26334	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
48-4		0 48-4	0.00000	12.99900	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
2-4-1		0 2-4-1	0.00000	10.68216	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
2-4-2		0 2-4-2	0.00000	17.36679	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
2-4-3		0 2-4-3	0.00000	11.70584	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
2-4-4		0 2-4-4	0.00000	17.28772	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
56-3-1		0 56-3-1	0.00000	18.08242	0.0	0.10000	Burland Strain Limits	0.20000	2.6000
56-3-2		0 56-3-2	0.00000	7.47229	0.0	0.10000	Burland Strain Limits	0.20000	2.6000

Structure Name	Sub-Structure Name	Displacement Line	Start Distance Along Line	End Distance Along Line	Vertical Offsets from Line for Vertical	Vertical Displacement Limit Sensitivity	Damage Category Strains	Poisson's Ratio	E/G
56-3-3		0 56-3-3	0.00000	17.46325	0.0	0.10000	Burland Strain Limits	0.20000	2.6000

Specific Structures - Bending Parameters

Structure Name	Sub-Structure Name	Height	Default Properties	Hogging			Sagging		
				2nd Moment of Area (per unit width)	Distance of Bending Strain from N.A.	Distance of N.A. from Edge of Beam in Tension	2nd Moment of Area (per unit width)	Distance of Bending Strain from N.A.	Distance of N.A. from Edge of Beam in Tension
		[m]		[m³]	[m]	[m]	[m³]	[m]	[m]
48-1		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
48-2		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
48-3		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
48-4		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
2-4-1		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
2-4-2		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
2-4-3		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
2-4-4		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
56-3-1		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
56-3-2		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000
56-3-3		0 10.000	Yes	333.33	10.000	10.000	83.333	5.0000	5.0000

Building Segment Combinations

Structure Name	Sub-Structure Name	Vertical Offset from Line for Vertical Movement Calculations	Segment Start	Length	Curvature	Combined Segment
		[m]	[m]	[m]		

No structures have segments combined.

Utility Strain Calculation Options

Neglect beneficial contribution of axial strains : No

Warnings

1 Multiple excavations have been specified. The displacements resulting from these excavations are calculated by summing the displacements resulting from each individual excavation. No account has been taken of the interactions between excavations (e.g. overlapping zones of influence or 'shielding' of one excavation by another).

2 Embedded Wall Excavation PE1 : Lift Pit intersects PE2 : New Basement 1, , PE3 : New Basement 2, and PE4 : New Basement 3.

3 Embedded Wall Excavation PE2 : New Basement 1 intersects PE1 : Lift Pit, , PE3 : New Basement 2, and PE4 : New Basement 3.

4 Embedded Wall Excavation PE3 : New Basement 2 intersects PE1 : Lift Pit, , PE2 : New Basement 1, and PE4 : New Basement 3.

5 Embedded Wall Excavation PE4 : New Basement 3 intersects PE1 : Lift Pit, , PE2 : New Basement 1, and PE3 : New Basement 2.

6 If an embedded wall excavation is assigned a 'surface' ground movement curve and if the 'allow movement calculation to level' option is checked for the excavation then displacements induced by it are calculated for points at the surface, and points below the surface to the level specified. Others are ignored. An example of such a combination, for which displacements will not be calculated is Excavation XP1/Side 1/Line 1/Vertical. This is an example only. There are 131 others.

7 If an embedded wall excavation is assigned a 'sub-surface' ground movement curve then displacements induced by it can only be calculated for those points that are level with or below the embedded wall excavation's 'surface level'. Others are ignored. An example of such a combination, for which displacements will not be calculated is Excavation XP4/Side 3/Line 1/Vertical. This is an example only. There are 43 others.

Errors

None

Displacement and Strain Results

Type/No. Name	Dist.	Coordinates x	y	z	Displacements x	y	z	Horizontal displacement along Line	Horizontal displacement perpendicular to Line	Angle of Line to x Axis	
	[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	[mm]	[°]	
48-1	Line 1	70.00000	143.00000	22.50000	0.0	0.0	-0.12544	0.0	0.0	294.60	*
	1.9521	70.81250	141.22500	22.50000	0.0	0.0	-0.13289	0.0	0.0	294.60	*
	3.9042	71.62500	139.45000	22.50000	0.0	0.0	-0.13941	0.0	0.0	294.60	*
	5.8564	72.43750	137.67500	22.50000	0.0	0.0	-0.14419	0.0	0.0	294.60	*
	7.8085	73.25000	135.90000	22.50000	0.0	0.0	-0.14608	0.0	0.0	294.60	*
	9.7606	74.06250	134.12500	22.50000	0.0	0.0	-0.14338	0.0	0.0	294.60	*
	11.713	74.87500	132.35000	22.50000	0.0	0.0	-0.13377	0.0	0.0	294.60	*
	13.665	75.68750	130.57500	22.50000	0.0	0.0	-0.11406	0.0	0.0	294.60	*
	15.617	76.50000	128.80000	22.50000	0.0	0.0	-0.080115	0.0	0.0	294.60	*
48-2	Line 2	76.50000	128.80000	22.50000	0.0	0.0	-0.080115	0.0	0.0	24.249	*
	2.0290	78.35000	129.63333	22.50000	0.0	0.0	-0.069338	0.0	0.0	24.249	*
	4.0581	80.20000	130.46667	22.50000	0.0	0.0	-0.052880	0.0	0.0	24.249	*
	6.0871	82.05000	131.30000	22.50000	0.0	0.0	-0.035563	0.0	0.0	24.249	*
	8.1161	83.90000	132.13333	22.50000	0.087366	0.042065	-0.011618	0.096934	0.0024719	24.249	*
	10.145	85.75000	132.96667	22.50000	0.16077	0.077408	-0.012144	0.17838	0.0045487	24.249	*
	12.174	87.60000	133.80000	22.50000	0.19864	0.095641	-0.024926	0.22039	0.0056201	24.249	*
48-3	Line 3	87.60000	133.80000	22.50000	0.19864	0.095641	-0.024926	0.016098	-0.21988	111.52	*
	1.9080	86.90000	135.57500	22.50000	0.096455	0.046441	-0.11987	0.0078168	-0.10677	111.52	*
	3.8161	86.20000	137.35000	22.50000	0.011376	0.0054775	-0.17550	921.96E-6	-0.012593	111.52	*
	5.7241	85.50000	139.12500	22.50000	0.0	0.0	-0.19989	0.0	0.0	111.52	*
	7.6322	84.80000	140.90000	22.50000	0.0	0.0	-0.20692	0.0	0.0	111.52	*
	9.5402	84.10000	142.67500	22.50000	0.0	0.0	-0.20496	0.0	0.0	111.52	*
	11.448	83.40000	144.45000	22.50000	0.0	0.0	-0.19757	0.0	0.0	111.52	*
	13.356	82.70000	146.22500	22.50000	0.0	0.0	-0.18709	0.0	0.0	111.52	*
	15.264	82.00000	148.00000	22.50000	0.0	0.0	-0.17507	0.0	0.0	111.52	*
48-4	Line 4	82.00000	148.00000	22.50000	0.0	0.0	-0.17507	0.0	0.0	202.62	*
	1.8571	80.28571	147.28571	22.50000	0.0	0.0	-0.16834	0.0	0.0	202.62	*
	3.7143	78.57143	146.57143	22.50000	0.0	0.0	-0.16127	0.0	0.0	202.62	*
	5.5714	76.85714	145.85714	22.50000	0.0	0.0	-0.15402	0.0	0.0	202.62	*
	7.4286	75.14286	145.14286	22.50000	0.0	0.0	-0.14673	0.0	0.0	202.62	*
	9.2857	73.42857	144.42857	22.50000	0.0	0.0	-0.13948	0.0	0.0	202.62	*
	11.143	71.71429	143.71429	22.50000	0.0	0.0	-0.13237	0.0	0.0	202.62	*
	13.000	70.00000	143.00000	22.50000	0.0	0.0	-0.12544	0.0	0.0	202.62	*
2-4-1	Line 5	66.00000	122.70000	22.50000	0.0	0.0	-0.076738	0.0	0.0	305.48	*
	2.1366	67.24000	120.96000	22.50000	0.0	0.0	-0.047130	0.0	0.0	305.48	*
	4.2733	68.48000	119.22000	22.50000	0.0	0.0	0.0068176	0.0	0.0	305.48	*
	6.4099	69.72000	117.48000	22.50000	0.0	0.0	0.10272	0.0	0.0	305.48	*
	8.5465	70.96000	115.74000	22.50000	0.0	0.0	0.27274	0.0	0.0	305.48	*
	10.683	72.20000	114.00000	22.50000	0.0	0.0	0.57304	0.0	0.0	305.48	*
2-4-2	Line 6	72.20000	114.00000	22.50000	0.0	0.0	0.57304	0.0	0.0	215.15	*
	1.9298	70.62222	112.88889	22.50000	0.0	0.0	0.30907	0.0	0.0	215.15	*
	3.8595	69.04444	111.77778	22.50000	0.0	0.0	0.14666	0.0	0.0	215.15	*
	5.7893	67.46667	110.66667	22.50000	0.0	0.0	0.049917	0.0	0.0	215.15	*
	7.7190	65.88889	109.55556	22.50000	0.0	0.0	-0.0070486	0.0	0.0	215.15	*
	9.6488	64.31111	108.44444	22.50000	0.0	0.0	-0.040039	0.0	0.0	215.15	*
	11.579	62.73333	107.33333	22.50000	0.0	0.0	-0.058436	0.0	0.0	215.15	*
	13.508	61.15556	106.22222	22.50000	0.0	0.0	-0.067877	0.0	0.0	215.15	*
	15.438	59.57778	105.11111	22.50000	0.0	0.0	-0.071806	0.0	0.0	215.15	*
	17.368	58.00000	104.00000	22.50000	0.0	0.0	-0.072358	0.0	0.0	215.15	*
2-4-3	Line 7	58.00000	104.00000	22.50000	0.0	0.0	-0.072358	0.0	0.0	124.91	*
	1.9511	56.88333	105.60000	22.50000	0.0	0.0	-0.072264	0.0	0.0	124.91	*

Name	Type/No.	Dist.	Coordinates x	y	z	Displacements x	y	z	Horizontal displacement	Horizontal displacement	Angle of Line to x Axis	
		3.9023	55.76667	107.20000	22.50000	0.0	0.0	-0.071953	0.0	0.0	124.91	*
		5.8534	54.65000	108.80000	22.50000	0.0	0.0	-0.071374	0.0	0.0	124.91	*
		7.8046	53.53333	110.40000	22.50000	0.0	0.0	-0.070488	0.0	0.0	124.91	*
		9.7557	52.41667	112.00000	22.50000	0.0	0.0	-0.069280	0.0	0.0	124.91	*
		11.707	51.30000	113.60000	22.50000	0.0	0.0	-0.067758	0.0	0.0	124.91	*
2-4-4	Line 8		51.30000	113.60000	22.50000	0.0	0.0	-0.067758	0.0	0.0	31.759	*
		1.9210	52.93333	114.61111	22.50000	0.0	0.0	-0.071354	0.0	0.0	31.759	*
		3.8419	54.56667	115.62222	22.50000	0.0	0.0	-0.074658	0.0	0.0	31.759	*
		5.7629	56.20000	116.63333	22.50000	0.0	0.0	-0.077477	0.0	0.0	31.759	*
		7.6839	57.83333	117.64444	22.50000	0.0	0.0	-0.079591	0.0	0.0	31.759	*
		9.6048	59.46667	118.65556	22.50000	0.0	0.0	-0.080788	0.0	0.0	31.759	*
		11.526	61.10000	119.66667	22.50000	0.0	0.0	-0.080930	0.0	0.0	31.759	*
		13.447	62.73333	120.67778	22.50000	0.0	0.0	-0.080046	0.0	0.0	31.759	*
		15.368	64.36667	121.68889	22.50000	0.0	0.0	-0.078439	0.0	0.0	31.759	*
		17.289	66.00000	122.70000	22.50000	0.0	0.0	-0.076738	0.0	0.0	31.759	*
56-3-1	Line 9		87.60000	133.80000	22.50000	0.19864	0.095641	-0.024926	0.22038	0.0059805	24.156	*
		2.0093	89.43333	134.62222	22.50000	0.19996	0.096277	-0.032425	0.22185	0.0060202	24.156	*
		4.0185	91.26667	135.44444	22.50000	0.16677	0.080296	-0.022971	0.18502	0.0050210	24.156	*
		6.0278	93.10000	136.26667	22.50000	0.10505	0.050581	0.0052003	0.11655	0.0031629	24.156	*
		8.0371	94.93333	137.08889	22.50000	0.025492	0.012274	0.042685	0.028282	767.50E-6	24.156	*
		10.046	96.76667	137.91111	22.50000	0.0	0.0	0.088798	0.0	0.0	24.156	*
		12.056	98.60000	138.73333	22.50000	0.0	0.0	0.12483	0.0	0.0	24.156	*
		14.065	100.43333	139.55556	22.50000	0.0	0.0	0.13821	0.0	0.0	24.156	*
		16.074	102.26667	140.37778	22.50000	0.0	0.0	0.12519	0.0	0.0	24.156	*
		18.083	104.10000	141.20000	22.50000	0.0	0.0	0.092067	0.0	0.0	24.156	*
56-3-2	Line 10		104.10000	141.20000	22.50000	0.0	0.0	0.092067	0.0	0.0	114.51	*
		1.8683	103.32500	142.90000	22.50000	0.0	0.0	-0.073884	0.0	0.0	114.51	*
		3.7366	102.55000	144.60000	22.50000	0.0	0.0	-0.16412	0.0	0.0	114.51	*
		5.6050	101.77500	146.30000	22.50000	0.0	0.0	-0.20956	0.0	0.0	114.51	*
		7.4733	101.00000	148.00000	22.50000	0.0	0.0	-0.22818	0.0	0.0	114.51	*
56-3-3	Line 11		101.00000	148.00000	22.50000	0.0	0.0	-0.22818	0.0	0.0	203.63	*
		1.9405	99.22222	147.22222	22.50000	0.0	0.0	-0.22819	0.0	0.0	203.63	*
		3.8809	97.44444	146.44444	22.50000	0.0	0.0	-0.22865	0.0	0.0	203.63	*
		5.8214	95.66667	145.66667	22.50000	0.0	0.0	-0.22935	0.0	0.0	203.63	*
		7.7619	93.88889	144.88889	22.50000	0.0	0.0	-0.22980	0.0	0.0	203.63	*
		9.7024	92.11111	144.11111	22.50000	0.0	0.0	-0.22935	0.0	0.0	203.63	*
		11.643	90.33333	143.33333	22.50000	0.0	0.0	-0.22728	0.0	0.0	203.63	*
		13.583	88.55556	142.55556	22.50000	0.0	0.0	-0.22307	0.0	0.0	203.63	*
		15.524	86.77778	141.77778	22.50000	0.0	0.0	-0.21654	0.0	0.0	203.63	*
		17.464	85.00000	141.00000	22.50000	0.0	0.0	-0.20801	0.0	0.0	203.63	*

* Result includes imported displacement(s).

Specific Building Damage Results - Horizontal Displacements

Structure: 48-1 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	70.00000	143.00000	22.50000	0.0	0.0	0.0	0.0	d
1.9521	70.81250	141.22500	22.50000	0.0	0.0	0.0	0.0	d
3.9042	71.62500	139.45000	22.50000	0.0	0.0	0.0	0.0	d
5.8564	72.43750	137.67500	22.50000	0.0	0.0	0.0	0.0	d
7.8085	73.25000	135.90000	22.50000	0.0	0.0	0.0	0.0	d
9.7606	74.06250	134.12500	22.50000	0.0	0.0	0.0	0.0	d
11.713	74.87500	132.35000	22.50000	0.0	0.0	0.0	0.0	d
13.665	75.68750	130.57500	22.50000	0.0	0.0	0.0	0.0	d
15.617	76.50000	128.80000	22.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Structure: 48-2 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	76.50000	128.80000	22.50000	0.0	0.0	0.0	0.0	d
2.0290	78.35000	129.63333	22.50000	0.0	0.0	0.0	0.0	d
4.0581	80.20000	130.46667	22.50000	0.0	0.0	0.0	0.0	d
6.0871	82.05000	131.30000	22.50000	0.0	0.0	0.0	0.0	d
8.1161	83.90000	132.13333	22.50000	0.087366	0.042065	0.096934	0.0024719	d
10.145	85.75000	132.96667	22.50000	0.16077	0.077408	0.17838	0.0045487	d
12.174	87.60000	133.80000	22.50000	0.19864	0.095641	0.22039	0.0056201	d

d - Displacements include imported displacements.

Structure: 48-3 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	87.60000	133.80000	22.50000	0.19864	0.095641	0.016098	-0.21988	d
1.9080	86.90000	135.57500	22.50000	0.096455	0.046441	0.0078168	-0.10677	d
3.8161	86.20000	137.35000	22.50000	0.011376	0.0054775	921.96E-6	-0.012593	d
5.7241	85.50000	139.12500	22.50000	0.0	0.0	0.0	0.0	d
7.6322	84.80000	140.90000	22.50000	0.0	0.0	0.0	0.0	d
9.5402	84.10000	142.67500	22.50000	0.0	0.0	0.0	0.0	d
11.448	83.40000	144.45000	22.50000	0.0	0.0	0.0	0.0	d
13.356	82.70000	146.22500	22.50000	0.0	0.0	0.0	0.0	d
15.264	82.00000	148.00000	22.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Structure: 48-4 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	82.00000	148.00000	22.50000	0.0	0.0	0.0	0.0	d
1.8571	80.28571	147.28571	22.50000	0.0	0.0	0.0	0.0	d
3.7143	78.57143	146.57143	22.50000	0.0	0.0	0.0	0.0	d
5.5714	76.85714	145.85714	22.50000	0.0	0.0	0.0	0.0	d
7.4286	75.14286	145.14286	22.50000	0.0	0.0	0.0	0.0	d
9.2857	73.42857	144.42857	22.50000	0.0	0.0	0.0	0.0	d
11.143	71.71429	143.71429	22.50000	0.0	0.0	0.0	0.0	d
13.000	70.00000	143.00000	22.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Structure: 2-4-1 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	66.00000	122.70000	22.50000	0.0	0.0	0.0	0.0	d
2.1366	67.24000	120.96000	22.50000	0.0	0.0	0.0	0.0	d
4.2733	68.48000	119.22000	22.50000	0.0	0.0	0.0	0.0	d
6.4099	69.72000	117.48000	22.50000	0.0	0.0	0.0	0.0	d
8.5465	70.96000	115.74000	22.50000	0.0	0.0	0.0	0.0	d
10.683	72.20000	114.00000	22.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
	0.0	72.20000	114.00000	22.50000	0.0	0.0	0.0	0.0 d
1.9298	70.62222	112.88889	22.50000	0.0	0.0	0.0	0.0 d
3.8595	69.04444	111.77778	22.50000	0.0	0.0	0.0	0.0 d
5.7893	67.46667	110.66667	22.50000	0.0	0.0	0.0	0.0 d
7.7190	65.88889	109.55556	22.50000	0.0	0.0	0.0	0.0 d
9.6488	64.31111	108.44444	22.50000	0.0	0.0	0.0	0.0 d
11.579	62.73333	107.33333	22.50000	0.0	0.0	0.0	0.0 d
13.508	61.15556	106.22222	22.50000	0.0	0.0	0.0	0.0 d
15.438	59.57778	105.11111	22.50000	0.0	0.0	0.0	0.0 d
17.368	58.00000	104.00000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 2-4-3 | Sub-structure: 0

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
	0.0	58.00000	104.00000	22.50000	0.0	0.0	0.0	0.0 d
1.9511	56.88333	105.60000	22.50000	0.0	0.0	0.0	0.0 d
3.9023	55.76667	107.20000	22.50000	0.0	0.0	0.0	0.0 d
5.8534	54.65000	108.80000	22.50000	0.0	0.0	0.0	0.0 d
7.8046	53.53333	110.40000	22.50000	0.0	0.0	0.0	0.0 d
9.7557	52.41667	112.00000	22.50000	0.0	0.0	0.0	0.0 d
11.707	51.30000	113.60000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 2-4-4 | Sub-structure: 0

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
	0.0	51.30000	113.60000	22.50000	0.0	0.0	0.0	0.0 d
1.9210	52.93333	114.61111	22.50000	0.0	0.0	0.0	0.0 d
3.8419	54.56667	115.62222	22.50000	0.0	0.0	0.0	0.0 d
5.7629	56.20000	116.63333	22.50000	0.0	0.0	0.0	0.0 d
7.6839	57.83333	117.64444	22.50000	0.0	0.0	0.0	0.0 d
9.6048	59.46667	118.65556	22.50000	0.0	0.0	0.0	0.0 d
11.526	61.10000	119.66667	22.50000	0.0	0.0	0.0	0.0 d
13.447	62.73333	120.67778	22.50000	0.0	0.0	0.0	0.0 d
15.368	64.36667	121.68889	22.50000	0.0	0.0	0.0	0.0 d
17.289	66.00000	122.70000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 56-3-1 | Sub-structure: 0

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
	0.0	87.60000	133.80000	22.50000	0.19864	0.095641	0.22038	0.0059805 d
2.0093	89.43333	134.62222	22.50000	0.19996	0.096277	0.22185	0.0060202 d
4.0185	91.26667	135.44444	22.50000	0.16677	0.080296	0.18502	0.0050210 d
6.0278	93.10000	136.26667	22.50000	0.10505	0.050581	0.11655	0.0031629 d
8.0371	94.93333	137.08889	22.50000	0.025492	0.012274	0.028282	767.50E-6 d
10.046	96.76667	137.91111	22.50000	0.0	0.0	0.0	0.0 d
12.056	98.60000	138.73333	22.50000	0.0	0.0	0.0	0.0 d
14.065	100.43333	139.55556	22.50000	0.0	0.0	0.0	0.0 d
16.074	102.26667	140.37778	22.50000	0.0	0.0	0.0	0.0 d
18.083	104.10000	141.20000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 56-3-2 | Sub-structure: 0

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
	0.0	104.10000	141.20000	22.50000	0.0	0.0	0.0	0.0 d
1.8683	103.32500	142.90000	22.50000	0.0	0.0	0.0	0.0 d
3.7366	102.55000	144.60000	22.50000	0.0	0.0	0.0	0.0 d
5.6050	101.77500	146.30000	22.50000	0.0	0.0	0.0	0.0 d
7.4733	101.00000	148.00000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: 56-3-3 | Sub-structure: 0

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
	0.0	101.00000	148.00000	22.50000	0.0	0.0	0.0	0.0 d
1.9405	99.22222	147.22222	22.50000	0.0	0.0	0.0	0.0 d
3.8809	97.44444	146.44444	22.50000	0.0	0.0	0.0	0.0 d
5.8214	95.66667	145.66667	22.50000	0.0	0.0	0.0	0.0 d
7.7619	93.88889	144.88889	22.50000	0.0	0.0	0.0	0.0 d
9.7024	92.11111	144.11111	22.50000	0.0	0.0	0.0	0.0 d
11.643	90.33333	143.33333	22.50000	0.0	0.0	0.0	0.0 d
13.583	88.55556	142.55556	22.50000	0.0	0.0	0.0	0.0 d
15.524	86.77778	141.77778	22.50000	0.0	0.0	0.0	0.0 d
17.464	85.00000	141.00000	22.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Specific Building Damage Results - Vertical Displacements

Structure: 48-1 | Sub-structure: 0

Dist.	Coordinates			Displacements
	x	y	z	z
	[m]	[m]	[m]	[mm]
Vertical Offset 1				
	0.0	70.00000	143.00000	22.50000	-0.12544 d
1.9521	70.81250	141.22500	22.50000	-0.13289 d
3.9042	71.62500	139.45000	22.50000	-0.13941 d
5.8564	72.43750	137.67500	22.50000	-0.14419 d
7.8085	73.25000	135.90000	22.50000	-0.14608 d
9.7606	74.06250	134.12500	22.50000	-0.14338 d
11.713	74.87500	132.35000	22.50000	-0.13377 d
13.665	75.68750	130.57500	22.50000	-0.11406 d
15.617	76.50000	128.80000	22.50000	-0.080115 d

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]

d - Displacements include imported displacements.

Structure: 48-2 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	76.50000	128.80000	22.50000	-0.080115 d
2.0290	78.35000	129.63333	22.50000	-0.069338 d
4.0581	80.20000	130.46667	22.50000	-0.052880 d
6.0871	82.05000	131.30000	22.50000	-0.035563 d
8.1161	83.90000	132.13333	22.50000	-0.011618 d
10.145	85.75000	132.96667	22.50000	-0.012144 d
12.174	87.60000	133.80000	22.50000	-0.024926 d

d - Displacements include imported displacements.

Structure: 48-3 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	87.60000	133.80000	22.50000	-0.024926 d
1.9080	86.90000	135.57500	22.50000	-0.11987 d
3.8161	86.20000	137.35000	22.50000	-0.17550 d
5.7241	85.50000	139.12500	22.50000	-0.19989 d
7.6322	84.80000	140.90000	22.50000	-0.20692 d
9.5402	84.10000	142.67500	22.50000	-0.20496 d
11.448	83.40000	144.45000	22.50000	-0.19757 d
13.356	82.70000	146.22500	22.50000	-0.18709 d
15.264	82.00000	148.00000	22.50000	-0.17507 d

d - Displacements include imported displacements.

Structure: 48-4 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	82.00000	148.00000	22.50000	-0.17507 d
1.8571	80.28571	147.28571	22.50000	-0.16834 d
3.7143	78.57143	146.57143	22.50000	-0.16127 d
5.5714	76.85714	145.85714	22.50000	-0.15402 d
7.4286	75.14286	145.14286	22.50000	-0.14673 d
9.2857	73.42857	144.42857	22.50000	-0.13948 d
11.143	71.71429	143.71429	22.50000	-0.13237 d
13.000	70.00000	143.00000	22.50000	-0.12544 d

d - Displacements include imported displacements.

Structure: 2-4-1 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	66.00000	122.70000	22.50000	-0.076738 d
2.1366	67.24000	120.96000	22.50000	-0.047130 d
4.2733	68.48000	119.22000	22.50000	0.0068176 d
6.4099	69.72000	117.48000	22.50000	0.10272 d
8.5465	70.96000	115.74000	22.50000	0.27274 d
10.683	72.20000	114.00000	22.50000	0.57304 d

d - Displacements include imported displacements.

Structure: 2-4-2 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	72.20000	114.00000	22.50000	0.57304 d
1.9298	70.62222	112.88889	22.50000	0.30907 d
3.8595	69.04444	111.77778	22.50000	0.14666 d
5.7893	67.46667	110.66667	22.50000	0.049917 d
7.7190	65.88889	109.55556	22.50000	-0.0070486 d
9.6488	64.31111	108.44444	22.50000	-0.040039 d
11.579	62.73333	107.33333	22.50000	-0.058436 d
13.508	61.15556	106.22222	22.50000	-0.067877 d
15.438	59.57778	105.11111	22.50000	-0.071806 d
17.368	58.00000	104.00000	22.50000	-0.072358 d

d - Displacements include imported displacements.

Structure: 2-4-3 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	58.00000	104.00000	22.50000	-0.072358 d
1.9511	56.88333	105.60000	22.50000	-0.072264 d
3.9023	55.76667	107.20000	22.50000	-0.071953 d
5.8534	54.65000	108.80000	22.50000	-0.071374 d
7.8046	53.53333	110.40000	22.50000	-0.070488 d
9.7557	52.41667	112.00000	22.50000	-0.069280 d
11.707	51.30000	113.60000	22.50000	-0.067758 d

d - Displacements include imported displacements.

Structure: 2-4-4 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	51.30000	113.60000	22.50000	-0.067758 d
1.9210	52.93333	114.61111	22.50000	-0.071354 d
3.8419	54.56667	115.62222	22.50000	-0.074658 d
5.7629	56.20000	116.63333	22.50000	-0.077477 d
7.6839	57.83333	117.64444	22.50000	-0.079591 d
9.6048	59.46667	118.65556	22.50000	-0.080788 d
11.526	61.10000	119.66667	22.50000	-0.080930 d
13.447	62.73333	120.67778	22.50000	-0.080046 d
15.368	64.36667	121.68889	22.50000	-0.078439 d
17.289	66.00000	122.70000	22.50000	-0.076738 d

d - Displacements include imported displacements.

Structure: 56-3-1 | Sub-structure: 0

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	87.60000	133.80000	22.50000	-0.024926 d
2.0093	89.43333	134.62222	22.50000	-0.032425 d

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
4.0185	91.26667	135.44444	22.50000	-0.022971	d
6.0278	93.10000	136.26667	22.50000	0.0052003	d
8.0371	94.93333	137.08889	22.50000	0.042685	d
10.046	96.76667	137.91111	22.50000	0.088798	d
12.056	98.60000	138.73333	22.50000	0.12483	d
14.065	100.43333	139.55556	22.50000	0.13821	d
16.074	102.26667	140.37778	22.50000	0.12519	d
18.083	104.10000	141.20000	22.50000	0.092067	d

d - Displacements include imported displacements.

Structure: 56-3-2 | Sub-structure: 0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	104.10000	141.20000	22.50000	0.092067	d
1.8683	103.32500	142.90000	22.50000	-0.073884	d
3.7366	102.55000	144.60000	22.50000	-0.16412	d
5.6050	101.77500	146.30000	22.50000	-0.20956	d
7.4733	101.00000	148.00000	22.50000	-0.22818	d

d - Displacements include imported displacements.

Structure: 56-3-3 | Sub-structure: 0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	101.00000	148.00000	22.50000	-0.22818	d
1.9405	99.22222	147.22222	22.50000	-0.22819	d
3.8809	97.44444	146.44444	22.50000	-0.22865	d
5.8214	95.66667	145.66667	22.50000	-0.22935	d
7.7619	93.88889	144.88889	22.50000	-0.22980	d
9.7024	92.11111	144.11111	22.50000	-0.22935	d
11.643	90.33333	143.33333	22.50000	-0.22728	d
13.583	88.55556	142.55556	22.50000	-0.22307	d
15.524	86.77778	141.77778	22.50000	-0.21654	d
17.464	85.00000	141.00000	22.50000	-0.20801	d

d - Displacements include imported displacements.

Specific Building Damage Results - All Segments

Structure: 48-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max Tensile Strain [%]	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature [m]	Damage Category
0.0	1	0.0	13.665	Hogging	198.38E-6	0.0	186.22E-6	0.0	-17.386E-6	288750.	0 (Negligible)

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

Structure: 48-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max Tensile Strain [%]	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature [m]	Damage Category
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.										

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

Structure: 48-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max Tensile Strain [%]	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature [m]	Damage Category
0.0	1	1.9080	13.355	Hogging	480.68E-6	-58.530E-6	409.38E-6	4.3401E-6	49.763E-6	97597.	0 (Negligible)

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

Structure: 48-4 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max Tensile Strain [%]	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature [m]	Damage Category
0.0	1	0.0	6.5798	Hogging	4.9626E-6	0.0	4.8280E-6	0.0	-3.9287E-6	9.2336E+6	0 (Negligible)
	2	6.5798	6.4192	Sagging	3.1189E-6	0.0	2.8253E-6	0.0	-3.9287E-6	17.670E+6	0 (Negligible)

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

Structure: 2-4-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max Tensile Strain [%]	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature [m]	Damage Category
0.0	1	6.4099	4.2723	Hogging	0.0015094	0.0	0.0014919	0.0	-140.55E-6	31623.	0 (Negligible)

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

Structure: 2-4-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max Tensile Strain [%]	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature [m]	Damage Category
0.0	1	0.0	3.8595	Hogging	0.0013023	0.0	0.0012900	0.0	136.79E-6	33695.	0 (Negligible)

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

Structure: 2-4-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max Tensile Strain [%]	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature [m]	Damage Category
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.										

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

Vertical Offset from Line for Vertical Movement	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category

Structure: 2-4-4 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.										

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

Structure: 56-3-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0		1	12.056	4.0185 Sagging	325.18E-6	0.0	312.24E-6	0.0	-17.931E-6	169150.	0 (Negligible)

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

Structure: 56-3-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0		1	3.7366	3.7356 Hogging	355.30E-6	0.0	352.16E-6	0.0	48.299E-6	72667.	0 (Negligible)

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

Structure: 56-3-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0		1	0.0	4.5913 Sagging	6.3455E-6	0.0	6.0439E-6	0.0	0.0	7.5710E+6	0 (Negligible)
		2	4.5913	12.872 Hogging	76.178E-6	0.0	68.843E-6	0.0	-4.3950E-6	1.7168E+6	0 (Negligible)

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

Specific Building Damage Results - Critical Values for All Segments within Each Sub-Structure

Structure: 48-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	198.38E-6	0.0	-17.386E-6	0.14600	186.22E-6	0.0	-17.386E-6	288750.	-	0 (Negligible)

Structure: 48-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	

Structure: 48-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	480.68E-6	-58.530E-6	49.763E-6	0.20684	409.38E-6	4.3401E-6	49.763E-6	97597.	-	0 (Negligible)

Structure: 48-4 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	4.9626E-6	0.0	-3.9287E-6	0.17507	4.8280E-6	0.0	-3.9287E-6	9.2336E+6	17.670E+6	0 (Negligible)

Structure: 2-4-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	0.0015094	0.0	-140.55E-6	0.57290	0.0014919	0.0	-140.55E-6	31623.	-	0 (Negligible)

Structure: 2-4-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	0.0013023	0.0	136.79E-6	0.57304	0.0012900	0.0	136.79E-6	33695.	-	0 (Negligible)

Structure: 2-4-3 | Sub-structure: 0

Vertical Offset from Line for Vertical	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category

Movement Calculations					Curve			
[m]	[%]	[%]	[mm]	[%]			[m]	[m]

Structure: 2-4-4 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	

Structure: 56-3-1 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	325.18E-6	0.0	-17.931E-6	0.13808	312.24E-6	0.0	-17.931E-6	-	169150.	0 (Negligible)

Structure: 56-3-2 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	355.30E-6	0.0	48.299E-6	0.22817	352.16E-6	0.0	48.299E-6	72667.	-	0 (Negligible)

Structure: 56-3-3 | Sub-structure: 0

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	76.178E-6	0.0	-4.3950E-6	0.22979	68.843E-6	0.0	-4.3950E-6	1.7168E+6	7.5710E+6	0 (Negligible)

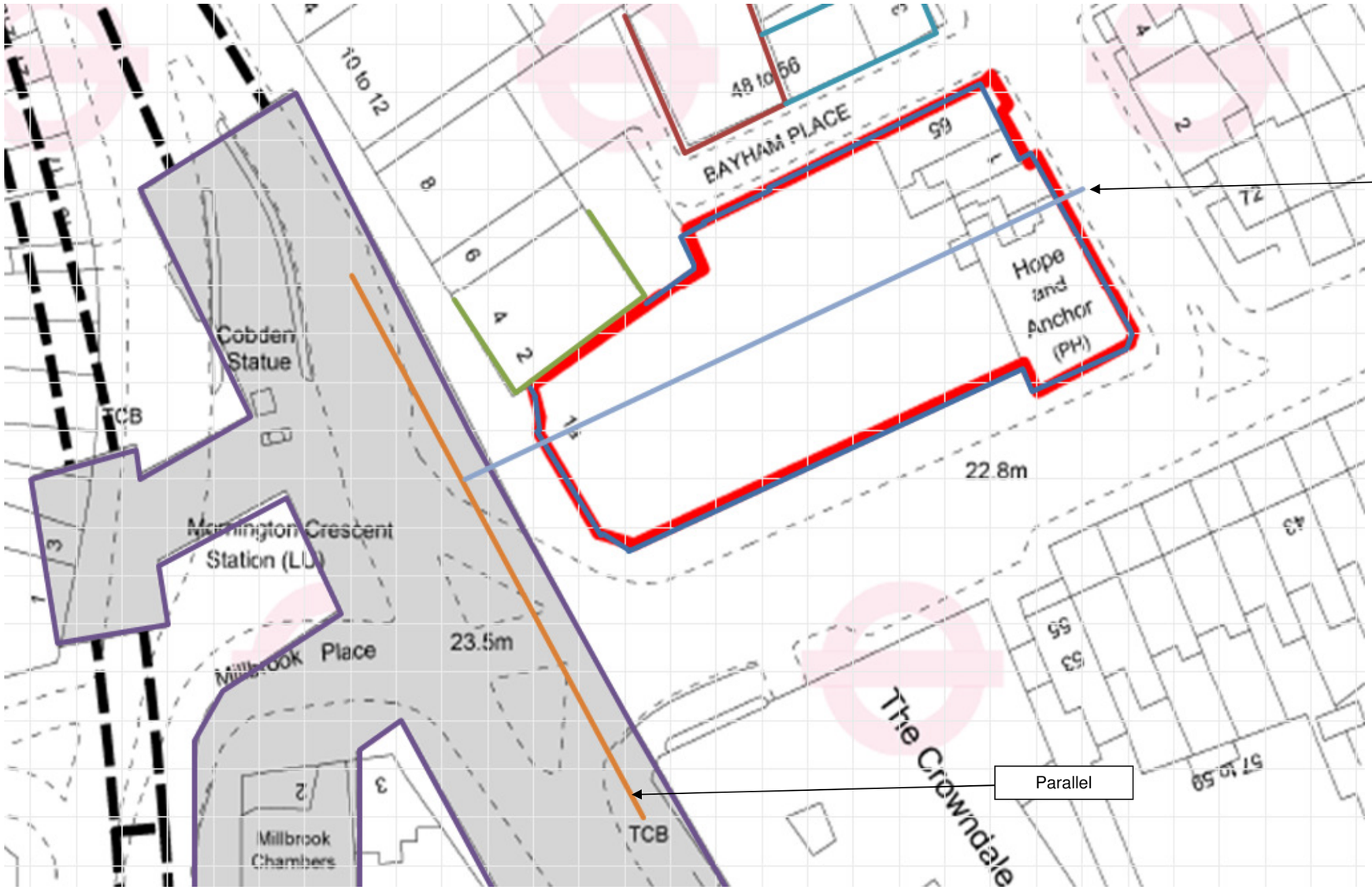
Specific Building Damage Results - Critical Segments within Each Structure

Structure Name	Parameter	Critical Sub-Structure	Critical Segment	Start	End	Curvature	Max Slope	Max Settlement	Max Tensile Strain	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
				[m]	[m]			[mm]	[%]	[m]	[m]	
48-1	Max Slope	0	1	0.0	13.665	Hogging	**17.386E-6**	0.14600	186.22E-6	288750.	-	0 (Negligible)
	Max Settlement	0	1	0.0	13.665	Hogging	17.386E-6	**0.14600**	186.22E-6	288750.	-	0 (Negligible)
	Max Tensile Strain	0	1	0.0	13.665	Hogging	17.386E-6	0.14600	**186.22E-6**	288750.	-	0 (Negligible)
	Min Radius of Curvature (Hogging)	0	1	0.0	13.665	Hogging	17.386E-6	0.14600	186.22E-6	**288750.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)			-	-	- -	-	-	-	-	-	- -
48-2	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
48-3	Max Slope	0	1	1.9080	15.263	Hogging	**49.763E-6**	0.20684	409.38E-6	97597.	-	0 (Negligible)
	Max Settlement	0	1	1.9080	15.263	Hogging	49.763E-6	**0.20684**	409.38E-6	97597.	-	0 (Negligible)
	Max Tensile Strain	0	1	1.9080	15.263	Hogging	49.763E-6	0.20684	**409.38E-6**	97597.	-	0 (Negligible)
	Min Radius of Curvature (Hogging)	0	1	1.9080	15.263	Hogging	49.763E-6	0.20684	409.38E-6	**97597.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)			-	-	- -	-	-	-	-	-	- -
48-4	Max Slope	0	1	0.0	6.5798	Hogging	**3.9287E-6**	0.17507	4.8280E-6	9.2336E+6	-	0 (Negligible)
	Max Settlement	0	1	0.0	6.5798	Hogging	3.9287E-6	**0.17507**	4.8280E-6	9.2336E+6	-	0 (Negligible)
	Max Tensile Strain	0	1	0.0	6.5798	Hogging	3.9287E-6	0.17507	**4.8280E-6**	9.2336E+6	-	0 (Negligible)
	Min Radius of Curvature (Hogging)	0	1	0.0	6.5798	Hogging	3.9287E-6	0.17507	4.8280E-6	**9.2336E+6**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	0	2	6.5798	12.999	Sagging	3.9287E-6	0.15006	2.8253E-6	-	**17.670E+6**	0 (Negligible)
2-4-1	Max Slope	0	1	6.4099	10.682	Hogging	**140.55E-6**	0.57290	0.0014919	31623.	-	0 (Negligible)
	Max Settlement	0	1	6.4099	10.682	Hogging	140.55E-6	**0.57290**	0.0014919	31623.	-	0 (Negligible)
	Max Tensile Strain	0	1	6.4099	10.682	Hogging	140.55E-6	0.57290	**0.0014919**	31623.	-	0 (Negligible)
	Min Radius of Curvature (Hogging)	0	1	6.4099	10.682	Hogging	140.55E-6	0.57290	0.0014919	**31623.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)			-	-	- -	-	-	-	-	-	- -
2-4-2	Max Slope	0	1	0.0	3.8595	Hogging	**136.79E-6**	0.57304	0.0012900	33695.	-	0 (Negligible)
	Max Settlement	0	1	0.0	3.8595	Hogging	136.79E-6	**0.57304**	0.0012900	33695.	-	0 (Negligible)
	Max Tensile Strain	0	1	0.0	3.8595	Hogging	136.79E-6	0.57304	**0.0012900**	33695.	-	0 (Negligible)
	Min Radius of Curvature (Hogging)	0	1	0.0	3.8595	Hogging	136.79E-6	0.57304	0.0012900	**33695.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)			-	-	- -	-	-	-	-	-	- -
2-4-3	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
2-4-4	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
56-3-1	Max Slope	0	1	12.056	16.074	Sagging	**17.931E-6**	0.13808	312.24E-6	-	169150.	0 (Negligible)
	Max Settlement	0	1	12.056	16.074	Sagging	17.931E-6	**0.13808**	312.24E-6	-	169150.	0 (Negligible)
	Max Tensile Strain	0	1	12.056	16.074	Sagging	17.931E-6	0.13808	**312.24E-6**	-	169150.	0 (Negligible)
	Min Radius of Curvature (Hogging)			-	-	- -	-	-	-	-	-	- -
	Min Radius of Curvature (Sagging)	0	1	12.056	16.074	Sagging	17.931E-6	0.13808	312.24E-6	-	**169150.**	0 (Negligible)
56-3-2	Max Slope	0	1	3.7366	7.4723	Hogging	**48.299E-6**	0.22817	352.16E-6	72667.	-	0 (Negligible)
	Max Settlement	0	1	3.7366	7.4723	Hogging	48.299E-6	**0.22817**	352.16E-6	72667.	-	0 (Negligible)

Structure Name	Parameter	Critical Sub-Structure	Critical Segment	Start	End	Curvature	Max Slope	Max Settlement	Max Tensile Strain	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
	Max Tensile Strain	0	1	3.7366	7.4723	Hogging	48.299E-6	0.22817	**352.16E-6**	72667.	- 0	(Negligible)
	Min Radius of Curvature (Hogging)	0	1	3.7366	7.4723	Hogging	48.299E-6	0.22817	352.16E-6	**72667.**	- 0	(Negligible)
	Min Radius of Curvature (Sagging)	-	-	-	-	-	-	-	-	-	-	-
56-3-3	Max Slope	0	2	4.5913	17.463	Hogging	**4.3950E-6**	0.22979	68.843E-6	1.7168E+6	- 0	(Negligible)
	Max Settlement	0	2	4.5913	17.463	Hogging	4.3950E-6	**0.22979**	68.843E-6	1.7168E+6	- 0	(Negligible)
	Max Tensile Strain	0	2	4.5913	17.463	Hogging	4.3950E-6	0.22979	**68.843E-6**	1.7168E+6	- 0	(Negligible)
	Min Radius of Curvature (Hogging)	0	2	4.5913	17.463	Hogging	4.3950E-6	0.22979	68.843E-6	**1.7168E+6**	- 0	(Negligible)
	Min Radius of Curvature (Sagging)	0	1	0.0	4.5913	Sagging	0.0	0.22891	6.0439E-6	- **7.5710E+6**	0	(Negligible)

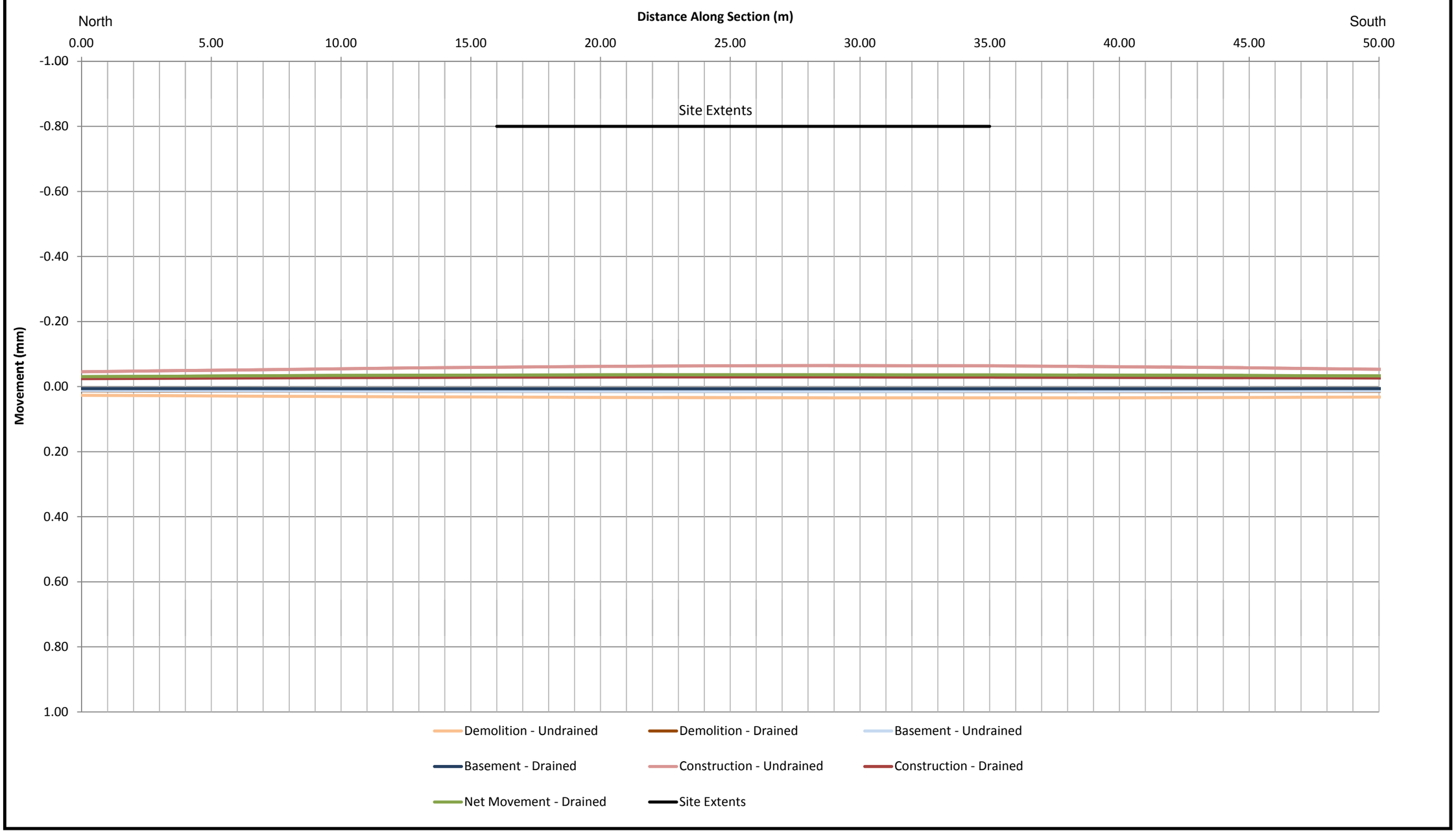
APPENDIX F
GROUND MOVEMENT OUTPUTS FOR LUL TUNNEL ASSESSMENT

Approximate North



RSK	**LUL ASSESSMENT LINE LOCATION PLAN**	**Client:**	The Hope Lease Limited	**Figure No:**	7
		Site:	The Hope Project	**Job No:**	371475
		Scale:	Not to scale	**Source:**	Client

RSK	Display: Ground Movement With Distance Along Tunnel Stages: Demolition / Basement Excavation / Construction Section Location: LUL Asset Alignment		
Site: The Hope Project	Client: The Hope Lease Limited	Job Number:	371475
		Figure:	8



RSK	Display: Ground Movement With Distance Perpendicular To Tunnel Stages: Demolition / Basement Excavation / Construction Section Location: Perpendicular to LUL Asset		
Site: The Hope Project	Client: The Hope Lease Limited	Job Number:	371475
		Figure:	9