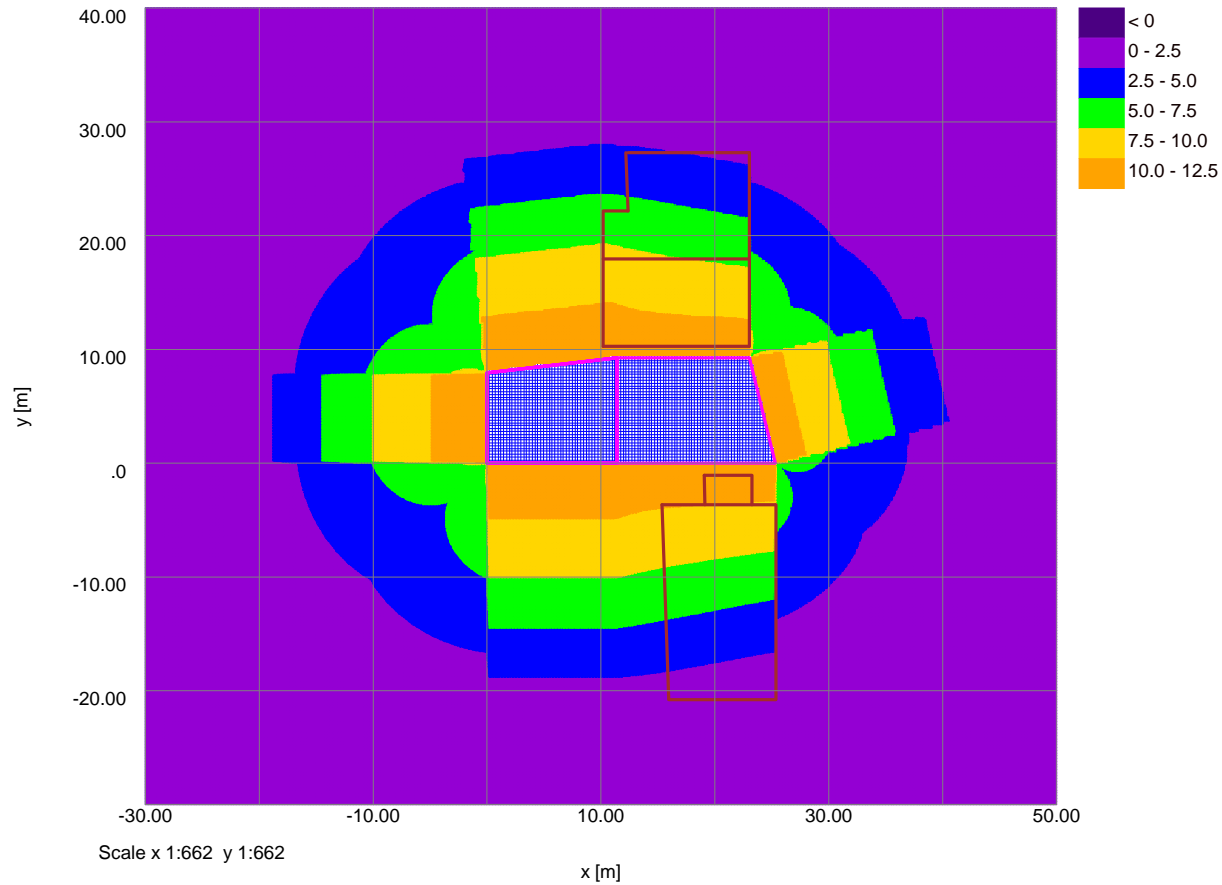


24 REDINGTON GARDENS

Ground Movement & Buildgin Damage Assessment
Excavation in Front of a Medium Stiffness Secant Pile Wall in Stiff Clay

| Job No. | Sheet No. | Rev. |
|---------------|---------------------|---------|
| 1248 | | |
| Drg. Ref. | | |
| Made by JB | Date 09-Nov-2015 | Checked |

Vertical Settlement Contours: Grid 1 (level 50.000m) (Interval 2.5mm)

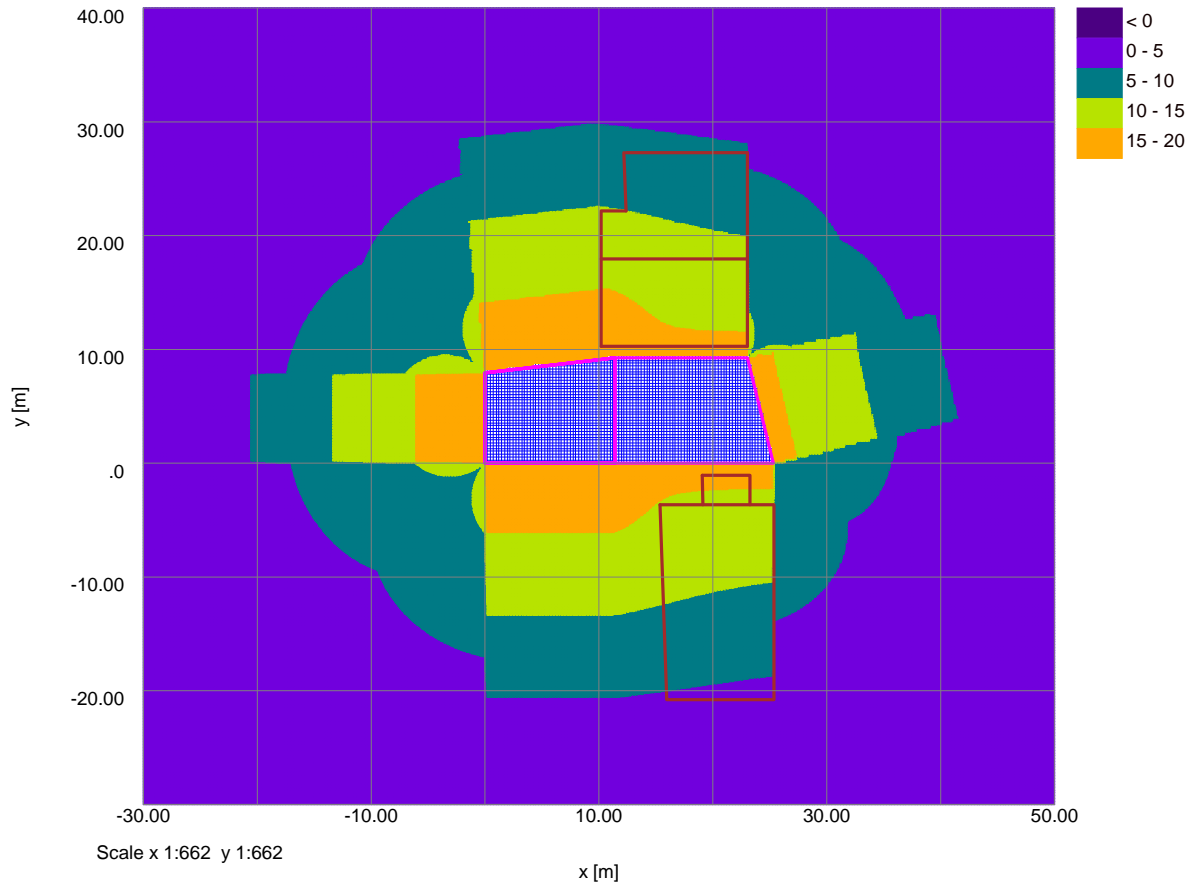


24 REDINGTON GARDENS

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Excavation in Front of a Medium Stiffness Secant Pile Wall in Stiff Clay

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Horizontal Displacement Contours: Grid 1 (level 50.000m) Interval 5mm





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| Job No. | Sheet No. | Rev. |
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| Made by JB | Date 09-Nov-2015 | Checked |

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 [m] | 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] | | | | | |
| Line No. 7 Wall A | | - | 25.40000 | -3.70000 | 50.00000 | 25.40000 | -20.80000 | 50.00000 | 17 | - | - | Yes | Surface |
| Line No. 7 Wall B | | - | 15.40000 | -3.70000 | 50.00000 | 16.00000 | -20.80000 | 50.00000 | 17 | - | - | Yes | Surface |
| Line No. 7 Wall C | | - | 15.40000 | -3.70000 | 50.00000 | 25.40000 | -3.70000 | 50.00000 | 10 | - | - | Yes | Surface |
| Line No. 7 Wall D | | - | 16.00000 | -20.80000 | 50.00000 | 25.40000 | -20.80000 | 50.00000 | 10 | - | - | Yes | Surface |
| Line No. 7 Wall E | | - | 19.10000 | -1.07500 | 50.00000 | 19.20000 | -3.70000 | 50.00000 | 4 | - | - | Yes | Surface |
| Line No. 7 Wall F | | - | 19.10000 | -1.07500 | 50.00000 | 23.30000 | -1.10000 | 50.00000 | 5 | - | - | Yes | Surface |
| Line No. 7 Wall G | | - | 23.30000 | -1.10000 | 50.00000 | 23.30000 | -3.70000 | 50.00000 | 4 | - | - | Yes | Surface |
| Line No. 25/26 Wall A | | - | 23.10000 | 10.30000 | 50.00000 | 23.10000 | 27.30000 | 50.00000 | 17 | - | - | Yes | Surface |
| Line No. 25/26 Wall B | | - | 10.20000 | 10.30000 | 50.00000 | 10.20000 | 22.20000 | 50.00000 | 12 | - | - | Yes | Surface |
| Line No. 25/26 Wall C | | - | 12.40000 | 22.20000 | 50.00000 | 12.20000 | 27.30000 | 50.00000 | 5 | - | - | Yes | Surface |
| Line No. 25/26 Wall D | | - | 10.20000 | 10.30000 | 50.00000 | 23.10000 | 10.30000 | 50.00000 | 13 | - | - | Yes | Surface |
| Line No. 25/26 Wall E | | - | 10.20000 | 18.00000 | 50.00000 | 23.10000 | 18.00000 | 50.00000 | 13 | - | - | Yes | Surface |
| Line No. 25/26 Wall F | | - | 10.20000 | 22.20000 | 50.00000 | 12.40000 | 22.20000 | 50.00000 | 3 | - | - | Yes | Surface |
| Line No. 25/26 Wall G | | - | 12.40000 | 27.30000 | 50.00000 | 23.10000 | 27.30000 | 50.00000 | 11 | - | - | Yes | Surface |

Vertical Ground Movement Curves

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

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-3x⁴ + 2.8495E-2x³ - 1.0051E-1x² + 1.0569E-1x + 3.8990E-2
Coeff. of Determination: 9.9991E-1

Curve Name: Excavation in front of medium 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)(%)]
 [0.000,0.000,0.192][0.100,0.000,0.188][0.200,0.000,0.184][0.300,0.000,0.178]
 [0.400,0.000,0.173][0.500,0.000,0.167][0.600,0.000,0.161][0.700,0.000,0.155]
 [0.800,0.000,0.148][0.900,0.000,0.142][1.000,0.000,0.135][1.100,0.000,0.129]
 [1.200,0.000,0.122][1.300,0.000,0.115][1.400,0.000,0.108][1.500,0.000,0.102]
 [1.600,0.000,0.095][1.700,0.000,0.089][1.800,0.000,0.083][1.900,0.000,0.077]
 [2.000,0.000,0.071][2.100,0.000,0.066][2.200,0.000,0.061][2.300,0.000,0.056]
 [2.400,0.000,0.051][2.500,0.000,0.047][2.600,0.000,0.042][2.700,0.000,0.039]
 [2.800,0.000,0.035][2.900,0.000,0.031][3.000,0.000,0.028][3.100,0.000,0.025]
 [3.200,0.000,0.021][3.300,0.000,0.019][3.400,0.000,0.016][3.500,0.000,0.014]
 [3.600,0.000,0.011][3.700,0.000,0.009][3.800,0.000,0.005][3.900,0.000,0.003]
 [4.000,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 3
y Order: 0
Polynomial: z = 1.8963E-3x³ - 4.6630E-3x² - 5.9625E-2x + 1.9598E-1
Coeff. of Determination: 9.9916E-1

Horizontal Ground Movement Curves

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: 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



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| Job No. | Sheet No. | Rev. |
| 1248 | | |
| Dr. Ref. | | |
| Made by JB | Date 09-Nov-2015 | Checked |

| 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 |
|--------------------------|---|------------------------|-------------------------------|--|-----------------|----------------------------------|-----------|--------------------------|
| Curve Name: | Excavation in front of medium 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)](%) | | | | | | | |
| Curve Fitting Method: | Polynomial | | | | | | | |
| x Order: | 1 | | | | | | | |
| y Order: | 0 | | | | | | | |
| Polynomial: | z = -6.98E-2x + 2.75E-1 | | | | | | | |
| Coeff. of Determination: | 1.00 | | | | | | | |

Polygonal Excavations

Excavation Name: GENERAL - FL=44.0
Surface level [m]: 50.000
Contribution: Positive
Enabled: Yes

| Corner | x | y | Base Level | Stiffened | Previous Side | Next Side | | | | |
|--------|--------|--------|------------|-----------|---------------|-----------|--------|-----|--------|--------|
| | [m] | [m] | [m] | | d | pl | p2* | d | pl | p2* |
| 1 | 0.0 | 0.0 | 44.000 | Yes | 0.0 | 67.000 | 25.000 | 0.0 | 67.000 | 25.000 |
| 2 | 0.0 | 8.0000 | 44.000 | Yes | 0.0 | 67.000 | 25.000 | 0.0 | 67.000 | 25.000 |
| 3 | 11.400 | 9.3000 | 44.000 | No | - | - | - | - | - | - |
| 4 | 23.100 | 9.3000 | 44.000 | Yes | 0.0 | 67.000 | 25.000 | 0.0 | 67.000 | 25.000 |
| 5 | 25.300 | 0.0 | 44.000 | 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 |
| 1 | 0.0 | 0.0 | 0.0 | 8.0000 | Excavation in front of medium stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b)) | Excavation in front of medium stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a)) |
| 2 | 0.0 | 8.0000 | 11.400 | 9.3000 | Excavation in front of medium stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b)) | Excavation in front of medium stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a)) |
| 3 | 11.400 | 9.3000 | 23.100 | 9.3000 | Excavation in front of medium stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b)) | Excavation in front of medium stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a)) |
| 4 | 23.100 | 9.3000 | 25.300 | 0.0 | Excavation in front of medium stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b)) | Excavation in front of medium stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a)) |
| 5 | 25.300 | 0.0 | 0.0 | 0.0 | Excavation in front of medium stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(b)) | Excavation in front of medium stiffness wall in stiff clay (CIRIA 580 Fig. 2.11(a)) |

Excavation Name: SWIMMING POOL - FL=42.2
Surface level [m]: 50.000
Contribution: Positive
Enabled: Yes

| Corner | x | y | Base Level | Stiffened | Previous Side | Next Side | | | | |
|--------|--------|--------|------------|-----------|---------------|-----------|--------|-----|--------|--------|
| | [m] | [m] | [m] | | d | pl | p2* | d | pl | p2* |
| 1 | 0.0 | 0.0 | 42.200 | Yes | 0.0 | 67.000 | 25.000 | 0.0 | 67.000 | 25.000 |
| 2 | 0.0 | 8.0000 | 42.200 | Yes | 0.0 | 67.000 | 25.000 | 0.0 | 67.000 | 25.000 |
| 3 | 11.400 | 9.3000 | 42.200 | No | - | - | - | - | - | - |
| 4 | 11.400 | 0.0 | 42.200 | No | - | - | - | - | - | - |

| Side | Corner 1 | | Corner 2 | | Ground Movement Curve | |
|------|----------|--------|----------|--------|---|---|
| | x | y | x | y | Vertical | Horizontal |
| 1 | 0.0 | 0.0 | 0.0 | 8.0000 | 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 | 0.0 | 8.0000 | 11.400 | 9.3000 | 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 | 11.400 | 9.3000 | 11.400 | 0.0 | No vertical ground movement | No horizontal ground movement |
| 4 | 11.400 | 0.0 | 0.0 | 0.0 | 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)) |

Excavation Name: NEG SWIMMING POOL
Surface level [m]: 50.000
Contribution: Negative
Enabled: Yes

| Corner | x | y | Base Level | Stiffened | Previous Side | Next Side | | | | |
|--------|--------|--------|------------|-----------|---------------|-----------|--------|-----|--------|--------|
| | [m] | [m] | [m] | | d | pl | p2* | d | pl | p2* |
| 1 | 0.0 | 0.0 | 44.000 | Yes | 0.0 | 67.000 | 25.000 | 0.0 | 67.000 | 25.000 |
| 2 | 0.0 | 8.0000 | 44.000 | Yes | 0.0 | 67.000 | 25.000 | 0.0 | 67.000 | 25.000 |
| 3 | 11.400 | 9.3000 | 44.000 | No | - | - | - | - | - | - |
| 4 | 11.400 | 0.0 | 44.000 | No | - | - | - | - | - | - |

| Side | Corner 1 | | Corner 2 | | Ground Movement Curve | |
|------|----------|--------|----------|--------|---|---|
| | x | y | x | y | Vertical | Horizontal |
| 1 | 0.0 | 0.0 | 0.0 | 8.0000 | 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 | 0.0 | 8.0000 | 11.400 | 9.3000 | 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 | 11.400 | 9.3000 | 11.400 | 0.0 | No vertical ground movement | No horizontal ground movement |
| 4 | 11.400 | 0.0 | 0.0 | 0.0 | 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)) |

Damage Category Strains

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

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 |
|----------------|--------------------|-------------------|---------------------------|-------------------------|---|---|-------------------------|-----------------|--------|
| No. 7 Wall A | No. 7 Wall A | No. 7 Wall A | 0.00000 | 17.10000 | 0.0 | 0.00100 | Burland Strain Limits | 0.20000 | 2.6000 |
| No. 7 Wall B | No. 7 Wall B | No. 7 Wall B | 0.00000 | 17.10000 | 0.0 | 0.00100 | Burland Strain Limits | 0.20000 | 2.6000 |
| No. 7 Wall C | No. 7 Wall C | No. 7 Wall C | 0.00000 | 9.90000 | 0.0 | 0.00100 | Burland Strain Limits | 0.20000 | 2.6000 |
| No. 7 Wall D | No. 7 Wall D | No. 7 Wall D | 0.00000 | 9.30000 | 0.0 | 0.00100 | Burland Strain Limits | 0.20000 | 2.6000 |
| No. 7 Wall E | No. 7 Wall E | No. 7 Wall E | 0.00000 | 2.60000 | 0.0 | 0.00100 | Burland Strain Limits | 0.20000 | 2.6000 |
| No. 7 Wall F | No. 7 Wall F | No. 7 Wall F | 0.00000 | 4.20000 | 0.0 | 0.00100 | Burland Strain Limits | 0.20000 | 2.6000 |
| No. 7 Wall G | No. 7 Wall G | No. 7 Wall G | 0.00000 | 2.60000 | 0.0 | 0.00100 | Burland Strain Limits | 0.20000 | 2.6000 |



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| Job No. | Sheet No. | Rev. |
| 1248 | | |
| Drg. Ref. | | |
| Made by JB | Date 09-Nov-2015 | Checked |

| 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 |
|------------------|--------------------|-------------------|---------------------------|-------------------------|---|---|-----------------------|---------|-----------------|-----|
| No. 25/26 Wall A | No. 25/26 Wall A | No. 25/26 Wall A | 0.00000 | 17.00000 | 0.0 | 0.00100 | Burland Strain Limits | 0.20000 | 2.6000 | |
| No. 25/26 Wall B | No. 25/26 Wall B | No. 25/26 Wall B | 0.00000 | 11.80000 | 0.0 | 0.00100 | Burland Strain Limits | 0.20000 | 2.6000 | |
| No. 25/26 Wall C | No. 25/26 Wall C | No. 25/26 Wall C | 0.00000 | 5.10000 | 0.0 | 0.00100 | Burland Strain Limits | 0.20000 | 2.6000 | |
| No. 25/26 Wall D | No. 25/26 Wall D | No. 25/26 Wall D | 0.00000 | 12.90000 | 0.0 | 0.00100 | Burland Strain Limits | 0.20000 | 2.6000 | |
| No. 25/26 Wall E | No. 25/26 Wall E | No. 25/26 Wall E | 0.00000 | 12.90000 | 0.0 | 0.00100 | Burland Strain Limits | 0.20000 | 2.6000 | |
| No. 25/26 Wall F | No. 25/26 Wall F | No. 25/26 Wall F | 0.00000 | 2.20000 | 0.0 | 0.00100 | Burland Strain Limits | 0.20000 | 2.6000 | |
| No. 25/26 Wall G | No. 25/26 Wall G | No. 25/26 Wall G | 0.00000 | 10.70000 | 0.0 | 0.00100 | Burland Strain Limits | 0.20000 | 2.6000 | |

Specific Structures - Bending Parameters

| Structure Name | Sub-Structure Name | Height [m] | Default Properties | Hogging | | | Sagging | | |
|------------------|--------------------|------------|--------------------|---|-----------------------------------|---|---|-----------------------------------|---|
| | | | | 2nd Moment of Area (per unit width) [m ³] | Distance of Bending from N.A. [m] | Distance of N.A. from Edge of Beam in Tension [m] | 2nd Moment of Area (per unit width) [m ³] | Distance of Bending from N.A. [m] | Distance of N.A. from Edge of Beam in Tension [m] |
| No. 7 Wall A | No. 7 Wall A | 7.0000 | Yes | 114.33 | 7.0000 | 7.0000 | 28.583 | 3.5000 | 3.5000 |
| No. 7 Wall B | No. 7 Wall B | 7.0000 | Yes | 114.33 | 7.0000 | 7.0000 | 28.583 | 3.5000 | 3.5000 |
| No. 7 Wall C | No. 7 Wall C | 7.0000 | Yes | 114.33 | 7.0000 | 7.0000 | 28.583 | 3.5000 | 3.5000 |
| No. 7 Wall D | No. 7 Wall D | 7.0000 | Yes | 114.33 | 7.0000 | 7.0000 | 28.583 | 3.5000 | 3.5000 |
| No. 7 Wall E | No. 7 Wall E | 3.0000 | Yes | 9.0000 | 3.0000 | 3.0000 | 2.2500 | 1.5000 | 1.5000 |
| No. 7 Wall F | No. 7 Wall F | 3.0000 | Yes | 9.0000 | 3.0000 | 3.0000 | 2.2500 | 1.5000 | 1.5000 |
| No. 7 Wall G | No. 7 Wall G | 3.0000 | Yes | 9.0000 | 3.0000 | 3.0000 | 2.2500 | 1.5000 | 1.5000 |
| No. 25/26 Wall A | No. 25/26 Wall A | 9.0000 | Yes | 243.00 | 9.0000 | 9.0000 | 60.750 | 4.5000 | 4.5000 |
| No. 25/26 Wall B | No. 25/26 Wall B | 9.0000 | Yes | 243.00 | 9.0000 | 9.0000 | 60.750 | 4.5000 | 4.5000 |
| No. 25/26 Wall C | No. 25/26 Wall C | 9.0000 | Yes | 243.00 | 9.0000 | 9.0000 | 60.750 | 4.5000 | 4.5000 |
| No. 25/26 Wall D | No. 25/26 Wall D | 9.0000 | Yes | 243.00 | 9.0000 | 9.0000 | 60.750 | 4.5000 | 4.5000 |
| No. 25/26 Wall E | No. 25/26 Wall E | 9.0000 | Yes | 243.00 | 9.0000 | 9.0000 | 60.750 | 4.5000 | 4.5000 |
| No. 25/26 Wall F | No. 25/26 Wall F | 9.0000 | Yes | 243.00 | 9.0000 | 9.0000 | 60.750 | 4.5000 | 4.5000 |
| No. 25/26 Wall G | No. 25/26 Wall G | 9.0000 | Yes | 243.00 | 9.0000 | 9.0000 | 60.750 | 4.5000 | 4.5000 |

Building Segment Combinations

| Structure Name | Sub-Structure Name | Vertical Offset from Line for Movement Calculations [m] | Segment Start [m] | Length [m] | Curvature [mm] | Combined Segment |
|---------------------------------------|--------------------|---|-------------------|------------|----------------|------------------|
| No structures have segments combined. | | | | | | |

Displacement and Strain Results

| Type/No. | Coordinates | | | Displacements | | | Angle of Line to x Axis [°] |
|---------------------|-------------|----------|-----------------------------|----------------|---|--|-----------------------------|
| | Name | Dist. | x y z | x y z | Horizontal displacement along the Line [mm] | Horizontal displacement perpendicular to Line [mm] | |
| No. 7 Wall Line 1 A | | | [m] [mm] | [mm] | [mm] | [mm] | 270.00 |
| | 1.0059 | 25.40000 | -4.70588 50.00000 -0.68825 | 7.7033 5.4056 | -7.7033 | -0.68825 | 270.00 |
| | 2.0118 | 25.40000 | -5.71176 50.00000 -0.74154 | 7.3930 5.1145 | -7.3930 | -0.74154 | 270.00 |
| | 3.0176 | 25.40000 | -6.71765 50.00000 -0.79385 | 7.0867 4.8124 | -7.0867 | -0.79385 | 270.00 |
| | 4.0235 | 25.40000 | -7.72353 50.00000 -0.84114 | 6.7832 4.5003 | -6.7832 | -0.84114 | 270.00 |
| | 5.0294 | 25.40000 | -8.72941 50.00000 -0.88164 | 6.4809 4.1792 | -6.4809 | -0.88164 | 270.00 |
| | 6.0353 | 25.40000 | -9.73529 50.00000 -0.91482 | 6.1786 3.8502 | -6.1786 | -0.91482 | 270.00 |
| | 7.0412 | 25.40000 | -10.74118 50.00000 -0.94080 | 5.8749 3.5147 | -5.8749 | -0.94080 | 270.00 |
| | 8.0471 | 25.40000 | -11.74706 50.00000 -0.96009 | 5.5688 3.1747 | -5.5688 | -0.96009 | 270.00 |
| | 9.0529 | 25.40000 | -12.75294 50.00000 -0.97336 | 5.2597 2.8331 | -5.2597 | -0.97336 | 270.00 |
| | 10.059 | 25.40000 | -13.75882 50.00000 -0.98135 | 4.9471 2.4935 | -4.9471 | -0.98135 | 270.00 |
| | 11.065 | 25.40000 | -14.76471 50.00000 -0.98483 | 4.6306 2.1602 | -4.6306 | -0.98483 | 270.00 |
| | 12.071 | 25.40000 | -15.77059 50.00000 -0.98447 | 4.3101 1.8391 | -4.3101 | -0.98447 | 270.00 |
| | 13.076 | 25.40000 | -16.77647 50.00000 -0.98092 | 3.9856 1.5366 | -3.9856 | -0.98092 | 270.00 |
| | 14.082 | 25.40000 | -17.78235 50.00000 -0.97474 | 3.6572 1.2607 | -3.6572 | -0.97474 | 270.00 |
| | 15.088 | 25.40000 | -18.78824 50.00000 -0.96644 | 3.3248 1.0206 | -3.3248 | -0.96644 | 270.00 |
| | 16.094 | 25.40000 | -19.79412 50.00000 -0.92419 | 2.9433 0.8173 | -2.9433 | -0.92419 | 270.00 |
| | 17.100 | 25.40000 | -20.80000 50.00000 -0.80515 | 2.4415 0.62353 | -2.4415 | -0.80515 | 270.00 |
| No. 7 Wall Line 2 B | | | [m] [mm] | [mm] | [mm] | [mm] | 272.01 |
| | 1.0065 | 15.43529 | -4.70588 50.00000 -0.96445 | 14.389 9.6674 | -14.414 | -0.45927 | 272.01 |
| | 2.0130 | 15.47059 | -5.71176 50.00000 -0.94931 | 13.905 9.1971 | -13.900 | -0.46112 | 272.01 |
| | 3.0195 | 15.50588 | -6.71765 50.00000 -0.91629 | 13.381 8.7187 | -13.405 | -0.44651 | 272.01 |
| | 4.0260 | 15.54118 | -7.72353 50.00000 -0.87610 | 12.824 8.2298 | -12.847 | -0.42587 | 272.01 |
| | 5.0325 | 15.57647 | -8.72941 50.00000 -0.83423 | 12.242 7.7282 | -12.264 | -0.40443 | 272.01 |
| | 6.0390 | 15.61176 | -9.73529 50.00000 -0.79339 | 11.641 7.2124 | -11.662 | -0.38471 | 272.01 |
| | 7.0455 | 15.64706 | -10.74118 50.00000 -0.75481 | 11.024 6.6817 | -11.044 | -0.36776 | 272.01 |
| | 8.0520 | 15.68235 | -11.74706 50.00000 -0.71895 | 10.396 6.1367 | -10.415 | -0.35396 | 272.01 |
| | 9.0585 | 15.71765 | -12.75294 50.00000 -0.68590 | 9.7583 5.5792 | -9.7763 | -0.34329 | 272.01 |
| | 10.065 | 15.75294 | -13.75882 50.00000 -0.65556 | 9.1129 5.0124 | -9.1303 | -0.33560 | 272.01 |
| | 11.072 | 15.78824 | -14.76471 50.00000 -0.62774 | 8.4614 4.4412 | -8.4792 | -0.33065 | 272.01 |
| | 12.078 | 15.82353 | -15.77059 50.00000 -0.60224 | 7.8048 3.8717 | -7.8211 | -0.32819 | 272.01 |
| | 13.085 | 15.85882 | -16.77647 50.00000 -0.57883 | 7.1441 3.3117 | -7.1600 | -0.32796 | 272.01 |
| | 14.091 | 15.89412 | -17.78235 50.00000 -0.55731 | 6.4798 2.7705 | -6.4954 | -0.32975 | 272.01 |
| | 15.098 | 15.92941 | -18.78824 50.00000 -0.53748 | 5.8126 2.2590 | -5.8279 | -0.33333 | 272.01 |
| | 16.104 | 15.96471 | -19.79412 50.00000 -0.51918 | 5.1429 1.7896 | -5.1579 | -0.33852 | 272.01 |
| | 17.111 | 16.00000 | -20.80000 50.00000 -0.50224 | 4.4710 1.3763 | -4.4859 | -0.34515 | 272.01 |
| No. 7 Wall Line 3 C | | | [m] [mm] | [mm] | [mm] | [mm] | 0.0 |
| | 1.0000 | 16.40000 | -3.70000 50.00000 -0.88024 | 14.608 10.089 | -0.88024 | 14.608 | 0.0 |
| | 2.0000 | 17.40000 | -3.70000 50.00000 -0.80846 | 14.455 10.055 | -0.80846 | 14.455 | 0.0 |
| | 3.0000 | 18.40000 | -3.70000 50.00000 -0.73892 | 14.347 10.025 | -0.73892 | 14.347 | 0.0 |
| | 4.0000 | 19.40000 | -3.70000 50.00000 -0.67583 | 14.269 9.9953 | -0.67583 | 14.269 | 0.0 |
| | 5.0000 | 20.40000 | -3.70000 50.00000 -0.62009 | 14.211 9.9651 | -0.62009 | 14.211 | 0.0 |
| | 6.0000 | 21.40000 | -3.70000 50.00000 -0.57128 | 14.168 9.9333 | -0.57128 | 14.168 | 0.0 |
| | 7.0000 | 22.40000 | -3.70000 50.00000 -0.52863 | 14.134 9.8998 | -0.52863 | 14.134 | 0.0 |
| | 8.0000 | 23.40000 | -3.70000 50.00000 -0.49127 | 14.108 9.8645 | -0.49127 | 14.108 | 0.0 |
| | 9.0000 | 24.40000 | -3.70000 50.00000 -0.45841 | 14.087 9.8277 | -0.45841 | 14.087 | 0.0 |
| | 10.000 | 25.40000 | -3.70000 50.00000 -0.43000 | 8.0174 5.6839 | -0.43000 | 8.0174 | 0.0 |
| | 11.000 | 26.40000 | -3.70000 50.00000 -0.40224 | 4.4710 1.3763 | -0.40224 | 4.4710 | 0.0 |
| No. 7 Wall Line 4 D | | | [m] [mm] | [mm] | [mm] | [mm] | 0.0 |
| | 0.94000 | 16.94000 | -20.80000 50.00000 -0.57975 | 4.3767 1.3247 | -0.57975 | 4.3767 | 0.0 |
| | 1.88000 | 17.88000 | -20.80000 50.00000 -0.64868 | 4.2822 1.2719 | -0.64868 | 4.2822 | 0.0 |
| | 2.82000 | 18.82000 | -20.80000 50.00000 -0.70928 | 4.1883 1.2193 | -0.70928 | 4.1883 | 0.0 |
| | 3.76000 | 19.76000 | -20.80000 50.00000 -0.76193 | 4.0957 1.1686 | -0.76193 | 4.0957 | 0.0 |
| | 4.70000 | 20.70000 | -20.80000 50.00000 -0.80708 | 4.0051 1.1214 | -0.80708 | 4.0051 | 0.0 |
| | 5.64000 | 21.64000 | -20.80000 50.00000 -0.84523 | 3.9169 1.0796 | -0.84523 | 3.9169 | 0.0 |
| | 6.58000 | 22.58000 | -20.80000 50.00000 -0.87694 | 3.8315 1.0451 | -0.87694 | 3.8315 | 0.0 |
| | 7.52000 | 23.52000 | -20.80000 50.00000 -0.89355 | 3.7335 1.0195 | -0.89355 | 3.7335 | 0.0 |
| | 8.46000 | 24.46000 | -20.80000 50.00000 -0.85144 | 3.5560 0.97672 | -0.85144 | 3.5560 | 0.0 |
| | 9.40000 | 25.40000 | -20.80000 50.00000 -0.80515 | 2.4415 0.62353 | -0.80515 | 2.4415 | 0.0 |



BYLAND ENGINEERING LTD

24 REDINGTON GARDENS Ground Movement & Buildign Damage Assessment Excavation in Front of a Medium Stiffness Secant Pile Wall in Stiff Clay

Job No. 1248, Sheet No., Rev., Drg. Ref., Made by JB, Date 09-Nov-2015, Checked

Main data table with columns: Type/No., Coordinates (x, y, z), Displacements (Horizontal, Vertical), Angle of Line to x Axis. Contains multiple rows for different wall sections (A, B, C, D, E, F).

Specific Building Damage Results - Horizontal Displacements

Structure: No. 7 Wall A | Sub-structure: No. 7 Wall A

Table showing horizontal displacements for No. 7 Wall A, including columns for Dist., Coordinates (x, y, z), Displacements (Horizontal, Vertical), and Angle of Line to Line.



BYLAND ENGINEERING LTD

24 REDINGTON GARDENS

Ground Movement & Buildgin Damage Assessment

Excavation in Front of a Medium Stiffness Secant Pile Wall in Stiff Clay

| | | |
|---------------|---------------------|---------|
| Job No. | Sheet No. | Rev. |
| 1248 | | |
| Drg. Ref. | | |
| Made by JB | Date 09-Nov-2015 | Checked |

| Dist. | Coordinates | | | Displacements | | |
|--------|-------------|-----------|----------|---------------|-----------------------------------|---------------------------------------|
| x | y | z | x | y | Horizontal displacement along the | Horizontal displacement perpendicular |
| 12.071 | 25.40000 | -15.77059 | 50.00000 | -0.98447 | 4.3101 | -0.98447 |
| 13.076 | 25.40000 | -16.77647 | 50.00000 | -0.98092 | 3.9856 | -0.98092 |
| 14.082 | 25.40000 | -17.78235 | 50.00000 | -0.97474 | 3.6572 | -0.97474 |
| 15.088 | 25.40000 | -18.78824 | 50.00000 | -0.96644 | 3.3248 | -0.96644 |
| 16.094 | 25.40000 | -19.79412 | 50.00000 | -0.92419 | 2.9433 | -0.92419 |
| 17.100 | 25.40000 | -20.80000 | 50.00000 | -0.80515 | 2.4415 | -0.80515 |

Structure: No. 7 Wall B | Sub-structure: No. 7 Wall B

| Dist. | Coordinates | | | Displacements | | |
|--------|-------------|-----------|----------|---------------|-----------------------------------|---------------------------------------|
| x | y | z | x | y | Horizontal displacement along the | Horizontal displacement perpendicular |
| [m] | [m] | [m] | [mm] | [mm] | Line to Line | to Line |
| 0.0 | 15.40000 | -3.70000 | 50.00000 | -0.94190 | 14.828 | -0.42137 |
| 1.0065 | 15.43529 | -4.70588 | 50.00000 | -0.96445 | 14.389 | -0.45927 |
| 2.0130 | 15.47059 | -5.71176 | 50.00000 | -0.94931 | 13.905 | -0.46112 |
| 3.0195 | 15.50588 | -6.71765 | 50.00000 | -0.91629 | 13.381 | -0.44651 |
| 4.0260 | 15.54118 | -7.72353 | 50.00000 | -0.87610 | 12.824 | -0.42587 |
| 5.0325 | 15.57647 | -8.72941 | 50.00000 | -0.83423 | 12.242 | -0.40443 |
| 6.0390 | 15.61176 | -9.73529 | 50.00000 | -0.79339 | 11.641 | -0.38471 |
| 7.0455 | 15.64706 | -10.74118 | 50.00000 | -0.75481 | 11.024 | -0.36776 |
| 8.0520 | 15.68235 | -11.74706 | 50.00000 | -0.71895 | 10.396 | -0.35396 |
| 9.0585 | 15.71765 | -12.75294 | 50.00000 | -0.68590 | 9.7583 | -0.34329 |
| 10.065 | 15.75294 | -13.75882 | 50.00000 | -0.65556 | 9.1129 | -0.33560 |
| 11.072 | 15.78824 | -14.76471 | 50.00000 | -0.62774 | 8.4614 | -0.33065 |
| 12.078 | 15.82353 | -15.77059 | 50.00000 | -0.60224 | 7.8048 | -0.32819 |
| 13.085 | 15.85882 | -16.77647 | 50.00000 | -0.57883 | 7.1441 | -0.32796 |
| 14.091 | 15.89412 | -17.78235 | 50.00000 | -0.55731 | 6.4798 | -0.32975 |
| 15.098 | 15.92941 | -18.78824 | 50.00000 | -0.53748 | 5.8126 | -0.33233 |
| 16.104 | 15.96471 | -19.79412 | 50.00000 | -0.51918 | 5.1429 | -0.33852 |
| 17.111 | 16.00000 | -20.80000 | 50.00000 | -0.50224 | 4.4710 | -0.34515 |

Structure: No. 7 Wall C | Sub-structure: No. 7 Wall C

| Dist. | Coordinates | | | Displacements | | |
|--------|-------------|----------|----------|---------------|-----------------------------------|---------------------------------------|
| x | y | z | x | y | Horizontal displacement along the | Horizontal displacement perpendicular |
| [m] | [m] | [m] | [mm] | [mm] | Line to Line | to Line |
| 0.0 | 15.40000 | -3.70000 | 50.00000 | -0.94190 | 14.828 | 14.828 |
| 1.0000 | 16.40000 | -3.70000 | 50.00000 | -0.88024 | 14.608 | 14.608 |
| 2.0000 | 17.40000 | -3.70000 | 50.00000 | -0.80846 | 14.455 | 14.455 |
| 3.0000 | 18.40000 | -3.70000 | 50.00000 | -0.73892 | 14.347 | 14.347 |
| 4.0000 | 19.40000 | -3.70000 | 50.00000 | -0.67583 | 14.269 | 14.269 |
| 5.0000 | 20.40000 | -3.70000 | 50.00000 | -0.62009 | 14.211 | 14.211 |
| 6.0000 | 21.40000 | -3.70000 | 50.00000 | -0.57128 | 14.168 | 14.168 |
| 7.0000 | 22.40000 | -3.70000 | 50.00000 | -0.52863 | 14.134 | 14.134 |
| 8.0000 | 23.40000 | -3.70000 | 50.00000 | -0.49127 | 14.108 | 14.108 |
| 9.0000 | 24.40000 | -3.70000 | 50.00000 | -0.45841 | 14.087 | 14.087 |
| 10.000 | 25.40000 | -3.70000 | 50.00000 | -0.64300 | 8.0174 | 8.0174 |

Structure: No. 7 Wall D | Sub-structure: No. 7 Wall D

| Dist. | Coordinates | | | Displacements | | |
|---------|-------------|-----------|----------|---------------|-----------------------------------|---------------------------------------|
| x | y | z | x | y | Horizontal displacement along the | Horizontal displacement perpendicular |
| [m] | [m] | [m] | [mm] | [mm] | Line to Line | to Line |
| 0.0 | 16.00000 | -20.80000 | 50.00000 | -0.50224 | 4.4710 | 4.4710 |
| 0.94000 | 16.94000 | -20.80000 | 50.00000 | -0.57975 | 4.3767 | 4.3767 |
| 1.88000 | 17.88000 | -20.80000 | 50.00000 | -0.64868 | 4.2822 | 4.2822 |
| 2.82000 | 18.82000 | -20.80000 | 50.00000 | -0.70928 | 4.1883 | 4.1883 |
| 3.76000 | 19.76000 | -20.80000 | 50.00000 | -0.76193 | 4.0957 | 4.0957 |
| 4.70000 | 20.70000 | -20.80000 | 50.00000 | -0.80708 | 4.0051 | 4.0051 |
| 5.64000 | 21.64000 | -20.80000 | 50.00000 | -0.84523 | 3.9169 | 3.9169 |
| 6.58000 | 22.58000 | -20.80000 | 50.00000 | -0.87694 | 3.8315 | 3.8315 |
| 7.52000 | 23.52000 | -20.80000 | 50.00000 | -0.89355 | 3.7335 | 3.7335 |
| 8.46000 | 24.46000 | -20.80000 | 50.00000 | -0.85144 | 3.5660 | 3.5660 |
| 9.40000 | 25.40000 | -20.80000 | 50.00000 | -0.80515 | 2.4415 | 2.4415 |

Structure: No. 7 Wall E | Sub-structure: No. 7 Wall E

| Dist. | Coordinates | | | Displacements | | |
|---------|-------------|----------|----------|---------------|-----------------------------------|---------------------------------------|
| x | y | z | x | y | Horizontal displacement along the | Horizontal displacement perpendicular |
| [m] | [m] | [m] | [mm] | [mm] | Line to Line | to Line |
| 0.0 | 19.10000 | -1.07500 | 50.00000 | -0.23614 | 15.794 | 0.36527 |
| 0.65673 | 19.12500 | -1.73125 | 50.00000 | -0.36978 | 15.393 | 0.21645 |
| 1.3135 | 19.15000 | -2.38750 | 50.00000 | -0.49090 | 15.010 | 0.080844 |
| 1.9702 | 19.17500 | -3.04375 | 50.00000 | -0.59724 | 14.641 | -0.039454 |
| 2.6269 | 19.20000 | -3.70000 | 50.00000 | -0.68787 | 14.283 | -0.14366 |

Structure: No. 7 Wall F | Sub-structure: No. 7 Wall F

| Dist. | Coordinates | | | Displacements | | |
|---------|-------------|----------|----------|---------------|-----------------------------------|---------------------------------------|
| x | y | z | x | y | Horizontal displacement along the | Horizontal displacement perpendicular |
| [m] | [m] | [m] | [mm] | [mm] | Line to Line | to Line |
| 0.0 | 19.10000 | -1.07500 | 50.00000 | -0.23614 | 15.794 | -0.33015 |
| 0.84001 | 19.94000 | -1.08000 | 50.00000 | -0.23452 | 15.785 | -0.30847 |
| 1.6800 | 20.78000 | -1.08500 | 50.00000 | -0.19663 | 15.777 | -0.29054 |
| 2.5200 | 21.62000 | -1.09000 | 50.00000 | -0.18160 | 15.770 | -0.27547 |
| 3.3601 | 22.46000 | -1.09500 | 50.00000 | -0.16880 | 15.764 | -0.26263 |
| 4.2001 | 23.30000 | -1.10000 | 50.00000 | -0.15776 | 15.758 | -0.25156 |

Structure: No. 7 Wall G | Sub-structure: No. 7 Wall G

| Dist. | Coordinates | | | Displacements | | |
|---------|-------------|----------|----------|---------------|-----------------------------------|---------------------------------------|
| x | y | z | x | y | Horizontal displacement along the | Horizontal displacement perpendicular |
| [m] | [m] | [m] | [mm] | [mm] | Line to Line | to Line |
| 0.0 | 23.30000 | -1.10000 | 50.00000 | -0.15776 | 15.758 | -0.15776 |
| 0.65000 | 23.30000 | -1.75000 | 50.00000 | -0.24831 | 15.333 | -0.24831 |
| 1.3000 | 23.30000 | -2.40000 | 50.00000 | -0.33532 | 14.918 | -0.33532 |
| 1.9500 | 23.30000 | -3.05000 | 50.00000 | -0.41776 | 14.510 | -0.41776 |
| 2.6000 | 23.30000 | -3.70000 | 50.00000 | -0.49479 | 14.110 | -0.49479 |

Structure: No. 25/26 Wall A | Sub-structure: No. 25/26 Wall A

| Dist. | Coordinates | | | Displacements | | |
|---------|-------------|----------|----------|---------------|-----------------------------------|---------------------------------------|
| x | y | z | x | y | Horizontal displacement along the | Horizontal displacement perpendicular |
| [m] | [m] | [m] | [mm] | [mm] | Line to Line | to Line |
| 0.0 | 23.30000 | -1.10000 | 50.00000 | -0.15776 | 15.758 | -0.15776 |
| 0.65000 | 23.30000 | -1.75000 | 50.00000 | -0.24831 | 15.333 | -0.24831 |
| 1.3000 | 23.30000 | -2.40000 | 50.00000 | -0.33532 | 14.918 | -0.33532 |
| 1.9500 | 23.30000 | -3.05000 | 50.00000 | -0.41776 | 14.510 | -0.41776 |
| 2.6000 | 23.30000 | -3.70000 | 50.00000 | -0.49479 | 14.110 | -0.49479 |



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24 REDINGTON GARDENS

Ground Movement & Buildgin Damage Assessment

Excavation in Front of a Medium Stiffness Secant Pile Wall in Stiff Clay

| | | |
|---------------|---------------------|---------|
| Job No. | Sheet No. | Rev. |
| 1248 | | |
| Drg. Ref. | | |
| Made by JB | Date 09-Nov-2015 | Checked |

| [m] | [m] | [m] | [m] | [mm] | [mm] | [mm] | [mm] |
|---------|----------|----------|----------|----------|---------|---------|---------|
| 0.0 | 23.10000 | 10.30000 | 50.00000 | -0.13618 | -11.378 | -11.378 | 0.13618 |
| 1.0000 | 23.10000 | 11.30000 | 50.00000 | -0.26751 | -10.918 | -10.918 | 0.26751 |
| 2.0000 | 23.10000 | 12.30000 | 50.00000 | -0.38975 | -10.478 | -10.478 | 0.38975 |
| 3.0000 | 23.10000 | 13.30000 | 50.00000 | -0.49967 | -10.054 | -10.054 | 0.49967 |
| 4.0000 | 23.10000 | 14.30000 | 50.00000 | -0.59531 | -9.6437 | -9.6437 | 0.59531 |
| 5.0000 | 23.10000 | 15.30000 | 50.00000 | -0.67589 | -9.2418 | -9.2418 | 0.67589 |
| 6.0000 | 23.10000 | 16.30000 | 50.00000 | -0.74167 | -8.8447 | -8.8447 | 0.74167 |
| 7.0000 | 23.10000 | 17.30000 | 50.00000 | -0.79361 | -8.4494 | -8.4494 | 0.79361 |
| 8.0000 | 23.10000 | 18.30000 | 50.00000 | -0.83311 | -8.0535 | -8.0535 | 0.83311 |
| 9.0000 | 23.10000 | 19.30000 | 50.00000 | -0.86178 | -7.6550 | -7.6550 | 0.86178 |
| 10.0000 | 23.10000 | 20.30000 | 50.00000 | -0.88126 | -7.2528 | -7.2528 | 0.88126 |
| 11.0000 | 23.10000 | 21.30000 | 50.00000 | -0.89307 | -6.8461 | -6.8461 | 0.89307 |
| 12.0000 | 23.10000 | 22.30000 | 50.00000 | -0.89861 | -6.4344 | -6.4344 | 0.89861 |
| 13.0000 | 23.10000 | 23.30000 | 50.00000 | -0.89910 | -6.0176 | -6.0176 | 0.89910 |
| 14.0000 | 23.10000 | 24.30000 | 50.00000 | -0.89556 | -5.5957 | -5.5957 | 0.89556 |
| 15.0000 | 23.10000 | 25.30000 | 50.00000 | -0.88887 | -5.1689 | -5.1689 | 0.88887 |
| 16.0000 | 23.10000 | 26.30000 | 50.00000 | -0.87973 | -4.7375 | -4.7375 | 0.87973 |
| 17.0000 | 23.10000 | 27.30000 | 50.00000 | -0.86874 | -4.3016 | -4.3016 | 0.86874 |

Structure: No. 25/26 Wall B | Sub-structure: No. 25/26 Wall B

| 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 | 10.20000 | 10.30000 | 50.00000 | 2.0874 | -18.305 | -18.305 | -2.0874 |
| 0.99167 | 10.20000 | 11.29167 | 50.00000 | 2.0106 | -17.632 | -17.632 | -2.0106 |
| 1.98333 | 10.20000 | 12.28333 | 50.00000 | 1.9339 | -16.959 | -16.959 | -1.9339 |
| 2.97500 | 10.20000 | 13.27500 | 50.00000 | 1.8571 | -16.286 | -16.286 | -1.8571 |
| 3.96667 | 10.20000 | 14.26667 | 50.00000 | 1.7804 | -15.613 | -15.613 | -1.7804 |
| 4.95833 | 10.20000 | 15.25833 | 50.00000 | 1.7037 | -14.940 | -14.940 | -1.7037 |
| 5.95000 | 10.20000 | 16.25000 | 50.00000 | 1.6269 | -14.267 | -14.267 | -1.6269 |
| 6.94167 | 10.20000 | 17.24167 | 50.00000 | 1.5502 | -13.594 | -13.594 | -1.5502 |
| 7.93333 | 10.20000 | 18.23333 | 50.00000 | 1.4734 | -12.921 | -12.921 | -1.4734 |
| 8.92500 | 10.20000 | 19.22500 | 50.00000 | 1.3967 | -12.248 | -12.248 | -1.3967 |
| 9.91667 | 10.20000 | 20.21667 | 50.00000 | 1.2722 | -11.573 | -11.573 | -1.2722 |
| 10.90833 | 10.20000 | 21.20833 | 50.00000 | 1.0979 | -10.895 | -10.895 | -1.0979 |
| 11.90000 | 10.20000 | 22.20000 | 50.00000 | 0.95028 | -10.216 | -10.216 | -0.95028 |

Structure: No. 25/26 Wall C | Sub-structure: No. 25/26 Wall C

| 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 | 12.40000 | 22.20000 | 50.00000 | -0.18502 | -10.018 | -10.003 | 0.57745 |
| 1.0208 | 12.36000 | 23.22000 | 50.00000 | -0.16565 | -9.3319 | -9.3182 | 0.53120 |
| 2.0416 | 12.32000 | 24.24000 | 50.00000 | -0.14870 | -8.6436 | -8.6311 | 0.48729 |
| 3.0624 | 12.28000 | 25.26000 | 50.00000 | -0.13376 | -7.9535 | -7.9422 | 0.44532 |
| 4.0831 | 12.24000 | 26.28000 | 50.00000 | -0.12050 | -7.2620 | -7.2517 | 0.40497 |
| 5.1039 | 12.20000 | 27.30000 | 50.00000 | -0.10864 | -6.5694 | -6.5601 | 0.36598 |

Structure: No. 25/26 Wall D | Sub-structure: No. 25/26 Wall D

| 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 | 10.20000 | 10.30000 | 50.00000 | 2.0874 | -18.305 | 2.0874 | -18.305 |
| 0.99231 | 11.19231 | 10.30000 | 50.00000 | 2.0961 | -18.382 | 2.0961 | -18.382 |
| 1.9846 | 12.18462 | 10.30000 | 50.00000 | -0.89601 | -16.954 | -0.89601 | -16.954 |
| 2.9769 | 13.17692 | 10.30000 | 50.00000 | -0.71608 | -16.215 | -0.71608 | -16.215 |
| 3.9692 | 14.16923 | 10.30000 | 50.00000 | -0.52248 | -16.001 | -0.52248 | -16.001 |
| 4.9615 | 15.16154 | 10.30000 | 50.00000 | -0.40254 | -15.920 | -0.40254 | -15.920 |
| 5.9538 | 16.15385 | 10.30000 | 50.00000 | -0.32524 | -15.881 | -0.32524 | -15.881 |
| 6.9462 | 17.14615 | 10.30000 | 50.00000 | -0.27211 | -15.860 | -0.27211 | -15.860 |
| 7.9385 | 18.13846 | 10.30000 | 50.00000 | -0.23361 | -15.847 | -0.23361 | -15.847 |
| 8.9308 | 19.13077 | 10.30000 | 50.00000 | -0.20450 | -15.839 | -0.20450 | -15.839 |
| 9.9231 | 20.12308 | 10.30000 | 50.00000 | -0.18178 | -15.833 | -0.18178 | -15.833 |
| 10.915 | 21.11538 | 10.30000 | 50.00000 | -0.16355 | -15.829 | -0.16355 | -15.829 |
| 11.908 | 22.10769 | 10.30000 | 50.00000 | -0.14863 | -15.826 | -0.14863 | -15.826 |
| 12.900 | 23.10000 | 10.30000 | 50.00000 | -0.13618 | -11.378 | -0.13618 | -11.378 |

Structure: No. 25/26 Wall E | Sub-structure: No. 25/26 Wall E

| 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 | 10.20000 | 18.00000 | 50.00000 | 1.4915 | -13.079 | 1.4915 | -13.079 |
| 0.99231 | 11.19231 | 18.00000 | 50.00000 | 0.31201 | -13.070 | 0.31201 | -13.070 |
| 1.9846 | 12.18462 | 18.00000 | 50.00000 | -0.21322 | -12.883 | -0.21322 | -12.883 |
| 2.9769 | 13.17692 | 18.00000 | 50.00000 | -0.43925 | -12.669 | -0.43925 | -12.669 |
| 3.9692 | 14.16923 | 18.00000 | 50.00000 | -0.61390 | -12.447 | -0.61390 | -12.447 |
| 4.9615 | 15.16154 | 18.00000 | 50.00000 | -0.73967 | -12.230 | -0.73967 | -12.230 |
| 5.9538 | 16.15385 | 18.00000 | 50.00000 | -0.82299 | -12.025 | -0.82299 | -12.025 |
| 6.9462 | 17.14615 | 18.00000 | 50.00000 | -0.87204 | -11.839 | -0.87204 | -11.839 |
| 7.9385 | 18.13846 | 18.00000 | 50.00000 | -0.89499 | -11.674 | -0.89499 | -11.674 |
| 8.9308 | 19.13077 | 18.00000 | 50.00000 | -0.89901 | -11.530 | -0.89901 | -11.530 |
| 9.9231 | 20.12308 | 18.00000 | 50.00000 | -0.88992 | -11.406 | -0.88992 | -11.406 |
| 10.915 | 21.11538 | 18.00000 | 50.00000 | -0.87213 | -11.300 | -0.87213 | -11.300 |
| 11.908 | 22.10769 | 18.00000 | 50.00000 | -0.84888 | -11.208 | -0.84888 | -11.208 |
| 12.900 | 23.10000 | 18.00000 | 50.00000 | -0.82247 | -8.1725 | -0.82247 | -8.1725 |

Structure: No. 25/26 Wall F | Sub-structure: No. 25/26 Wall F

| 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 | 10.20000 | 22.20000 | 50.00000 | 0.95028 | -10.216 | 0.95028 | -10.216 |
| 0.73333 | 10.93333 | 22.20000 | 50.00000 | 0.36880 | -10.195 | 0.36880 | -10.195 |
| 1.4667 | 11.66667 | 22.20000 | 50.00000 | -0.051356 | -10.116 | -0.051356 | -10.116 |
| 2.2000 | 12.40000 | 22.20000 | 50.00000 | -0.18502 | -10.018 | -0.18502 | -10.018 |

Structure: No. 25/26 Wall G | Sub-structure: No. 25/26 Wall G

| 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 | 12.40000 | 27.30000 | 50.00000 | -0.13474 | -6.5503 | -0.13474 | -6.5503 |
| 0.97273 | 13.37273 | 27.30000 | 50.00000 | -0.25526 | -6.4541 | -0.25526 | -6.4541 |



| | | |
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| Job No. | Sheet No. | Rev. |
| 1248 | | |
| Drg. Ref. | | |
| Made by JB | Date 09-Nov-2015 | Checked |

24 REDINGTON GARDENS
Ground Movement & Buildgin Damage Assessment
Excavation in Front of a Medium Stiffness Secant Pile Wall in Stiff Clay

| Dist. | Coordinates | | | Displacements | | |
|--------|-------------|----------|----------|---------------|---------|----------|
| | x | y | z | x | y | z |
| 1.9455 | 14.34545 | 27.30000 | 50.00000 | -0.36464 | -6.3533 | -0.36464 |
| 2.9182 | 15.31818 | 27.30000 | 50.00000 | -0.46249 | -6.2497 | -0.46249 |
| 3.8909 | 16.29091 | 27.30000 | 50.00000 | -0.54873 | -6.1445 | -0.54873 |
| 4.8636 | 17.26364 | 27.30000 | 50.00000 | -0.62356 | -6.0392 | -0.62356 |
| 5.8364 | 18.23636 | 27.30000 | 50.00000 | -0.68743 | -5.9350 | -0.68743 |
| 6.8091 | 19.20909 | 27.30000 | 50.00000 | -0.74100 | -5.8330 | -0.74100 |
| 7.7818 | 20.18182 | 27.30000 | 50.00000 | -0.78504 | -5.7341 | -0.78504 |
| 8.7545 | 21.15455 | 27.30000 | 50.00000 | -0.82041 | -5.6389 | -0.82041 |
| 9.7273 | 22.12727 | 27.30000 | 50.00000 | -0.84801 | -5.5479 | -0.84801 |
| 10.700 | 23.10000 | 27.30000 | 50.00000 | -0.86874 | -4.3016 | -0.86874 |

Specific Building Damage Results - Vertical Displacements

Structure: No. 7 Wall A | Sub-structure: No. 7 Wall A

| Dist. | Coordinates | | | Displacements | | |
|--------|-------------|-----------|----------|---------------|---|---|
| | x | y | z | x | y | z |
| 0.0 | 25.40000 | -3.70000 | 50.00000 | 5.6839 | | |
| 1.0059 | 25.40000 | -4.70588 | 50.00000 | 5.4056 | | |
| 2.0118 | 25.40000 | -5.71176 | 50.00000 | 5.1145 | | |
| 3.0176 | 25.40000 | -6.71765 | 50.00000 | 4.8124 | | |
| 4.0235 | 25.40000 | -7.72353 | 50.00000 | 4.5003 | | |
| 5.0294 | 25.40000 | -8.72941 | 50.00000 | 4.1792 | | |
| 6.0353 | 25.40000 | -9.73529 | 50.00000 | 3.8502 | | |
| 7.0412 | 25.40000 | -10.74118 | 50.00000 | 3.5147 | | |
| 8.0471 | 25.40000 | -11.74706 | 50.00000 | 3.1747 | | |
| 9.0529 | 25.40000 | -12.75294 | 50.00000 | 2.8331 | | |
| 10.059 | 25.40000 | -13.75882 | 50.00000 | 2.4935 | | |
| 11.065 | 25.40000 | -14.76471 | 50.00000 | 2.1602 | | |
| 12.071 | 25.40000 | -15.77059 | 50.00000 | 1.8391 | | |
| 13.076 | 25.40000 | -16.77647 | 50.00000 | 1.5366 | | |
| 14.082 | 25.40000 | -17.78235 | 50.00000 | 1.2607 | | |
| 15.088 | 25.40000 | -18.78824 | 50.00000 | 1.0206 | | |
| 16.094 | 25.40000 | -19.79412 | 50.00000 | 0.81733 | | |
| 17.100 | 25.40000 | -20.80000 | 50.00000 | 0.62353 | | |

Structure: No. 7 Wall B | Sub-structure: No. 7 Wall B

| Dist. | Coordinates | | | Displacements | | |
|--------|-------------|-----------|----------|---------------|---|---|
| | x | y | z | x | y | z |
| 0.0 | 15.40000 | -3.70000 | 50.00000 | 10.131 | | |
| 1.0065 | 15.43529 | -4.70588 | 50.00000 | 9.6674 | | |
| 2.0130 | 15.47059 | -5.71176 | 50.00000 | 9.1971 | | |
| 3.0195 | 15.50588 | -6.71765 | 50.00000 | 8.7187 | | |
| 4.0260 | 15.54118 | -7.72353 | 50.00000 | 8.2298 | | |
| 5.0325 | 15.57647 | -8.72941 | 50.00000 | 7.7282 | | |
| 6.0390 | 15.61176 | -9.73529 | 50.00000 | 7.2124 | | |
| 7.0455 | 15.64706 | -10.74118 | 50.00000 | 6.6817 | | |
| 8.0520 | 15.68235 | -11.74706 | 50.00000 | 6.1367 | | |
| 9.0585 | 15.71765 | -12.75294 | 50.00000 | 5.5792 | | |
| 10.065 | 15.75294 | -13.75882 | 50.00000 | 5.0124 | | |
| 11.072 | 15.78824 | -14.76471 | 50.00000 | 4.4412 | | |
| 12.078 | 15.82353 | -15.77059 | 50.00000 | 3.8717 | | |
| 13.085 | 15.85882 | -16.77647 | 50.00000 | 3.3117 | | |
| 14.091 | 15.89412 | -17.78235 | 50.00000 | 2.7705 | | |
| 15.098 | 15.92941 | -18.78824 | 50.00000 | 2.2590 | | |
| 16.104 | 15.96471 | -19.79412 | 50.00000 | 1.7896 | | |
| 17.111 | 16.00000 | -20.80000 | 50.00000 | 1.3763 | | |

Structure: No. 7 Wall C | Sub-structure: No. 7 Wall C

| Dist. | Coordinates | | | Displacements | | |
|--------|-------------|----------|----------|---------------|---|---|
| | x | y | z | x | y | z |
| 0.0 | 15.40000 | -3.70000 | 50.00000 | 10.131 | | |
| 1.0000 | 16.40000 | -3.70000 | 50.00000 | 10.089 | | |
| 2.0000 | 17.40000 | -3.70000 | 50.00000 | 10.055 | | |
| 3.0000 | 18.40000 | -3.70000 | 50.00000 | 10.025 | | |
| 4.0000 | 19.40000 | -3.70000 | 50.00000 | 9.9953 | | |
| 5.0000 | 20.40000 | -3.70000 | 50.00000 | 9.9651 | | |
| 6.0000 | 21.40000 | -3.70000 | 50.00000 | 9.9333 | | |
| 7.0000 | 22.40000 | -3.70000 | 50.00000 | 9.8998 | | |
| 8.0000 | 23.40000 | -3.70000 | 50.00000 | 9.8645 | | |
| 9.0000 | 24.40000 | -3.70000 | 50.00000 | 9.8277 | | |
| 10.000 | 25.40000 | -3.70000 | 50.00000 | 9.8277 | | |

Structure: No. 7 Wall D | Sub-structure: No. 7 Wall D

| Dist. | Coordinates | | | Displacements | | |
|---------|-------------|-----------|----------|---------------|---|---|
| | x | y | z | x | y | z |
| 0.0 | 16.00000 | -20.80000 | 50.00000 | 1.3763 | | |
| 0.94000 | 16.94000 | -20.80000 | 50.00000 | 1.3247 | | |
| 1.8800 | 17.88000 | -20.80000 | 50.00000 | 1.2719 | | |
| 2.8200 | 18.82000 | -20.80000 | 50.00000 | 1.2193 | | |
| 3.7600 | 19.76000 | -20.80000 | 50.00000 | 1.1686 | | |
| 4.7000 | 20.70000 | -20.80000 | 50.00000 | 1.1214 | | |
| 5.6400 | 21.64000 | -20.80000 | 50.00000 | 1.0796 | | |
| 6.5800 | 22.58000 | -20.80000 | 50.00000 | 1.0451 | | |
| 7.5200 | 23.52000 | -20.80000 | 50.00000 | 1.0195 | | |
| 8.4600 | 24.46000 | -20.80000 | 50.00000 | 0.97672 | | |
| 9.4000 | 25.40000 | -20.80000 | 50.00000 | 0.62353 | | |

Structure: No. 7 Wall E | Sub-structure: No. 7 Wall E

| Dist. | Coordinates | | | Displacements | | |
|---------|-------------|----------|----------|---------------|---|---|
| | x | y | z | x | y | z |
| 0.0 | 19.10000 | -1.07500 | 50.00000 | 11.265 | | |
| 0.65673 | 19.12500 | -1.73125 | 50.00000 | 10.956 | | |
| 1.3135 | 19.15000 | -2.38750 | 50.00000 | 10.642 | | |
| 1.9702 | 19.17500 | -3.04375 | 50.00000 | 10.324 | | |
| 2.6269 | 19.20000 | -3.70000 | 50.00000 | 10.001 | | |

Structure: No. 7 Wall F | Sub-structure: No. 7 Wall F

| Dist. | Coordinates | | | Displacements | | |
|---------|-------------|----------|----------|---------------|---|---|
| | x | y | z | x | y | z |
| 0.0 | 19.10000 | -1.07500 | 50.00000 | 11.265 | | |
| 0.84001 | 19.94000 | -1.08000 | 50.00000 | 11.256 | | |



**BYLAND
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24 REDINGTON GARDENS

Ground Movement & Buildgin Damage Assessment

Excavation in Front of a Medium Stiffness Secant Pile Wall in Stiff Clay

| | | |
|---------------|---------------------|---------|
| Job No. | Sheet No. | Rev. |
| 1248 | | |
| Drg. Ref. | | |
| Made by JB | Date 09-Nov-2015 | Checked |

| Dist. | Coordinates | | | Displacements | |
|--------|-------------|----------|----------|---------------|------|
| | x | y | z | x | z |
| [m] | [m] | [m] | [m] | [mm] | [mm] |
| 1.6800 | 20.78000 | -1.08500 | 50.00000 | 11.247 | |
| 2.5200 | 21.62000 | -1.09000 | 50.00000 | 11.237 | |
| 3.3601 | 22.46000 | -1.09500 | 50.00000 | 11.226 | |
| 4.2001 | 23.30000 | -1.10000 | 50.00000 | 11.215 | |

Structure: No. 7 Wall G | Sub-structure: No. 7 Wall G

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

Vertical Offset 1

| | | | | | |
|---------|----------|----------|----------|--------|--|
| 0.0 | 23.30000 | -1.10000 | 50.00000 | 11.215 | |
| 0.65000 | 23.30000 | -1.75000 | 50.00000 | 10.886 | |
| 1.3000 | 23.30000 | -2.40000 | 50.00000 | 10.552 | |
| 1.9500 | 23.30000 | -3.05000 | 50.00000 | 10.212 | |
| 2.6000 | 23.30000 | -3.70000 | 50.00000 | 9.8681 | |

Structure: No. 25/26 Wall A | Sub-structure: No. 25/26 Wall A

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

Vertical Offset 1

| | | | | | |
|--------|----------|----------|----------|--------|--|
| 0.0 | 23.10000 | 10.30000 | 50.00000 | 8.1230 | |
| 1.0000 | 23.10000 | 11.30000 | 50.00000 | 7.7835 | |
| 2.0000 | 23.10000 | 12.30000 | 50.00000 | 7.4343 | |
| 3.0000 | 23.10000 | 13.30000 | 50.00000 | 7.0759 | |
| 4.0000 | 23.10000 | 14.30000 | 50.00000 | 6.7088 | |
| 5.0000 | 23.10000 | 15.30000 | 50.00000 | 6.3332 | |
| 6.0000 | 23.10000 | 16.30000 | 50.00000 | 5.9493 | |
| 7.0000 | 23.10000 | 17.30000 | 50.00000 | 5.5572 | |
| 8.0000 | 23.10000 | 18.30000 | 50.00000 | 5.1575 | |
| 9.0000 | 23.10000 | 19.30000 | 50.00000 | 4.7508 | |
| 10.000 | 23.10000 | 20.30000 | 50.00000 | 4.3385 | |
| 11.000 | 23.10000 | 21.30000 | 50.00000 | 3.9224 | |
| 12.000 | 23.10000 | 22.30000 | 50.00000 | 3.5051 | |
| 13.000 | 23.10000 | 23.30000 | 50.00000 | 3.0901 | |
| 14.000 | 23.10000 | 24.30000 | 50.00000 | 2.6819 | |
| 15.000 | 23.10000 | 25.30000 | 50.00000 | 2.2860 | |
| 16.000 | 23.10000 | 26.30000 | 50.00000 | 1.9091 | |
| 17.000 | 23.10000 | 27.30000 | 50.00000 | 1.5590 | |

Structure: No. 25/26 Wall B | Sub-structure: No. 25/26 Wall B

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

Vertical Offset 1

| | | | | | |
|---------|----------|----------|----------|--------|--|
| 0.0 | 10.20000 | 10.30000 | 50.00000 | 11.823 | |
| 0.99167 | 10.20000 | 11.29167 | 50.00000 | 11.313 | |
| 1.9833 | 10.20000 | 12.28333 | 50.00000 | 10.834 | |
| 2.9750 | 10.20000 | 13.27500 | 50.00000 | 10.374 | |
| 3.9667 | 10.20000 | 14.26667 | 50.00000 | 9.9226 | |
| 4.9583 | 10.20000 | 15.25833 | 50.00000 | 9.4712 | |
| 5.9500 | 10.20000 | 16.25000 | 50.00000 | 9.0131 | |
| 6.9417 | 10.20000 | 17.24167 | 50.00000 | 8.5426 | |
| 7.9333 | 10.20000 | 18.23333 | 50.00000 | 8.0558 | |
| 8.9250 | 10.20000 | 19.22500 | 50.00000 | 7.5503 | |
| 9.9167 | 10.20000 | 20.21667 | 50.00000 | 7.0201 | |
| 10.908 | 10.20000 | 21.20833 | 50.00000 | 6.4639 | |
| 11.900 | 10.20000 | 22.20000 | 50.00000 | 5.8922 | |

Structure: No. 25/26 Wall C | Sub-structure: No. 25/26 Wall C

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

Vertical Offset 1

| | | | | | |
|--------|----------|----------|----------|--------|--|
| 0.0 | 12.40000 | 22.20000 | 50.00000 | 5.7163 | |
| 1.0208 | 12.36000 | 23.22000 | 50.00000 | 5.1377 | |
| 2.0416 | 12.32000 | 24.24000 | 50.00000 | 4.5523 | |
| 3.0624 | 12.28000 | 25.26000 | 50.00000 | 3.9670 | |
| 4.0831 | 12.24000 | 26.28000 | 50.00000 | 3.3900 | |
| 5.1039 | 12.20000 | 27.30000 | 50.00000 | 2.8316 | |

Structure: No. 25/26 Wall D | Sub-structure: No. 25/26 Wall D

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

Vertical Offset 1

| | | | | | |
|---------|----------|----------|----------|--------|--|
| 0.0 | 10.20000 | 10.30000 | 50.00000 | 11.823 | |
| 0.99231 | 11.19231 | 10.30000 | 50.00000 | 11.883 | |
| 1.9846 | 12.18462 | 10.30000 | 50.00000 | 11.562 | |
| 2.9769 | 13.17692 | 10.30000 | 50.00000 | 11.410 | |
| 3.9692 | 14.16923 | 10.30000 | 50.00000 | 11.352 | |
| 4.9615 | 15.16154 | 10.30000 | 50.00000 | 11.327 | |
| 5.9538 | 16.15385 | 10.30000 | 50.00000 | 11.313 | |
| 6.9462 | 17.14615 | 10.30000 | 50.00000 | 11.304 | |
| 7.9385 | 18.13846 | 10.30000 | 50.00000 | 11.297 | |
| 8.9308 | 19.13077 | 10.30000 | 50.00000 | 11.290 | |
| 9.9231 | 20.12308 | 10.30000 | 50.00000 | 11.283 | |
| 10.915 | 21.11538 | 10.30000 | 50.00000 | 11.276 | |
| 11.908 | 22.10769 | 10.30000 | 50.00000 | 11.268 | |
| 12.900 | 23.10000 | 10.30000 | 50.00000 | 8.1230 | |

Structure: No. 25/26 Wall E | Sub-structure: No. 25/26 Wall E

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

Vertical Offset 1

| | | | | | |
|---------|----------|----------|----------|--------|--|
| 0.0 | 10.20000 | 18.00000 | 50.00000 | 8.1720 | |
| 0.99231 | 11.19231 | 18.00000 | 50.00000 | 8.1103 | |
| 1.9846 | 12.18462 | 18.00000 | 50.00000 | 7.9880 | |
| 2.9769 | 13.17692 | 18.00000 | 50.00000 | 7.8761 | |
| 3.9692 | 14.16923 | 18.00000 | 50.00000 | 7.7754 | |
| 4.9615 | 15.16154 | 18.00000 | 50.00000 | 7.6838 | |
| 5.9538 | 16.15385 | 18.00000 | 50.00000 | 7.5992 | |
| 6.9462 | 17.14615 | 18.00000 | 50.00000 | 7.5194 | |
| 7.9385 | 18.13846 | 18.00000 | 50.00000 | 7.4423 | |
| 8.9308 | 19.13077 | 18.00000 | 50.00000 | 7.3663 | |
| 9.9231 | 20.12308 | 18.00000 | 50.00000 | 7.2904 | |
| 10.915 | 21.11538 | 18.00000 | 50.00000 | 7.2138 | |
| 11.908 | 22.10769 | 18.00000 | 50.00000 | 7.1363 | |
| 12.900 | 23.10000 | 18.00000 | 50.00000 | 5.2782 | |

Structure: No. 25/26 Wall F | Sub-structure: No. 25/26 Wall F



| | | |
|-----------------|--------------------|----------------|
| Job No. | Sheet No. | Rev. |
| 1248 | | |
| Dr. Ref. | | |
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Dist. Coordinates Displacements
[m] x y z z
[m] [m] [m] [mm]

Vertical Offset 1

| | | | | |
|---------|----------|----------|----------|--------|
| 0.0 | 10.20000 | 22.20000 | 50.00000 | 5.8922 |
| 0.73333 | 10.33333 | 22.20000 | 50.00000 | 5.8508 |
| 1.4667 | 11.66667 | 22.20000 | 50.00000 | 5.7865 |
| 2.2000 | 12.40000 | 22.20000 | 50.00000 | 5.7163 |

Structure: No. 25/26 Wall G | Sub-structure: No. 25/26 Wall G

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

Vertical Offset 1

| | | | | |
|---------|----------|----------|----------|--------|
| 0.0 | 12.40000 | 27.30000 | 50.00000 | 2.8208 |
| 0.97273 | 13.37273 | 27.30000 | 50.00000 | 2.7634 |
| 1.9455 | 14.34545 | 27.30000 | 50.00000 | 2.6990 |
| 2.9182 | 15.31818 | 27.30000 | 50.00000 | 2.6288 |
| 3.8909 | 16.29091 | 27.30000 | 50.00000 | 2.5539 |
| 4.8636 | 17.26364 | 27.30000 | 50.00000 | 2.4755 |
| 5.8364 | 18.23636 | 27.30000 | 50.00000 | 2.3948 |
| 6.8091 | 19.20909 | 27.30000 | 50.00000 | 2.3130 |
| 7.7818 | 20.18182 | 27.30000 | 50.00000 | 2.2315 |
| 8.7545 | 21.15455 | 27.30000 | 50.00000 | 2.1516 |
| 9.7273 | 22.12727 | 27.30000 | 50.00000 | 2.0750 |
| 10.700 | 23.10000 | 27.30000 | 50.00000 | 1.9590 |

Specific Building Damage Results - All Segments

Structure: No. 7 Wall A | Sub-structure: No. 7 Wall A

| Vertical Offset from Line for Vertical Movement Calculations | Segment | Start | Length | Curvature | Deflection Ratio | Average Horizontal Strain | Max. Tensile Strain | Maximum Gradient of Horizontal Displacement Curve | Maximum Gradient of Vertical Displacement Curve | Min. Radius of Curvature | Damage Category |
|--|---------|--------|--------|-----------|------------------|---------------------------|---------------------|---|---|--------------------------|-----------------|
| [m] 0.0 | | [m] | [m] | | [%] | [%] | [%] | | | [m] | |
| | 1 | 0.0 | 8.4505 | Sagging | 903.31E-6 | 0.030442 | 0.031664 | -312.16E-6 | 339.49E-6 | 76392. | 0 (Negligible) |
| | 2 | 8.4505 | 8.6495 | Hogging | 0.0024268 | 0.034723 | 0.036824 | -498.62E-6 | 339.49E-6 | 30173. | 0 (Negligible) |

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

Structure: No. 7 Wall B | Sub-structure: No. 7 Wall B

| Vertical Offset from Line for Vertical Movement Calculations | Segment | Start | Length | Curvature | Deflection Ratio | Average Horizontal Strain | Max. Tensile Strain | Maximum Gradient of Horizontal Displacement Curve | Maximum Gradient of Vertical Displacement Curve | Min. Radius of Curvature | Damage Category |
|--|---------|--------|--------|-----------|------------------|---------------------------|---------------------|---|---|--------------------------|-----------------|
| [m] 0.0 | | [m] | [m] | | [%] | [%] | [%] | | | [m] | |
| | 1 | 0.0 | 10.730 | Sagging | 0.0016267 | 0.057334 | 0.059728 | -647.47E-6 | 567.17E-6 | 69637. | 1 (Very Slight) |
| | 2 | 10.730 | 6.3705 | Hogging | 0.0023106 | 0.066037 | 0.067573 | -667.26E-6 | 567.17E-6 | 16904. | 1 (Very Slight) |

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

Structure: No. 7 Wall C | Sub-structure: No. 7 Wall C

| Vertical Offset from Line for Vertical Movement Calculations | Segment | Start | Length | Curvature | Deflection Ratio | Average Horizontal Strain | Max. Tensile Strain | Maximum Gradient of Horizontal Displacement Curve | Maximum Gradient of Vertical Displacement Curve | Min. Radius of Curvature | Damage Category |
|--|---------|--------|--------|-----------|------------------|---------------------------|---------------------|---|---|--------------------------|-----------------|
| [m] 0.0 | | [m] | [m] | | [%] | [%] | [%] | | | [m] | |
| | 1 | 0.0 | 3.6799 | Hogging | 210.84E-6 | 0.0066814 | 0.0067652 | -71.775E-6 | 42.113E-6 | 107350. | 0 (Negligible) |
| | 2 | 3.6799 | 6.2201 | Sagging | 0.050468 | 0.0011493 | 0.058525 | 184.62E-6 | 0.0041447 | 186.98 | 1 (Very Slight) |

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

Structure: No. 7 Wall D | Sub-structure: No. 7 Wall D

| Vertical Offset from Line for Vertical Movement Calculations | Segment | Start | Length | Curvature | Deflection Ratio | Average Horizontal Strain | Max. Tensile Strain | Maximum Gradient of Horizontal Displacement Curve | Maximum Gradient of Vertical Displacement Curve | Min. Radius of Curvature | Damage Category |
|--|---------|--------|--------|-----------|------------------|---------------------------|---------------------|---|---|--------------------------|-----------------|
| [m] 0.0 | | [m] | [m] | | [%] | [%] | [%] | | | [m] | |
| | 1 | 0.0 | 1.6303 | Sagging | 31.112E-6 | -0.0078591 | 0.0015719 | 82.463E-6 | 56.208E-6 | 563460. | 0 (Negligible) |
| | 2 | 1.6303 | 4.9703 | Hogging | 309.75E-6 | -0.0049682 | 0.0010087 | 73.332E-6 | 56.208E-6 | 123360. | 0 (Negligible) |
| | 3 | 6.6006 | 2.6994 | Sagging | 0.0072525 | 0.0024906 | 0.0081404 | -49.242E-6 | 375.71E-6 | 2202.6 | 0 (Negligible) |

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

Structure: No. 7 Wall E | Sub-structure: No. 7 Wall E

| Vertical Offset from Line for Vertical Movement Calculations | Segment | Start | Length | Curvature | Deflection Ratio | Average Horizontal Strain | Max. Tensile Strain | Maximum Gradient of Horizontal Displacement Curve | Maximum Gradient of Vertical Displacement Curve | Min. Radius of Curvature | Damage Category |
|--|---------|-------|--------|-----------|------------------|---------------------------|---------------------|---|---|--------------------------|-----------------|
| [m] 0.0 | | [m] | [m] | | [%] | [%] | [%] | | | [m] | |
| | 1 | 0.0 | 2.6000 | Sagging | 339.68E-6 | 0.056866 | 0.057246 | -602.46E-6 | 490.73E-6 | 84123. | 1 (Very Slight) |

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

Structure: No. 7 Wall F | Sub-structure: No. 7 Wall F

| Vertical Offset from Line for Vertical Movement Calculations | Segment | Start | Length | Curvature | Deflection Ratio | Average Horizontal Strain | Max. Tensile Strain | Maximum Gradient of Horizontal Displacement Curve | Maximum Gradient of Vertical Displacement Curve | Min. Radius of Curvature | Damage Category |
|--|---------|-------|--------|-----------|------------------|---------------------------|---------------------|---|---|--------------------------|-----------------|
| [m] 0.0 | | [m] | [m] | | [%] | [%] | [%] | | | [m] | |
| | 1 | 0.0 | 4.2000 | Sagging | 38.531E-6 | 0.0018711 | 0.0019264 | -25.805E-6 | 13.117E-6 | 1.2630E+6 | 0 (Negligible) |

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

Structure: No. 7 Wall G | Sub-structure: No. 7 Wall G

| Vertical Offset from Line for Vertical Movement Calculations | Segment | Start | Length | Curvature | Deflection Ratio | Average Horizontal Strain | Max. Tensile Strain | Maximum Gradient of Horizontal Displacement Curve | Maximum Gradient of Vertical Displacement Curve | Min. Radius of Curvature | Damage Category |
|--|---------|-------|--------|-----------|------------------|---------------------------|---------------------|---|---|--------------------------|-----------------|
| [m] | | [m] | [m] | | [%] | [%] | [%] | | | [m] | |



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24 REDINGTON GARDENS
Ground Movement & Buildgin Damage Assessment
Excavation in Front of a Medium Stiffness Secant Pile Wall in Stiff Clay

| | | |
|-----------------|--------------------|----------------|
| Job No. | Sheet No. | Rev. |
| 1248 | | |
| Dr. Ref. | | |
| Made by | Date | Checked |
| JB | 09-Nov-2015 | |

| Vertical Offset from Line for Vertical Movement | Segment | Start | Length | Curvature | Deflection Ratio | Average Horizontal Strain | Max. Tensile Strain | Maximum Gradient of Horizontal Displacement | Maximum Gradient of Vertical Displacement | Min. Radius of Curvature | Damage Category |
|---|---------|-------|--------|-----------|------------------|---------------------------|---------------------|---|---|--------------------------|-----------------|
| 0.0 | 1 | 0.0 | 2.6000 | Sagging | 389.02E-6 | 0.063394 | 0.063829 | -653.33E-6 | 529.29E-6 | 76216.1 | 1 (Very Slight) |

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

Structure: No. 25/26 Wall A | Sub-structure: No. 25/26 Wall A

| Vertical Offset from Line for Vertical Movement | Segment | Start | Length | Curvature | Deflection Ratio | Average Horizontal Strain | Max. Tensile Strain | Maximum Gradient of Horizontal Displacement | Maximum Gradient of Vertical Displacement | Min. Radius of Curvature | Damage Category |
|---|---------|--------|--------|-----------|------------------|---------------------------|---------------------|---|---|--------------------------|-----------------|
| 0.0 | 1 | 0.0 | 11.271 | Sagging | 0.0010989 | 0.041196 | 0.042706 | -459.87E-6 | 417.13E-6 | 101700. | 0 (Negligible) |
| | 2 | 11.271 | 5.7291 | Hogging | 0.0010205 | 0.042467 | 0.042954 | -435.70E-6 | 417.13E-6 | 34799. | 0 (Negligible) |

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

Structure: No. 25/26 Wall B | Sub-structure: No. 25/26 Wall B

| Vertical Offset from Line for Vertical Movement | Segment | Start | Length | Curvature | Deflection Ratio | Average Horizontal Strain | Max. Tensile Strain | Maximum Gradient of Horizontal Displacement | Maximum Gradient of Vertical Displacement | Min. Radius of Curvature | Damage Category |
|---|---------|--------|--------|-----------|------------------|---------------------------|---------------------|---|---|--------------------------|-----------------|
| 0.0 | 1 | 0.0 | 4.0467 | Hogging | 963.86E-6 | 0.067867 | 0.068197 | -678.21E-6 | 513.14E-6 | 29724.1 | 1 (Very Slight) |
| | 2 | 4.0467 | 7.7533 | Sagging | 0.0018406 | 0.068027 | 0.070077 | -685.07E-6 | 576.11E-6 | 41903.1 | 1 (Very Slight) |

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

Structure: No. 25/26 Wall C | Sub-structure: No. 25/26 Wall C

| Vertical Offset from Line for Vertical Movement | Segment | Start | Length | Curvature | Deflection Ratio | Average Horizontal Strain | Max. Tensile Strain | Maximum Gradient of Horizontal Displacement | Maximum Gradient of Vertical Displacement | Min. Radius of Curvature | Damage Category |
|---|---------|--------|--------|-----------|------------------|---------------------------|---------------------|---|---|--------------------------|-----------------|
| 0.0 | 1 | 0.0 | 1.9628 | Sagging | 163.68E-6 | 0.067199 | 0.067253 | -672.69E-6 | 573.07E-6 | 123380. | 1 (Very Slight) |
| | 2 | 1.9628 | 3.1372 | Hogging | 488.95E-6 | 0.067621 | 0.067751 | -677.11E-6 | 573.07E-6 | 49581.1 | 1 (Very Slight) |

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

Structure: No. 25/26 Wall D | Sub-structure: No. 25/26 Wall D

| Vertical Offset from Line for Vertical Movement | Segment | Start | Length | Curvature | Deflection Ratio | Average Horizontal Strain | Max. Tensile Strain | Maximum Gradient of Horizontal Displacement | Maximum Gradient of Vertical Displacement | Min. Radius of Curvature | Damage Category |
|---|---------|--------|--------|-----------|------------------|---------------------------|---------------------|---|---|--------------------------|-----------------|
| 0.0 | 1 | 0.0 | 1.9362 | Sagging | 0.0095852 | -0.14655 | 0.029818 | 0.0030245 | 324.11E-6 | 1890.2 | 0 (Negligible) |
| | 2 | 1.9362 | 6.9061 | Hogging | 0.0020391 | 0.0078621 | 0.0090219 | 0.0030245 | 324.11E-6 | 10087. | 0 (Negligible) |
| | 3 | 8.8423 | 4.0577 | Sagging | 0.057913 | 0.0017478 | 0.055753 | -29.326E-6 | 0.0031695 | 251.10 | 1 (Very Slight) |

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

Structure: No. 25/26 Wall E | Sub-structure: No. 25/26 Wall E

| Vertical Offset from Line for Vertical Movement | Segment | Start | Length | Curvature | Deflection Ratio | Average Horizontal Strain | Max. Tensile Strain | Maximum Gradient of Horizontal Displacement | Maximum Gradient of Vertical Displacement | Min. Radius of Curvature | Damage Category |
|---|---------|--------|--------|-----------|------------------|---------------------------|---------------------|---|---|--------------------------|-----------------|
| 0.0 | 1 | 0.0 | 2.3866 | Sagging | 0.0014069 | -0.075265 | 0.015074 | 0.0011900 | 123.39E-6 | 12524. | 0 (Negligible) |
| | 2 | 2.3866 | 6.7474 | Hogging | 488.50E-6 | -0.0087794 | 0.0017769 | 227.84E-6 | 112.73E-6 | 94181. | 0 (Negligible) |
| | 3 | 9.1339 | 3.7661 | Sagging | 0.034724 | 0.0019829 | 0.034046 | -26.609E-6 | 0.0018725 | 442.45 | 0 (Negligible) |

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

Structure: No. 25/26 Wall F | Sub-structure: No. 25/26 Wall F

| Vertical Offset from Line for Vertical Movement | Segment | Start | Length | Curvature | Deflection Ratio | Average Horizontal Strain | Max. Tensile Strain | Maximum Gradient of Horizontal Displacement | Maximum Gradient of Vertical Displacement | Min. Radius of Curvature | Damage Category |
|---|---------|-------|--------|-----------|------------------|---------------------------|---------------------|---|---|--------------------------|-----------------|
| 0.0 | 1 | 0.0 | 2.2000 | Sagging | 781.19E-6 | -0.051605 | 0.010331 | 793.56E-6 | 95.790E-6 | 19886. | 0 (Negligible) |

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

Structure: No. 25/26 Wall G | Sub-structure: No. 25/26 Wall G

| Vertical Offset from Line for Vertical Movement | Segment | Start | Length | Curvature | Deflection Ratio | Average Horizontal Strain | Max. Tensile Strain | Maximum Gradient of Horizontal Displacement | Maximum Gradient of Vertical Displacement | Min. Radius of Curvature | Damage Category |
|---|---------|--------|--------|-----------|------------------|---------------------------|---------------------|---|---|--------------------------|-----------------|
| 0.0 | 1 | 0.0 | 6.5996 | Sagging | 374.41E-6 | -0.0090116 | 0.0018124 | 123.91E-6 | 84.084E-6 | 129710. | 0 (Negligible) |
| | 2 | 6.5996 | 1.1975 | Hogging | 4.2616E-6 | -0.0046873 | 937.45E-6 | 55.073E-6 | 84.084E-6 | 553110. | 0 (Negligible) |
| | 3 | 7.7971 | 2.9029 | Sagging | 0.0099756 | -0.0028642 | 0.0087215 | 36.364E-6 | 530.48E-6 | 1720.0 | 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: No. 7 Wall A | Sub-structure: No. 7 Wall A

| Vertical Offset from Line for Vertical Movement | Deflection Ratio | Average Horizontal Strain | Maximum Slope Settlement | Max. Tensile Strain | Maximum Gradient of Horizontal Displacement | Maximum Gradient of Vertical Displacement | Min. Radius of Curvature (Hogging) | Min. Radius of Curvature (Sagging) | Damage Category |
|---|------------------|---------------------------|--------------------------|---------------------|---|---|------------------------------------|------------------------------------|----------------------|
| 0.0 | 0.0024268 | 0.034723 | 339.49E-6 | 5.6839 | 0.036824 | -498.62E-6 | 339.49E-6 | 30173. | 76392.0 (Negligible) |

Structure: No. 7 Wall B | Sub-structure: No. 7 Wall B



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| Vertical Offset from Line for Vertical | Deflection Ratio | Average Horizontal Strain | Maximum Slope | Maximum Settlement | Max. Tensile Strain | Maximum Gradient of Horizontal Displacement | Maximum Gradient of Vertical Displacement | Min. Radius of Curvature (Hogging) | Min. Radius of Curvature (Sagging) | Damage Category |
|---|------------------|---------------------------|---------------|--------------------|---------------------|---|---|------------------------------------|------------------------------------|-----------------|
| Structure: No. 7 Wall C Sub-structure: No. 7 Wall C | | | | | | | | | | |
| Calculations | [m] | [%] | [%] | [mm] | [%] | [mm] | [mm] | [m] | [m] | |
| 0.0 | 0.0023106 | 0.066037 | 567.17E-6 | 10.131 | 0.067573 | -667.26E-6 | 567.17E-6 | 16904. | 69637. | 1 (Very Slight) |
| Structure: No. 7 Wall D Sub-structure: No. 7 Wall D | | | | | | | | | | |
| Calculations | [m] | [%] | [%] | [mm] | [%] | [mm] | [mm] | [m] | [m] | |
| 0.0 | 0.050468 | 0.0066814 | 0.0041447 | 10.131 | 0.058525 | 184.62E-6 | 0.0041447 | 107350. | 186.98 | 1 (Very Slight) |
| Structure: No. 7 Wall E Sub-structure: No. 7 Wall E | | | | | | | | | | |
| Calculations | [m] | [%] | [%] | [mm] | [%] | [mm] | [mm] | [m] | [m] | |
| 0.0 | 339.68E-6 | 0.056866 | 490.73E-6 | 11.265 | 0.057246 | -602.46E-6 | 490.73E-6 | - | 84123. | 1 (Very Slight) |
| Structure: No. 7 Wall F Sub-structure: No. 7 Wall F | | | | | | | | | | |
| Calculations | [m] | [%] | [%] | [mm] | [%] | [mm] | [mm] | [m] | [m] | |
| 0.0 | 38.531E-6 | 0.0018711 | 13.117E-6 | 11.265 | 0.0019264 | -25.805E-6 | 13.117E-6 | - | 1.2630E+6 | 0 (Negligible) |
| Structure: No. 7 Wall G Sub-structure: No. 7 Wall G | | | | | | | | | | |
| Calculations | [m] | [%] | [%] | [mm] | [%] | [mm] | [mm] | [m] | [m] | |
| 0.0 | 389.02E-6 | 0.063394 | 529.29E-6 | 11.215 | 0.063829 | -653.33E-6 | 529.29E-6 | - | 76216. | 1 (Very Slight) |
| Structure: No. 25/26 Wall A Sub-structure: No. 25/26 Wall A | | | | | | | | | | |
| Calculations | [m] | [%] | [%] | [mm] | [%] | [mm] | [mm] | [m] | [m] | |
| 0.0 | 0.0010989 | 0.042467 | 417.13E-6 | 8.1230 | 0.042954 | -459.87E-6 | 417.13E-6 | 34799. | 101700. | 0 (Negligible) |
| Structure: No. 25/26 Wall B Sub-structure: No. 25/26 Wall B | | | | | | | | | | |
| Calculations | [m] | [%] | [%] | [mm] | [%] | [mm] | [mm] | [m] | [m] | |
| 0.0 | 0.0018406 | 0.068027 | 576.11E-6 | 11.823 | 0.070077 | -685.07E-6 | 576.11E-6 | 29724. | 41903. | 1 (Very Slight) |
| Structure: No. 25/26 Wall C Sub-structure: No. 25/26 Wall C | | | | | | | | | | |
| Calculations | [m] | [%] | [%] | [mm] | [%] | [mm] | [mm] | [m] | [m] | |
| 0.0 | 488.95E-6 | 0.067621 | 573.07E-6 | 5.7163 | 0.067751 | -677.11E-6 | 573.07E-6 | 49581. | 123380. | 1 (Very Slight) |
| Structure: No. 25/26 Wall D Sub-structure: No. 25/26 Wall D | | | | | | | | | | |
| Calculations | [m] | [%] | [%] | [mm] | [%] | [mm] | [mm] | [m] | [m] | |
| 0.0 | 0.057913 | -0.14655 | 0.0031695 | 11.882 | 0.055753 | 0.0030245 | 0.0031695 | 10087. | 251.10 | 1 (Very Slight) |
| Structure: No. 25/26 Wall E Sub-structure: No. 25/26 Wall E | | | | | | | | | | |
| Calculations | [m] | [%] | [%] | [mm] | [%] | [mm] | [mm] | [m] | [m] | |
| 0.0 | 0.034724 | -0.075265 | 0.0018725 | 8.1720 | 0.034046 | 0.0011900 | 0.0018725 | 94181. | 442.45 | 0 (Negligible) |



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

Structure: No. 25/26 Wall F | Sub-structure: No. 25/26 Wall F

| Vertical Offset from Line for Vertical Movement | Deflection Ratio | Average Horizontal Strain | Maximum Slope | Maximum Settlement | Max. Tensile Strain | Maximum Gradient of Horizontal Displacement | Maximum Gradient of Vertical Displacement | Min. Radius of Curvature (Hogging) | Min. Radius of Curvature (Sagging) | Damage Category |
|---|------------------|---------------------------|---------------|--------------------|---------------------|---|---|------------------------------------|------------------------------------|-----------------|
| Calculations | [%] | [%] | | [mm] | [%] | | | [m] | [m] | |
| 0.0 | 781.19E-6 | -0.051605 | 95.790E-6 | 5.8922 | 0.010331 | 793.56E-6 | 95.790E-6 | - | 19886.0 | 0 (Negligible) |

Structure: No. 25/26 Wall G | Sub-structure: No. 25/26 Wall G

| Vertical Offset from Line for Vertical Movement | Deflection Ratio | Average Horizontal Strain | Maximum Slope | Maximum Settlement | Max. Tensile Strain | Maximum Gradient of Horizontal Displacement | Maximum Gradient of Vertical Displacement | Min. Radius of Curvature (Hogging) | Min. Radius of Curvature (Sagging) | Damage Category |
|---|------------------|---------------------------|---------------|--------------------|---------------------|---|---|------------------------------------|------------------------------------|-----------------|
| Calculations | [%] | [%] | | [mm] | [%] | | | [m] | [m] | |
| 0.0 | 0.0099756 | -0.0090116 | 530.48E-6 | 2.8208 | 0.0087215 | 123.91E-6 | 530.48E-6 | 553110. | 1720.0 | 0 (Negligible) |

Specific Building Damage Results - Critical Segments within Each Structure

| Structure Name | Parameter | Critical Sub-Structure | Critical Segment | Start | End | Curvature | Maximum Slope | Maximum Settlement | Max. Tensile Strain | Min. Radius of Curvature (Hogging) | Min. Radius of Curvature (Sagging) | Damage Category |
|------------------|------------------------------------|------------------------|------------------|-------|--------|-----------|---------------|--------------------|---------------------|------------------------------------|------------------------------------|--------------------------|
| No. 7 Wall A | Maximum Slope | No. 7 Wall A | | [m] | [m] | | | [mm] | [%] | [m] | [m] | |
| | Maximum Settlement | No. 7 Wall A | | 1 | 0.0 | 8.4505 | Sagging | 339.49E-6 | 5.6839 | 0.031664 | - | 76392.0 (Negligible) |
| | Max. Tensile Strain | No. 7 Wall A | | 1 | 0.0 | 8.4505 | Sagging | 339.49E-6 | 5.6839 | 0.031664 | - | 76392.0 (Negligible) |
| | Min. Radius of Curvature (Hogging) | No. 7 Wall A | | 2 | 8.4505 | 17.100 | Hogging | 339.49E-6 | 3.0377 | 0.036824 | 30173. | - 0 (Negligible) |
| | Min. Radius of Curvature (Sagging) | No. 7 Wall A | | 2 | 8.4505 | 17.100 | Hogging | 339.49E-6 | 3.0377 | 0.036824 | 30173. | - 0 (Negligible) |
| | Min. Radius of Curvature (Sagging) | No. 7 Wall A | | 1 | 0.0 | 8.4505 | Sagging | 339.49E-6 | 5.6839 | 0.031664 | - | 76392.0 (Negligible) |
| No. 7 Wall B | Maximum Slope | No. 7 Wall B | | 1 | 0.0 | 10.730 | Sagging | 567.17E-6 | 10.131 | 0.059728 | - | 69637.1 (Very Slight) |
| | Maximum Settlement | No. 7 Wall B | | 1 | 0.0 | 10.730 | Sagging | 567.17E-6 | 10.131 | 0.059728 | - | 69637.1 (Very Slight) |
| | Max. Tensile Strain | No. 7 Wall B | | 2 | 10.730 | 17.100 | Hogging | 567.17E-6 | 4.6353 | 0.067573 | 16904. | - 1 (Very Slight) |
| | Min. Radius of Curvature (Hogging) | No. 7 Wall B | | 2 | 10.730 | 17.100 | Hogging | 567.17E-6 | 4.6353 | 0.067573 | 16904. | - 1 (Very Slight) |
| | Min. Radius of Curvature (Sagging) | No. 7 Wall B | | 1 | 0.0 | 10.730 | Sagging | 567.17E-6 | 10.131 | 0.059728 | - | 69637.1 (Very Slight) |
| | Min. Radius of Curvature (Sagging) | No. 7 Wall B | | 1 | 0.0 | 10.730 | Sagging | 567.17E-6 | 10.131 | 0.059728 | - | 69637.1 (Very Slight) |
| No. 7 Wall C | Maximum Slope | No. 7 Wall C | | 2 | 3.6799 | 9.9000 | Sagging | 0.0041447 | 10.005 | 0.058525 | - | 186.98 1 (Very Slight) |
| | Maximum Settlement | No. 7 Wall C | | 1 | 0.0 | 3.6799 | Hogging | 42.113E-6 | 10.131 | 0.0067652 | 107350. | - 0 (Negligible) |
| | Max. Tensile Strain | No. 7 Wall C | | 2 | 3.6799 | 9.9000 | Sagging | 0.0041447 | 10.005 | 0.058525 | - | 186.98 1 (Very Slight) |
| | Min. Radius of Curvature (Hogging) | No. 7 Wall C | | 1 | 0.0 | 3.6799 | Hogging | 42.113E-6 | 10.131 | 0.0067652 | 107350. | - 0 (Negligible) |
| | Min. Radius of Curvature (Sagging) | No. 7 Wall C | | 2 | 3.6799 | 9.9000 | Sagging | 0.0041447 | 10.005 | 0.058525 | - | 186.98 1 (Very Slight) |
| | Min. Radius of Curvature (Sagging) | No. 7 Wall C | | 2 | 3.6799 | 9.9000 | Sagging | 0.0041447 | 10.005 | 0.058525 | - | 186.98 1 (Very Slight) |
| No. 7 Wall D | Maximum Slope | No. 7 Wall D | | 3 | 6.6006 | 9.3000 | Sagging | 375.71E-6 | 1.0446 | 0.0081404 | - | 2202.6 0 (Negligible) |
| | Maximum Settlement | No. 7 Wall D | | 1 | 0.0 | 1.6303 | Sagging | 56.208E-6 | 1.3763 | 0.0015719 | - | 56346.0 (Negligible) |
| | Max. Tensile Strain | No. 7 Wall D | | 3 | 6.6006 | 9.3000 | Sagging | 375.71E-6 | 1.0446 | 0.0081404 | - | 2202.6 0 (Negligible) |
| | Min. Radius of Curvature (Hogging) | No. 7 Wall D | | 2 | 1.6303 | 6.6006 | Hogging | 56.208E-6 | 1.2859 | 0.0010087 | 123360. | - 0 (Negligible) |
| | Min. Radius of Curvature (Sagging) | No. 7 Wall D | | 3 | 6.6006 | 9.3000 | Sagging | 375.71E-6 | 1.0446 | 0.0081404 | - | 2202.6 0 (Negligible) |
| | Min. Radius of Curvature (Sagging) | No. 7 Wall D | | 3 | 6.6006 | 9.3000 | Sagging | 375.71E-6 | 1.0446 | 0.0081404 | - | 2202.6 0 (Negligible) |
| No. 7 Wall E | Maximum Slope | No. 7 Wall E | | 1 | 0.0 | 2.6000 | Sagging | 490.73E-6 | 11.265 | 0.057246 | - | 84123.1 (Very Slight) |
| | Maximum Settlement | No. 7 Wall E | | 1 | 0.0 | 2.6000 | Sagging | 490.73E-6 | 11.265 | 0.057246 | - | 84123.1 (Very Slight) |
| | Max. Tensile Strain | No. 7 Wall E | | 1 | 0.0 | 2.6000 | Sagging | 490.73E-6 | 11.265 | 0.057246 | - | 84123.1 (Very Slight) |
| | Min. Radius of Curvature (Hogging) | No. 7 Wall E | | - | - | - | - | - | - | - | - | - |
| | Min. Radius of Curvature (Sagging) | No. 7 Wall E | | 1 | 0.0 | 2.6000 | Sagging | 490.73E-6 | 11.265 | 0.057246 | - | 84123.1 (Very Slight) |
| | Min. Radius of Curvature (Sagging) | No. 7 Wall E | | 1 | 0.0 | 2.6000 | Sagging | 490.73E-6 | 11.265 | 0.057246 | - | 84123.1 (Very Slight) |
| No. 7 Wall F | Maximum Slope | No. 7 Wall F | | 1 | 0.0 | 4.2000 | Sagging | 13.117E-6 | 11.265 | 0.0019264 | - | 1.2630E+6 0 (Negligible) |
| | Maximum Settlement | No. 7 Wall F | | 1 | 0.0 | 4.2000 | Sagging | 13.117E-6 | 11.265 | 0.0019264 | - | 1.2630E+6 0 (Negligible) |
| | Max. Tensile Strain | No. 7 Wall F | | 1 | 0.0 | 4.2000 | Sagging | 13.117E-6 | 11.265 | 0.0019264 | - | 1.2630E+6 0 (Negligible) |
| | Min. Radius of Curvature (Hogging) | No. 7 Wall F | | - | - | - | - | - | - | - | - | - |
| | Min. Radius of Curvature (Sagging) | No. 7 Wall F | | 1 | 0.0 | 4.2000 | Sagging | 13.117E-6 | 11.265 | 0.0019264 | - | 1.2630E+6 0 (Negligible) |
| | Min. Radius of Curvature (Sagging) | No. 7 Wall F | | 1 | 0.0 | 4.2000 | Sagging | 13.117E-6 | 11.265 | 0.0019264 | - | 1.2630E+6 0 (Negligible) |
| No. 7 Wall G | Maximum Slope | No. 7 Wall G | | 1 | 0.0 | 2.6000 | Sagging | 529.29E-6 | 11.215 | 0.063829 | - | 76216.1 (Very Slight) |
| | Maximum Settlement | No. 7 Wall G | | 1 | 0.0 | 2.6000 | Sagging | 529.29E-6 | 11.215 | 0.063829 | - | 76216.1 (Very Slight) |
| | Max. Tensile Strain | No. 7 Wall G | | 1 | 0.0 | 2.6000 | Sagging | 529.29E-6 | 11.215 | 0.063829 | - | 76216.1 (Very Slight) |
| | Min. Radius of Curvature (Hogging) | No. 7 Wall G | | - | - | - | - | - | - | - | - | - |
| | Min. Radius of Curvature (Sagging) | No. 7 Wall G | | 1 | 0.0 | 2.6000 | Sagging | 529.29E-6 | 11.215 | 0.063829 | - | 76216.1 (Very Slight) |
| | Min. Radius of Curvature (Sagging) | No. 7 Wall G | | 1 | 0.0 | 2.6000 | Sagging | 529.29E-6 | 11.215 | 0.063829 | - | 76216.1 (Very Slight) |
| No. 25#26 Wall A | Maximum Slope | No. 25/26 Wall A | | 1 | 0.0 | 11.271 | Sagging | 417.13E-6 | 8.1230 | 0.042706 | - | 101700.0 (Negligible) |
| | Maximum Settlement | No. 25/26 Wall A | | 1 | 0.0 | 11.271 | Sagging | 417.13E-6 | 8.1230 | 0.042706 | - | 101700.0 (Negligible) |
| | Max. Tensile Strain | No. 25/26 Wall A | | 2 | 11.271 | 17.000 | Hogging | 417.13E-6 | 3.8093 | 0.042954 | 34799. | - 0 (Negligible) |
| | Min. Radius of Curvature (Hogging) | No. 25/26 Wall A | | 2 | 11.271 | 17.000 | Hogging | 417.13E-6 | 3.8093 | 0.042954 | 34799. | - 0 (Negligible) |
| | Min. Radius of Curvature (Sagging) | No. 25/26 Wall A | | 1 | 0.0 | 11.271 | Sagging | 417.13E-6 | 8.1230 | 0.042706 | - | 101700.0 (Negligible) |
| | Min. Radius of Curvature (Sagging) | No. 25/26 Wall A | | 1 | 0.0 | 11.271 | Sagging | 417.13E-6 | 8.1230 | 0.042706 | - | 101700.0 (Negligible) |
| No. 25#26 Wall B | Maximum Slope | No. 25/26 Wall B | | 2 | 4.0467 | 11.800 | Sagging | 576.11E-6 | 9.8861 | 0.070077 | - | 41903.1 (Very Slight) |
| | Maximum Settlement | No. 25/26 Wall B | | 1 | 0.0 | 4.0467 | Hogging | 513.14E-6 | 11.823 | 0.068197 | 29724. | - 1 (Very Slight) |
| | Max. Tensile Strain | No. 25/26 Wall B | | 2 | 4.0467 | 11.800 | Sagging | 576.11E-6 | 9.8861 | 0.070077 | - | 41903.1 (Very Slight) |
| | Min. Radius of Curvature (Hogging) | No. 25/26 Wall B | | 1 | 0.0 | 4.0467 | Hogging | 513.14E-6 | 11.823 | 0.068197 | 29724. | - 1 (Very Slight) |
| | Min. Radius of Curvature (Sagging) | No. 25/26 Wall B | | 2 | 4.0467 | 11.800 | Sagging | 576.11E-6 | 9.8861 | 0.070077 | - | 41903.1 (Very Slight) |
| | Min. Radius of Curvature (Sagging) | No. 25/26 Wall B | | 1 | 0.0 | 4.0467 | Hogging | 513.14E-6 | 11.823 | 0.068197 | 29724. | - 1 (Very Slight) |



**BYLAND
ENGINEERING LTD**

24 REDINGTON GARDENS

Ground Movement & Buildgin Damage Assessment

Excavation in Front of a Medium Stiffness Secant Pile Wall in Stiff Clay

| | | |
|-----------------------|-----------------------------|----------------|
| Job No. | Sheet No. | Rev. |
| 1248 | | |
| Dr. Ref. | | |
| Made by JB | Date 09-Nov-2015 | Checked |

| Structure Name | Parameter | Critical Sub-Structure | Critical Segment | Start | End | Curvature | Maximum Slope | Maximum Settlement | Max. Tensile Strain | Min. Radius of Curvature (Hogging) | Min. Radius of Curvature (Sagging) | Damage Category |
|------------------|------------------------------------|------------------------|------------------|----------|--------|-----------|---------------|--------------------|---------------------|------------------------------------|------------------------------------|-----------------|
| No. 25#26 Wall C | Curvature (Hogging) | B | | | | | | | | | | |
| | Min. Radius of Curvature (Sagging) | No. 25/26 Wall B | | 2.4.0467 | 11.800 | Sagging | 576.11E-6 | 9.8861 | 0.070077 | - | 41903.1 | 1 (Very Slight) |
| | Maximum Slope | No. 25/26 Wall C | | 1.0.0 | 1.9628 | Sagging | 573.07E-6 | 5.7163 | 0.067253 | - | 123380.1 | 1 (Very Slight) |
| | Maximum Settlement | No. 25/26 Wall C | | 1.0.0 | 1.9628 | Sagging | 573.07E-6 | 5.7163 | 0.067253 | - | 123380.1 | 1 (Very Slight) |
| | Max. Tensile Strain | No. 25/26 Wall C | | 2.1.9628 | 5.1000 | Hogging | 573.07E-6 | 4.5975 | 0.067751 | 49581. | - | 1 (Very Slight) |
| No. 25#26 Wall D | Min. Radius of Curvature (Hogging) | No. 25/26 Wall C | | 2.1.9628 | 5.1000 | Hogging | 573.07E-6 | 4.5975 | 0.067751 | 49581. | - | 1 (Very Slight) |
| | Min. Radius of Curvature (Sagging) | No. 25/26 Wall C | | 1.0.0 | 1.9628 | Sagging | 573.07E-6 | 5.7163 | 0.067253 | - | 123380.1 | 1 (Very Slight) |
| | Maximum Slope | No. 25/26 Wall D | | 3.8.8423 | 12.900 | Sagging | 0.0031695 | 11.291 | 0.055753 | - | 251.10 | 1 (Very Slight) |
| | Maximum Settlement | No. 25/26 Wall D | | 1.0.0 | 1.9362 | Sagging | 324.11E-6 | 11.882 | 0.029818 | - | 1890.2 | 0 (Negligible) |
| | Max. Tensile Strain | No. 25/26 Wall D | | 3.8.8423 | 12.900 | Sagging | 0.0031695 | 11.291 | 0.055753 | - | 251.10 | 1 (Very Slight) |
| No. 25#26 Wall E | Min. Radius of Curvature (Hogging) | No. 25/26 Wall D | | 2.1.9362 | 8.8423 | Hogging | 324.11E-6 | 11.578 | 0.0090219 | 10087. | - | 0 (Negligible) |
| | Min. Radius of Curvature (Sagging) | No. 25/26 Wall D | | 3.8.8423 | 12.900 | Sagging | 0.0031695 | 11.291 | 0.055753 | - | 251.10 | 1 (Very Slight) |
| | Maximum Slope | No. 25/26 Wall E | | 3.9.1339 | 12.900 | Sagging | 0.0018725 | 7.3508 | 0.034046 | - | 442.45 | 0 (Negligible) |
| | Maximum Settlement | No. 25/26 Wall E | | 1.0.0 | 2.3866 | Sagging | 123.39E-6 | 8.1720 | 0.015074 | - | 12524.0 | 0 (Negligible) |
| | Max. Tensile Strain | No. 25/26 Wall E | | 3.9.1339 | 12.900 | Sagging | 0.0018725 | 7.3508 | 0.034046 | - | 442.45 | 0 (Negligible) |
| No. 25#26 Wall F | Min. Radius of Curvature (Hogging) | No. 25/26 Wall E | | 2.2.3866 | 9.1339 | Hogging | 112.73E-6 | 7.9427 | 0.0017769 | 94181. | - | 0 (Negligible) |
| | Min. Radius of Curvature (Sagging) | No. 25/26 Wall E | | 3.9.1339 | 12.900 | Sagging | 0.0018725 | 7.3508 | 0.034046 | - | 442.45 | 0 (Negligible) |
| | Maximum Slope | No. 25/26 Wall F | | 1.0.0 | 2.2000 | Sagging | 95.790E-6 | 5.8922 | 0.010331 | - | 19886.0 | 0 (Negligible) |
| | Maximum Settlement | No. 25/26 Wall F | | 1.0.0 | 2.2000 | Sagging | 95.790E-6 | 5.8922 | 0.010331 | - | 19886.0 | 0 (Negligible) |
| | Max. Tensile Strain | No. 25/26 Wall F | | 1.0.0 | 2.2000 | Sagging | 95.790E-6 | 5.8922 | 0.010331 | - | 19886.0 | 0 (Negligible) |
| No. 25#26 Wall G | Min. Radius of Curvature (Hogging) | No. 25/26 Wall F | | - | - | - | - | - | - | - | - | - |
| | Min. Radius of Curvature (Sagging) | No. 25/26 Wall F | | 1.0.0 | 2.2000 | Sagging | 95.790E-6 | 5.8922 | 0.010331 | - | 19886.0 | 0 (Negligible) |
| | Maximum Slope | No. 25/26 Wall G | | 3.7.7971 | 10.700 | Sagging | 530.48E-6 | 2.2302 | 0.0087215 | - | 1720.0 | 0 (Negligible) |
| | Maximum Settlement | No. 25/26 Wall G | | 1.0.0 | 6.5996 | Sagging | 84.084E-6 | 2.8208 | 0.0018124 | - | 129710.0 | 0 (Negligible) |
| | Max. Tensile Strain | No. 25/26 Wall G | | 3.7.7971 | 10.700 | Sagging | 530.48E-6 | 2.2302 | 0.0087215 | - | 1720.0 | 0 (Negligible) |
| No. 25#26 Wall H | Min. Radius of Curvature (Hogging) | No. 25/26 Wall G | | 2.6.5996 | 7.7971 | Hogging | 84.084E-6 | 2.3306 | 937.45E-6 | 553110. | - | 0 (Negligible) |
| | Min. Radius of Curvature (Sagging) | No. 25/26 Wall G | | 3.7.7971 | 10.700 | Sagging | 530.48E-6 | 2.2302 | 0.0087215 | - | 1720.0 | 0 (Negligible) |
| | Maximum Slope | No. 25/26 Wall H | | 3.7.7971 | 10.700 | Sagging | 530.48E-6 | 2.2302 | 0.0087215 | - | 1720.0 | 0 (Negligible) |

Specific Building Damage Results - All Combined Segments

Structure: No. 7 Wall A | Sub-structure: No. 7 Wall A

| Vertical Offset from Line for Vertical Movement Calculations | Combined Segment | Start | Length | Curvature | Deflection Ratio | Average Horizontal Strain | Max. Tensile Strain | Damage Category |
|--|------------------|-------|--------|-----------|------------------|---------------------------|---------------------|-----------------|
| [m] | [m] | [m] | | | [%] | [%] | [%] | |
| No structures have segments combined. | | | | | | | | |

Structure: No. 7 Wall B | Sub-structure: No. 7 Wall B

| Vertical Offset from Line for Vertical Movement Calculations | Combined Segment | Start | Length | Curvature | Deflection Ratio | Average Horizontal Strain | Max. Tensile Strain | Damage Category |
|--|------------------|-------|--------|-----------|------------------|---------------------------|---------------------|-----------------|
| [m] | [m] | [m] | | | [%] | [%] | [%] | |
| No structures have segments combined. | | | | | | | | |

Structure: No. 7 Wall C | Sub-structure: No. 7 Wall C

| Vertical Offset from Line for Vertical Movement Calculations | Combined Segment | Start | Length | Curvature | Deflection Ratio | Average Horizontal Strain | Max. Tensile Strain | Damage Category |
|--|------------------|-------|--------|-----------|------------------|---------------------------|---------------------|-----------------|
| [m] | [m] | [m] | | | [%] | [%] | [%] | |
| No structures have segments combined. | | | | | | | | |

Structure: No. 7 Wall D | Sub-structure: No. 7 Wall D

| Vertical Offset from Line for Vertical Movement Calculations | Combined Segment | Start | Length | Curvature | Deflection Ratio | Average Horizontal Strain | Max. Tensile Strain | Damage Category |
|--|------------------|-------|--------|-----------|------------------|---------------------------|---------------------|-----------------|
| [m] | [m] | [m] | | | [%] | [%] | [%] | |
| No structures have segments combined. | | | | | | | | |

Structure: No. 7 Wall E | Sub-structure: No. 7 Wall E

| Vertical Offset from Line for Vertical Movement Calculations | Combined Segment | Start | Length | Curvature | Deflection Ratio | Average Horizontal Strain | Max. Tensile Strain | Damage Category |
|--|------------------|-------|--------|-----------|------------------|---------------------------|---------------------|-----------------|
| [m] | [m] | [m] | | | [%] | [%] | [%] | |
| No structures have segments combined. | | | | | | | | |



24 REDINGTON GARDENS

Ground Movement & Buildgin Damage Assessment
Excavation in Front of a Medium Stiffness Secant Pile Wall in Stiff Clay

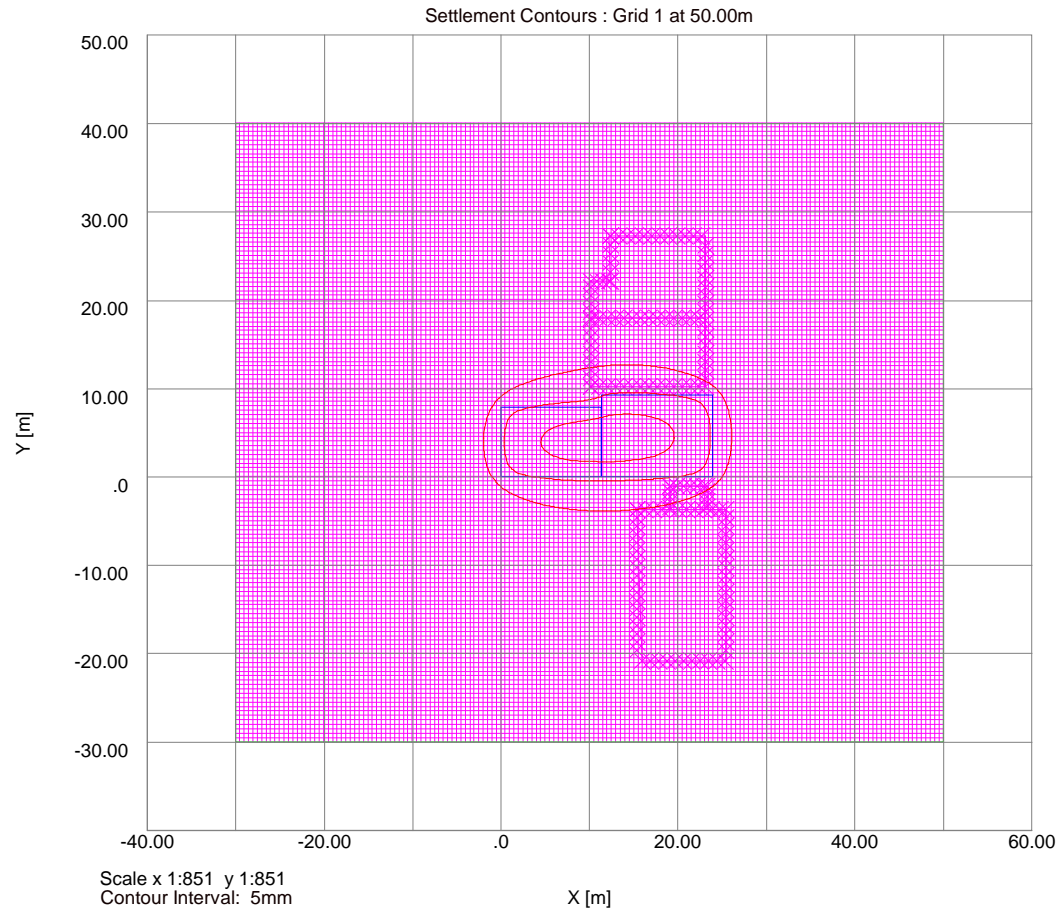
| | | |
|---------------|---------------------|---------|
| Job No. | Sheet No. | Rev. |
| 1248 | | |
| Drg. Ref. | | |
| Made by JB | Date 09-Nov-2015 | Checked |

| Vertical Offset from Line for Vertical | Combined Segment | Start | Length | Curvature | Deflection Ratio | Average Horizontal Strain | Max. Tensile Strain | Damage Category |
|---|------------------|-------|--------|-----------|------------------|---------------------------|---------------------|-----------------|
| Structure: No. 7 Wall F Sub-structure: No. 7 Wall F | | | | | | | | |
| Vertical Offset from Line for Vertical | Combined Segment | Start | Length | Curvature | Deflection Ratio | Average Horizontal Strain | Max. Tensile Strain | Damage Category |
| Calculations | | [m] | [m] | | [%] | [%] | [%] | |
| No structures have segments combined. | | | | | | | | |
| Structure: No. 7 Wall G Sub-structure: No. 7 Wall G | | | | | | | | |
| Vertical Offset from Line for Vertical | Combined Segment | Start | Length | Curvature | Deflection Ratio | Average Horizontal Strain | Max. Tensile Strain | Damage Category |
| Calculations | | [m] | [m] | | [%] | [%] | [%] | |
| No structures have segments combined. | | | | | | | | |
| Structure: No. 25/26 Wall A Sub-structure: No. 25/26 Wall A | | | | | | | | |
| Vertical Offset from Line for Vertical | Combined Segment | Start | Length | Curvature | Deflection Ratio | Average Horizontal Strain | Max. Tensile Strain | Damage Category |
| Calculations | | [m] | [m] | | [%] | [%] | [%] | |
| No structures have segments combined. | | | | | | | | |
| Structure: No. 25/26 Wall B Sub-structure: No. 25/26 Wall B | | | | | | | | |
| Vertical Offset from Line for Vertical | Combined Segment | Start | Length | Curvature | Deflection Ratio | Average Horizontal Strain | Max. Tensile Strain | Damage Category |
| Calculations | | [m] | [m] | | [%] | [%] | [%] | |
| No structures have segments combined. | | | | | | | | |
| Structure: No. 25/26 Wall C Sub-structure: No. 25/26 Wall C | | | | | | | | |
| Vertical Offset from Line for Vertical | Combined Segment | Start | Length | Curvature | Deflection Ratio | Average Horizontal Strain | Max. Tensile Strain | Damage Category |
| Calculations | | [m] | [m] | | [%] | [%] | [%] | |
| No structures have segments combined. | | | | | | | | |
| Structure: No. 25/26 Wall D Sub-structure: No. 25/26 Wall D | | | | | | | | |
| Vertical Offset from Line for Vertical | Combined Segment | Start | Length | Curvature | Deflection Ratio | Average Horizontal Strain | Max. Tensile Strain | Damage Category |
| Calculations | | [m] | [m] | | [%] | [%] | [%] | |
| No structures have segments combined. | | | | | | | | |
| Structure: No. 25/26 Wall E Sub-structure: No. 25/26 Wall E | | | | | | | | |
| Vertical Offset from Line for Vertical | Combined Segment | Start | Length | Curvature | Deflection Ratio | Average Horizontal Strain | Max. Tensile Strain | Damage Category |
| Calculations | | [m] | [m] | | [%] | [%] | [%] | |
| No structures have segments combined. | | | | | | | | |
| Structure: No. 25/26 Wall F Sub-structure: No. 25/26 Wall F | | | | | | | | |
| Vertical Offset from Line for Vertical | Combined Segment | Start | Length | Curvature | Deflection Ratio | Average Horizontal Strain | Max. Tensile Strain | Damage Category |
| Calculations | | [m] | [m] | | [%] | [%] | [%] | |
| No structures have segments combined. | | | | | | | | |
| Structure: No. 25/26 Wall G Sub-structure: No. 25/26 Wall G | | | | | | | | |
| Vertical Offset from Line for Vertical | Combined Segment | Start | Length | Curvature | Deflection Ratio | Average Horizontal Strain | Max. Tensile Strain | Damage Category |
| Calculations | | [m] | [m] | | [%] | [%] | [%] | |
| No structures have segments combined. | | | | | | | | |

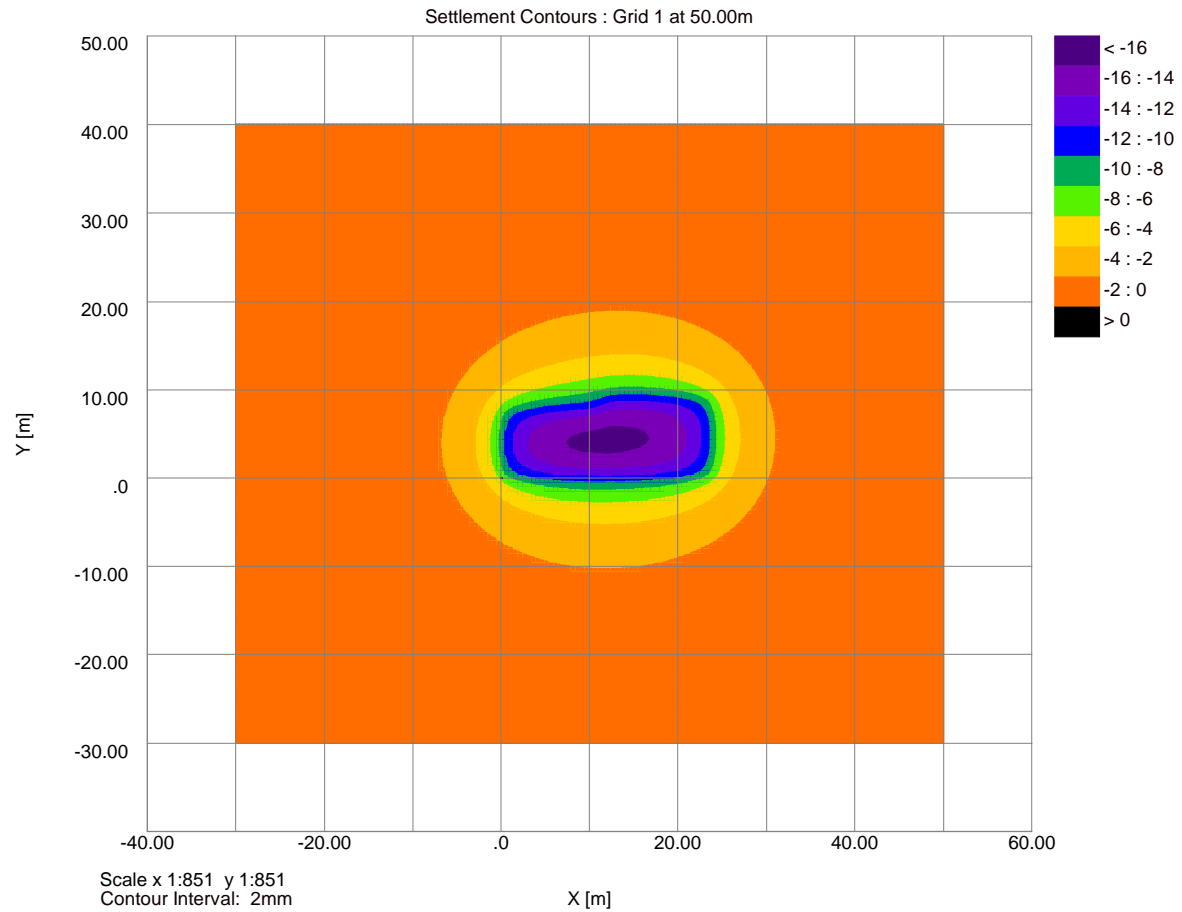
Appendix D

Oasys Pdisp input & output

| Job No. | Sheet No. | Rev. |
|---------------|---------------------|---------|
| 1248 | | |
| Drg. Ref. | | |
| Made by JB | Date 10-Nov-2015 | Checked |



| Job No. | Sheet No. | Rev. |
|---------------|---------------------|---------|
| 1248 | | |
| Drg. Ref. | | |
| Made by JB | Date 10-Nov-2015 | Checked |





24 Redington Gardens
Ground Movement Assessment
Short Term Heave Calculation

| | | |
|---------------|---------------------|---------|
| Job No. | Sheet No. | Rev. |
| 1248 | | |
| Drg. Ref. | | |
| Made by JB | Date 10-Nov-2015 | Checked |

Analysis Options

Analysis: Boussinesq
Global Poisson's ratio: 0.2
Maximum allowable ratio between values of E: 1.5
Horizontal rigid boundary level: 0.0 [m OD]
Displacements at area centroids calculated.

Soil Profiles Soil Profile 1

| Layer | Level at top | Number of intermediate displacement levels | Youngs Modulus | Poissons ratio | Non-linear curve |
|-------|--------------|--|--------------------------|--------------------------|------------------|
| | [mOD] | | Top [kN/m ²] | Btm [kN/m ²] | |
| 1 | 50.000 | 20 | 12000. | 12000. | 0.20000 None |
| 2 | 48.500 | 20 | 12000. | 12000. | 0.20000 None |
| 3 | 47.000 | 20 | 36000. | 43500. | 0.20000 None |
| 4 | 45.000 | 20 | 60000. | 168750. | 0.20000 None |

Soil Zones

| Zone | X coordinates min | X coordinates max | Y coordinates min | Y coordinates max | Profile |
|------|-------------------|-------------------|-------------------|-------------------|----------------|
| 1 | -30.000 | 50.000 | -30.000 | 40.000 | Soil Profile 1 |

Load Data

| Load ref. | Orientation | Centre of load (Global) | Angle of local x w.r.t. global X | Shape | Dimension Width x/ Radius | Depth y | Normal z | Load value Normal x Tangential | Number of rectangles | | |
|-----------|-------------|-------------------------|----------------------------------|--------|---------------------------|---------|----------|--------------------------------|----------------------|-----|-----|
| 1 | Horizontal | 5.7000 | 4.0000 | 42.400 | 0.0 Rectangular | 11.400 | 8.0000 | -136.00 | 0.0 | 0.0 | N/A |
| 2 | Horizontal | 17.700 | 4.6500 | 44.000 | 0.0 Rectangular | 12.600 | 9.3000 | -120.00 | 0.0 | 0.0 | N/A |

Displacement Data

| Ref. | Type | Name | Direction of Extrusion | Line/Line for extrusion | First point X Y Z(level) | Second point X Y Z(level) | No. of intrvl's across extrusion/line | Extrusion Depth | No. of intrvl's along extrusion | Calculate | Show Detailed results |
|------|------|------------------|------------------------|-------------------------|--------------------------|---------------------------|---------------------------------------|-----------------|---------------------------------|-----------|-----------------------|
| 1 | Line | No. 7 Wall A | N/A | | 25.400 -3.7000 50.000 | 25.400 -20.800 50.000 | 17 | N/A | N/A | Yes | Yes |
| 2 | Line | No. 7 Wall B | N/A | | 15.400 -3.7000 50.000 | 16.000 -20.800 50.000 | 17 | N/A | N/A | Yes | Yes |
| 3 | Line | No. 7 Wall C | N/A | | 15.400 -3.7000 50.000 | 25.400 -3.7000 50.000 | 10 | N/A | N/A | Yes | Yes |
| 4 | Line | No. 7 Wall D | N/A | | 16.000 -20.800 50.000 | 25.400 -20.800 50.000 | 10 | N/A | N/A | Yes | Yes |
| 5 | Line | No. 7 Wall E | N/A | | 19.100 -1.0750 50.000 | 19.200 -3.7000 50.000 | 4 | N/A | N/A | Yes | Yes |
| 6 | Line | No. 7 Wall F | N/A | | 19.100 -1.0750 50.000 | 23.300 -1.1000 50.000 | 5 | N/A | N/A | Yes | Yes |
| 7 | Line | No. 7 Wall G | N/A | | 23.300 -1.1000 50.000 | 23.300 -3.7000 50.000 | 4 | N/A | N/A | Yes | Yes |
| 8 | Line | No. 25/26 Wall A | N/A | | 23.100 10.300 50.000 | 23.100 27.300 50.000 | 17 | N/A | N/A | Yes | Yes |
| 9 | Line | No. 25/26 Wall B | N/A | | 10.200 10.300 50.000 | 10.200 22.200 50.000 | 12 | N/A | N/A | Yes | Yes |
| 10 | Line | No. 25/26 Wall C | N/A | | 12.400 22.200 50.000 | 12.200 27.300 50.000 | 5 | N/A | N/A | Yes | Yes |
| 11 | Line | No. 25/26 Wall D | N/A | | 10.200 10.300 50.000 | 23.100 10.300 50.000 | 13 | N/A | N/A | Yes | Yes |
| 12 | Line | No. 25/26 Wall E | N/A | | 10.200 18.000 50.000 | 23.100 18.000 50.000 | 13 | N/A | N/A | Yes | Yes |
| 13 | Line | No. 25/26 Wall F | N/A | | 10.200 22.200 50.000 | 12.400 22.200 50.000 | 3 | N/A | N/A | Yes | Yes |
| 14 | Line | No. 25/26 Wall G | N/A | | 12.400 27.300 50.000 | 23.100 27.300 50.000 | 11 | N/A | N/A | Yes | Yes |

RESULTS FOR GRIDS

Analysis: Boussinesq
Global Poisson's ratio: 0.2
Displacements at area centroids calculated.

| Type | X | Location Y | Z[Level] | Z | Displacement Calc Level | Vert Stress | Sum Princ Stress | Stresses Vert strain |
|--------------|--------|------------|----------|----------|-------------------------|----------------------|----------------------|----------------------|
| No. 7 Wall A | [m] | [m] | [mOD] | [mm] | [mOD] | [kN/m ²] | [kN/m ²] | |
| | 25.400 | -3.7000 | 50.000 | -2.7513 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 25.400 | -4.7059 | 50.000 | -2.4274 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 25.400 | -5.7118 | 50.000 | -2.1506 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 25.400 | -6.7176 | 50.000 | -1.9120 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 25.400 | -7.7235 | 50.000 | -1.7048 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 25.400 | -8.7294 | 50.000 | -1.5235 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 25.400 | -9.7353 | 50.000 | -1.3642 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 25.400 | -10.741 | 50.000 | -1.2236 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 25.400 | -11.747 | 50.000 | -1.0990 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 25.400 | -12.753 | 50.000 | -0.98822 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 25.400 | -13.759 | 50.000 | -0.88949 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 25.400 | -14.765 | 50.000 | -0.80129 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 25.400 | -15.771 | 50.000 | -0.72235 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 25.400 | -16.776 | 50.000 | -0.65157 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 25.400 | -17.782 | 50.000 | -0.58802 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 25.400 | -18.788 | 50.000 | -0.53089 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 25.400 | -19.794 | 50.000 | -0.47948 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 25.400 | -20.800 | 50.000 | -0.43316 | 49.964 | 0.0 | 0.0 | 0.0 |
| No. 7 Wall B | 15.400 | -3.7000 | 50.000 | -4.9805 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.435 | -4.7059 | 50.000 | -4.2269 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.471 | -5.7118 | 50.000 | -3.6217 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.506 | -6.7176 | 50.000 | -3.1262 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.541 | -7.7235 | 50.000 | -2.7144 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.576 | -8.7294 | 50.000 | -2.3684 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.612 | -9.7353 | 50.000 | -2.0750 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.647 | -10.741 | 50.000 | -1.8243 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.682 | -11.747 | 50.000 | -1.6087 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.718 | -12.753 | 50.000 | -1.4223 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.753 | -13.759 | 50.000 | -1.2604 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.788 | -14.765 | 50.000 | -1.1191 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.824 | -15.771 | 50.000 | -0.99540 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.859 | -16.776 | 50.000 | -0.88675 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.894 | -17.782 | 50.000 | -0.79103 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.929 | -18.788 | 50.000 | -0.70650 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.965 | -19.794 | 50.000 | -0.63167 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 16.000 | -20.800 | 50.000 | -0.56529 | 49.964 | 0.0 | 0.0 | 0.0 |
| No. 7 Wall C | 15.400 | -3.7000 | 50.000 | -4.9805 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 16.400 | -3.7000 | 50.000 | -4.8803 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 17.400 | -3.7000 | 50.000 | -4.7542 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 18.400 | -3.7000 | 50.000 | -4.6001 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 19.400 | -3.7000 | 50.000 | -4.4159 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 20.400 | -3.7000 | 50.000 | -4.1999 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 21.400 | -3.7000 | 50.000 | -3.9518 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 22.400 | -3.7000 | 50.000 | -3.6738 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.400 | -3.7000 | 50.000 | -3.3728 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 24.400 | -3.7000 | 50.000 | -3.0604 | 49.964 | 0.0 | 0.0 | 0.0 |

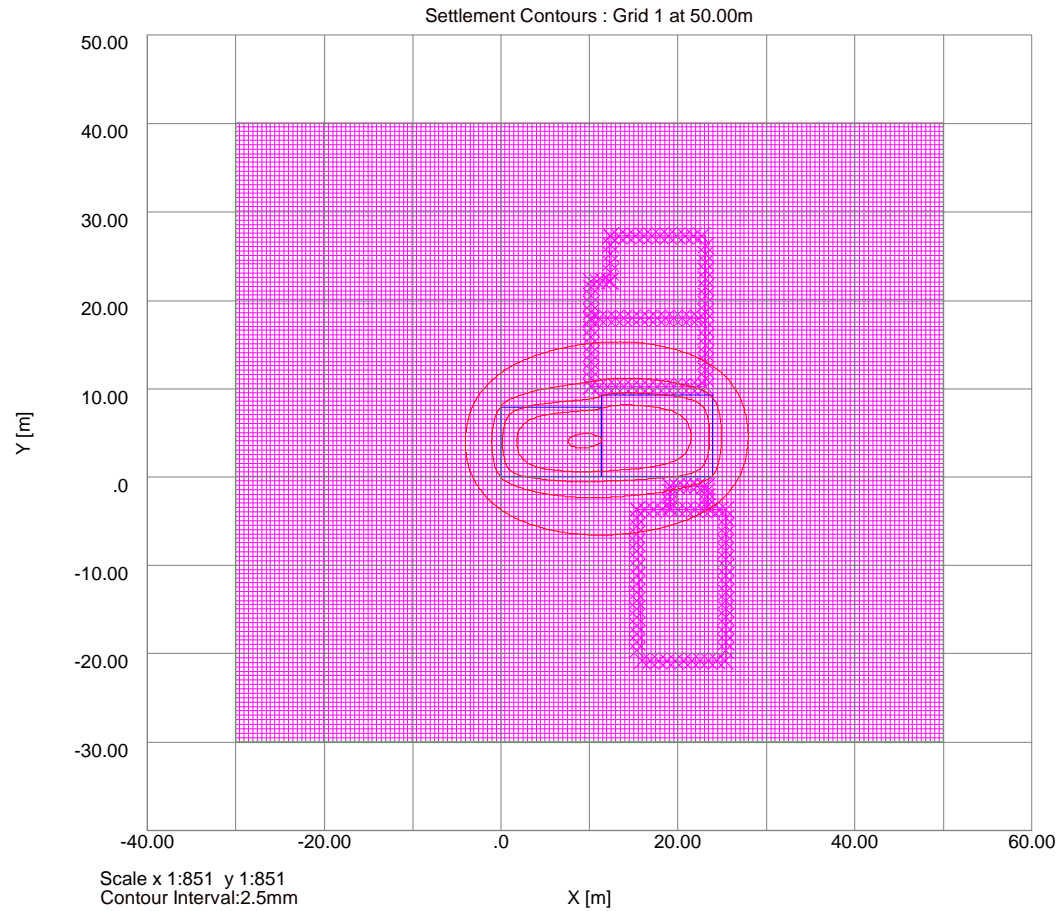


24 Redington Gardens
Ground Movement Assessment
Short Term Heave Calculation

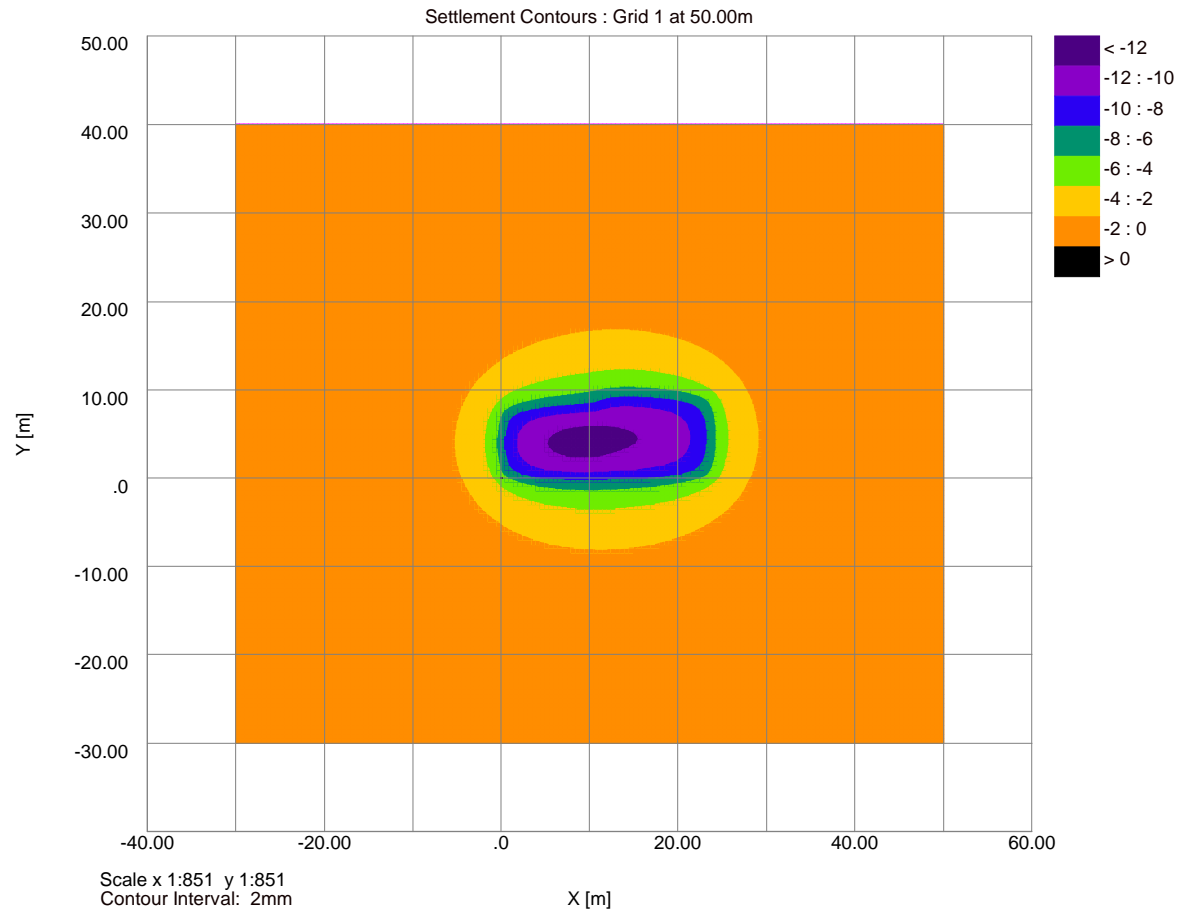
| | | |
|-----------------|--------------------|----------------|
| Job No. | Sheet No. | Rev. |
| 1248 | | |
| Dr. Ref. | | |
| Made by | Date | Checked |
| JB | 10-Nov-2015 | |

| | | | | | | | | |
|------------------|--------|---------|--------|----------|--------|-----|-----|-----|
| No. 7 Wall D | 25.400 | -3.7000 | 50.000 | -2.7513 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 16.000 | -20.800 | 50.000 | -0.56529 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 16.940 | -20.800 | 50.000 | -0.55749 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 17.880 | -20.800 | 50.000 | -0.54820 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 18.820 | -20.800 | 50.000 | -0.53752 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 19.760 | -20.800 | 50.000 | -0.52554 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 20.700 | -20.800 | 50.000 | -0.51237 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 21.640 | -20.800 | 50.000 | -0.49814 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 22.580 | -20.800 | 50.000 | -0.48297 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.520 | -20.800 | 50.000 | -0.46699 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 24.460 | -20.800 | 50.000 | -0.45034 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 25.400 | -20.800 | 50.000 | -0.43316 | 49.964 | 0.0 | 0.0 | 0.0 |
| No. 7 Wall E | 19.100 | -1.0750 | 50.000 | -7.5863 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 19.125 | -1.7313 | 50.000 | -6.4955 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 19.150 | -2.3875 | 50.000 | -5.6659 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 19.175 | -3.0438 | 50.000 | -5.0027 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 19.200 | -3.7000 | 50.000 | -4.4552 | 49.964 | 0.0 | 0.0 | 0.0 |
| No. 7 Wall F | 19.100 | -1.0750 | 50.000 | -7.5863 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 19.940 | -1.0800 | 50.000 | -7.3042 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 20.780 | -1.0850 | 50.000 | -6.9668 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 21.620 | -1.0900 | 50.000 | -6.5518 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 22.460 | -1.0950 | 50.000 | -6.0732 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.300 | -1.1000 | 50.000 | -5.4860 | 49.964 | 0.0 | 0.0 | 0.0 |
| No. 7 Wall G | 23.300 | -1.1000 | 50.000 | -5.4860 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.300 | -1.7500 | 50.000 | -4.7576 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.300 | -2.4000 | 50.000 | -4.2096 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.300 | -3.0500 | 50.000 | -3.7701 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.300 | -3.7000 | 50.000 | -3.4036 | 49.964 | 0.0 | 0.0 | 0.0 |
| No. 25/26 Wall A | 23.100 | 10.300 | 50.000 | -5.7377 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 11.300 | 50.000 | -4.5913 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 12.300 | 50.000 | -3.8314 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 13.300 | 50.000 | -3.2649 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 14.300 | 50.000 | -2.8180 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 15.300 | 50.000 | -2.4539 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 16.300 | 50.000 | -2.1509 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 17.300 | 50.000 | -1.8949 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 18.300 | 50.000 | -1.6760 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 19.300 | 50.000 | -1.4873 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 20.300 | 50.000 | -1.3234 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 21.300 | 50.000 | -1.1802 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 22.300 | 50.000 | -1.0545 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 23.300 | 50.000 | -0.94370 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 24.300 | 50.000 | -0.84570 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 25.300 | 50.000 | -0.75876 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 26.300 | 50.000 | -0.68145 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 27.300 | 50.000 | -0.61255 | 49.964 | 0.0 | 0.0 | 0.0 |
| No. 25/26 Wall B | 10.200 | 10.300 | 50.000 | -7.2742 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 10.200 | 11.292 | 50.000 | -6.0482 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 10.200 | 12.283 | 50.000 | -5.1046 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 10.200 | 13.275 | 50.000 | -4.3550 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 10.200 | 14.267 | 50.000 | -3.7463 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 10.200 | 15.258 | 50.000 | -3.2438 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 10.200 | 16.250 | 50.000 | -2.8239 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 10.200 | 17.242 | 50.000 | -2.4693 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 10.200 | 18.233 | 50.000 | -2.1675 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 10.200 | 19.225 | 50.000 | -1.9088 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 10.200 | 20.217 | 50.000 | -1.6858 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 10.200 | 21.208 | 50.000 | -1.4926 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 10.200 | 22.200 | 50.000 | -1.3244 | 49.964 | 0.0 | 0.0 | 0.0 |
| No. 25/26 Wall C | 12.400 | 22.200 | 50.000 | -1.3454 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 12.360 | 23.220 | 50.000 | -1.1908 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 12.320 | 24.240 | 50.000 | -1.0561 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 12.280 | 25.260 | 50.000 | -0.93817 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 12.240 | 26.280 | 50.000 | -0.83467 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 12.200 | 27.300 | 50.000 | -0.74358 | 49.964 | 0.0 | 0.0 | 0.0 |
| No. 25/26 Wall D | 10.200 | 10.300 | 50.000 | -7.2742 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 11.192 | 10.300 | 50.000 | -7.6023 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 12.185 | 10.300 | 50.000 | -7.9338 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 13.177 | 10.300 | 50.000 | -8.1404 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 14.169 | 10.300 | 50.000 | -8.2284 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.162 | 10.300 | 50.000 | -8.2328 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 16.154 | 10.300 | 50.000 | -8.1718 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 17.146 | 10.300 | 50.000 | -8.0521 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 18.138 | 10.300 | 50.000 | -7.8738 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 19.131 | 10.300 | 50.000 | -7.6320 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 20.123 | 10.300 | 50.000 | -7.3172 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 21.115 | 10.300 | 50.000 | -6.9137 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 22.108 | 10.300 | 50.000 | -6.3982 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 10.300 | 50.000 | -5.7377 | 49.964 | 0.0 | 0.0 | 0.0 |
| No. 25/26 Wall E | 10.200 | 18.000 | 50.000 | -2.2343 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 11.192 | 18.000 | 50.000 | -2.2626 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 12.185 | 18.000 | 50.000 | -2.2806 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 13.177 | 18.000 | 50.000 | -2.2877 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 14.169 | 18.000 | 50.000 | -2.2834 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.162 | 18.000 | 50.000 | -2.2674 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 16.154 | 18.000 | 50.000 | -2.2393 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 17.146 | 18.000 | 50.000 | -2.1991 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 18.138 | 18.000 | 50.000 | -2.1472 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 19.131 | 18.000 | 50.000 | -2.0840 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 20.123 | 18.000 | 50.000 | -2.0103 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 21.115 | 18.000 | 50.000 | -1.9271 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 22.108 | 18.000 | 50.000 | -1.8358 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 18.000 | 50.000 | -1.7383 | 49.964 | 0.0 | 0.0 | 0.0 |
| No. 25/26 Wall F | 10.200 | 22.200 | 50.000 | -1.3244 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 10.933 | 22.200 | 50.000 | -1.3344 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 11.667 | 22.200 | 50.000 | -1.3414 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 12.400 | 22.200 | 50.000 | -1.3454 | 49.964 | 0.0 | 0.0 | 0.0 |
| No. 25/26 Wall G | 12.400 | 27.300 | 50.000 | -0.74386 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 13.373 | 27.300 | 50.000 | -0.74364 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 14.345 | 27.300 | 50.000 | -0.74087 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.318 | 27.300 | 50.000 | -0.73555 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 16.291 | 27.300 | 50.000 | -0.72773 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 17.264 | 27.300 | 50.000 | -0.71748 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 18.236 | 27.300 | 50.000 | -0.70490 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 19.209 | 27.300 | 50.000 | -0.69012 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 20.182 | 27.300 | 50.000 | -0.67330 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 21.155 | 27.300 | 50.000 | -0.65463 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 22.127 | 27.300 | 50.000 | -0.63430 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 27.300 | 50.000 | -0.61255 | 49.964 | 0.0 | 0.0 | 0.0 |

| Job No. | Sheet No. | Rev. |
|---------------|---------------------|---------|
| 1248 | | |
| Drg. Ref. | | |
| Made by JB | Date 10-Nov-2015 | Checked |



| Job No. | Sheet No. | Rev. |
|---------------|---------------------|---------|
| 1248 | | |
| Drg. Ref. | | |
| Made by JB | Date 10-Nov-2015 | Checked |





24 Redington Gardens
Ground Movement Assessment
Long Term Heave Calculation

| | | |
|---------------|---------------------|---------|
| Job No. | Sheet No. | Rev. |
| 1248 | | |
| Drg. Ref. | | |
| Made by JB | Date 10-Nov-2015 | Checked |

Analysis Options

Analysis: Boussinesq
Global Poisson's ratio: 0.2
Maximum allowable ratio between values of E: 1.5
Horizontal rigid boundary level: 0.0 [m OD]
Displacements at area centroids calculated.

Soil Profiles Soil Profile 1

| Layer | Level at top | Number of intermediate displacement levels | Youngs Modulus | Poissons ratio | Non-linear curve |
|-------|--------------|--|--------------------------|--------------------------|------------------|
| | [mOD] | | Top [kN/m ²] | Btm [kN/m ²] | |
| 1 | 50.000 | 20 | 12000. | 12000. | 0.20000 None |
| 2 | 48.500 | 20 | 12000. | 12000. | 0.20000 None |
| 3 | 47.000 | 20 | 28800. | 34800. | 0.20000 None |
| 4 | 45.000 | 20 | 48000. | 135000. | 0.20000 None |

Soil Zones

| Zone | X coordinates min | X coordinates max | Y coordinates min | Y coordinates max | Profile |
|------|-------------------|-------------------|-------------------|-------------------|----------------|
| 1 | -30.000 | 50.000 | -30.000 | 40.000 | Soil Profile 1 |

Load Data

| Load ref. | Orientation | Centre of load (Global) | Angle of local x w.r.t. global X | Shape | Dimension Width x/ Radius | Depth y | Normal z | Load value Normal x Tangential y | Number of rectangles | | |
|-----------|-------------|-------------------------|----------------------------------|--------|---------------------------|---------|----------|----------------------------------|----------------------|-----|-----|
| 1 | Horizontal | 5.7000 | 4.0000 | 42.400 | 0.0 Rectangular | 11.400 | 8.0000 | -86.000 | 0.0 | 0.0 | N/A |
| 2 | Horizontal | 17.700 | 4.6500 | 44.000 | 0.0 Rectangular | 12.600 | 9.3000 | -70.000 | 0.0 | 0.0 | N/A |

Displacement Data

| Ref. | Type | Name | Direction of Extrusion | Line/Line for extrusion | First point X [m] Y [m] Z[level] | Second point X [m] Y [m] Z[level] | No. of intrvlrs across extrusion/line | Extrusion Depth [m] | No. of intrvlrs along extrusion | Calculate | Show Detailed results |
|------|------|------------------|------------------------|-------------------------|----------------------------------|-----------------------------------|---------------------------------------|---------------------|---------------------------------|-----------|-----------------------|
| 1 | Line | No. 7 Wall A | N/A | | 25.400 -3.7000 50.000 | 25.400 -20.800 50.000 | 17 | N/A | N/A | Yes | Yes |
| 2 | Line | No. 7 Wall B | N/A | | 15.400 -3.7000 50.000 | 16.000 -20.800 50.000 | 17 | N/A | N/A | Yes | Yes |
| 3 | Line | No. 7 Wall C | N/A | | 15.400 -3.7000 50.000 | 25.400 -3.7000 50.000 | 10 | N/A | N/A | Yes | Yes |
| 4 | Line | No. 7 Wall D | N/A | | 16.000 -20.800 50.000 | 25.400 -20.800 50.000 | 10 | N/A | N/A | Yes | Yes |
| 5 | Line | No. 7 Wall E | N/A | | 19.100 -1.0750 50.000 | 19.200 -3.7000 50.000 | 4 | N/A | N/A | Yes | Yes |
| 6 | Line | No. 7 Wall F | N/A | | 19.100 -1.0750 50.000 | 23.300 -1.1000 50.000 | 5 | N/A | N/A | Yes | Yes |
| 7 | Line | No. 7 Wall G | N/A | | 23.300 -1.1000 50.000 | 23.300 -3.7000 50.000 | 4 | N/A | N/A | Yes | Yes |
| 8 | Line | No. 25/26 Wall A | N/A | | 23.100 10.300 50.000 | 23.100 27.300 50.000 | 17 | N/A | N/A | Yes | Yes |
| 9 | Line | No. 25/26 Wall B | N/A | | 10.200 10.300 50.000 | 10.200 22.200 50.000 | 12 | N/A | N/A | Yes | Yes |
| 10 | Line | No. 25/26 Wall C | N/A | | 12.400 22.200 50.000 | 12.200 27.300 50.000 | 5 | N/A | N/A | Yes | Yes |
| 11 | Line | No. 25/26 Wall D | N/A | | 10.200 10.300 50.000 | 23.100 10.300 50.000 | 13 | N/A | N/A | Yes | Yes |
| 12 | Line | No. 25/26 Wall E | N/A | | 10.200 18.000 50.000 | 23.100 18.000 50.000 | 13 | N/A | N/A | Yes | Yes |
| 13 | Line | No. 25/26 Wall F | N/A | | 10.200 22.200 50.000 | 12.400 22.200 50.000 | 3 | N/A | N/A | Yes | Yes |
| 14 | Line | No. 25/26 Wall G | N/A | | 12.400 27.300 50.000 | 23.100 27.300 50.000 | 11 | N/A | N/A | Yes | Yes |

RESULTS FOR GRIDS

Analysis: Boussinesq
Global Poisson's ratio: 0.2
Displacements at area centroids calculated.

| Type | X | Location Y | Z[level] | Z | Displacement Calc Level | Vert Stress | Sum Princ Stress | Stresses Vert strain |
|--------------|---------|------------|----------|----------|-------------------------|----------------------|----------------------|----------------------|
| No. 7 Wall A | [m] | [m] | [mOD] | [mm] | [mOD] | [kN/m ²] | [kN/m ²] | |
| | 25.400 | -3.7000 | 50.000 | -2.0352 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 25.400 | -4.7059 | 50.000 | -1.7977 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 25.400 | -5.7118 | 50.000 | -1.5944 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 25.400 | -6.7176 | 50.000 | -1.4190 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 25.400 | -7.7235 | 50.000 | -1.2663 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 25.400 | -8.7294 | 50.000 | -1.1327 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 25.400 | -9.7353 | 50.000 | -1.0151 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 25.400 | -10.741 | 50.000 | -0.91119 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 25.400 | -11.747 | 50.000 | -0.81898 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 25.400 | -12.753 | 50.000 | -0.73692 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 25.400 | -13.759 | 50.000 | -0.66371 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 25.400 | -14.765 | 50.000 | -0.59824 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 25.400 | -15.771 | 50.000 | -0.53959 | 49.964 | 0.0 | 0.0 | 0.0 |
| No. 7 Wall B | 15.400 | -3.7000 | 50.000 | -3.7290 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.435 | -4.7059 | 50.000 | -3.1688 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.471 | -5.7118 | 50.000 | -2.7179 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.506 | -6.7176 | 50.000 | -2.3480 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.541 | -7.7235 | 50.000 | -2.0402 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.576 | -8.7294 | 50.000 | -1.7812 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.612 | -9.7353 | 50.000 | -1.5613 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.647 | -10.741 | 50.000 | -1.3733 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.682 | -11.747 | 50.000 | -1.2115 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.718 | -12.753 | 50.000 | -1.0715 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.753 | -13.759 | 50.000 | -0.94973 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.788 | -14.765 | 50.000 | -0.84348 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.824 | -15.771 | 50.000 | -0.75040 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.859 | -16.776 | 50.000 | -0.66861 | 49.964 | 0.0 | 0.0 | 0.0 |
| 15.894 | -17.782 | 50.000 | -0.59654 | 49.964 | 0.0 | 0.0 | 0.0 | |
| 15.929 | -18.788 | 50.000 | -0.53286 | 49.964 | 0.0 | 0.0 | 0.0 | |
| 15.965 | -19.794 | 50.000 | -0.47648 | 49.964 | 0.0 | 0.0 | 0.0 | |
| 16.000 | -20.800 | 50.000 | -0.42645 | 49.964 | 0.0 | 0.0 | 0.0 | |
| No. 7 Wall C | 15.400 | -3.7000 | 50.000 | -3.7290 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 16.400 | -3.7000 | 50.000 | -3.6445 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 17.400 | -3.7000 | 50.000 | -3.5425 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 18.400 | -3.7000 | 50.000 | -3.4212 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 19.400 | -3.7000 | 50.000 | -3.2792 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 20.400 | -3.7000 | 50.000 | -3.1149 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 21.400 | -3.7000 | 50.000 | -2.9280 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 22.400 | -3.7000 | 50.000 | -2.7201 | 49.964 | 0.0 | 0.0 | 0.0 |
| 23.400 | -3.7000 | 50.000 | -2.4960 | 49.964 | 0.0 | 0.0 | 0.0 | |
| 24.400 | -3.7000 | 50.000 | -2.2642 | 49.964 | 0.0 | 0.0 | 0.0 | |



24 Redington Gardens
Ground Movement Assessment
Long Term Heave Calculation

| | | |
|-----------------|--------------------|----------------|
| Job No. | Sheet No. | Rev. |
| 1248 | | |
| Dr. Ref. | | |
| Made by | Date | Checked |
| JB | 10-Nov-2015 | |

| | | | | | | | | |
|------------------|--------|---------|--------|----------|--------|-----|-----|-----|
| No. 7 Wall D | 25.400 | -3.7000 | 50.000 | -2.0352 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 16.000 | -20.800 | 50.000 | -0.42645 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 16.940 | -20.800 | 50.000 | -0.42019 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 17.880 | -20.800 | 50.000 | -0.41282 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 18.820 | -20.800 | 50.000 | -0.40443 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 19.760 | -20.800 | 50.000 | -0.39509 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 20.700 | -20.800 | 50.000 | -0.38488 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 21.640 | -20.800 | 50.000 | -0.37391 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 22.580 | -20.800 | 50.000 | -0.36225 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.520 | -20.800 | 50.000 | -0.35002 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 24.460 | -20.800 | 50.000 | -0.33732 | 49.964 | 0.0 | 0.0 | 0.0 |
| No. 7 Wall E | 25.400 | -20.800 | 50.000 | -0.32424 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 19.100 | -1.0750 | 50.000 | -5.6050 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 19.125 | -1.7313 | 50.000 | -4.8066 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 19.150 | -2.3875 | 50.000 | -4.1985 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 19.175 | -3.0438 | 50.000 | -3.7117 | 49.964 | 0.0 | 0.0 | 0.0 |
| No. 7 Wall F | 19.200 | -3.7000 | 50.000 | -3.3093 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 19.100 | -1.0750 | 50.000 | -5.6050 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 19.940 | -1.0800 | 50.000 | -5.3912 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 20.780 | -1.0850 | 50.000 | -5.1381 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 21.620 | -1.0900 | 50.000 | -4.8366 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 22.460 | -1.0950 | 50.000 | -4.4750 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.300 | -1.1000 | 50.000 | -4.0421 | 49.964 | 0.0 | 0.0 | 0.0 |
| No. 7 Wall G | 23.300 | -1.1000 | 50.000 | -4.0421 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.300 | -1.7500 | 50.000 | -3.5099 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.300 | -2.4000 | 50.000 | -3.1091 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.300 | -3.0500 | 50.000 | -2.7874 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.300 | -3.7000 | 50.000 | -2.5189 | 49.964 | 0.0 | 0.0 | 0.0 |
| No. 25/26 Wall A | 23.100 | 10.300 | 50.000 | -4.2246 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 11.300 | 50.000 | -3.3867 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 12.300 | 50.000 | -2.8305 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 13.300 | 50.000 | -2.4153 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 14.300 | 50.000 | -2.0872 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 15.300 | 50.000 | -1.8196 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 16.300 | 50.000 | -1.5966 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 17.300 | 50.000 | -1.4079 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 18.300 | 50.000 | -1.2464 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 19.300 | 50.000 | -1.1069 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 20.300 | 50.000 | -0.9853 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 21.300 | 50.000 | -0.87956 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 22.300 | 50.000 | -0.78635 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 23.300 | 50.000 | -0.70412 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 24.300 | 50.000 | -0.63131 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 25.300 | 50.000 | -0.56668 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 26.300 | 50.000 | -0.50916 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 27.300 | 50.000 | -0.45786 | 49.964 | 0.0 | 0.0 | 0.0 |
| No. 25/26 Wall B | 10.200 | 10.300 | 50.000 | -5.5325 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 10.200 | 11.292 | 50.000 | -4.5958 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 10.200 | 12.283 | 50.000 | -3.8763 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 10.200 | 13.275 | 50.000 | -3.3054 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 10.200 | 14.267 | 50.000 | -2.8423 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 10.200 | 15.258 | 50.000 | -2.4602 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 10.200 | 16.250 | 50.000 | -2.1411 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 10.200 | 17.242 | 50.000 | -1.8718 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 10.200 | 18.233 | 50.000 | -1.6427 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 10.200 | 19.225 | 50.000 | -1.4463 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 10.200 | 20.217 | 50.000 | -1.2771 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 10.200 | 21.208 | 50.000 | -1.1305 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 10.200 | 22.200 | 50.000 | -1.0030 | 49.964 | 0.0 | 0.0 | 0.0 |
| No. 25/26 Wall C | 12.400 | 22.200 | 50.000 | -1.0155 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 12.360 | 23.220 | 50.000 | -0.89898 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 12.320 | 24.240 | 50.000 | -0.79723 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 12.280 | 25.260 | 50.000 | -0.70836 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 12.240 | 26.280 | 50.000 | -0.63025 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 12.200 | 27.300 | 50.000 | -0.56150 | 49.964 | 0.0 | 0.0 | 0.0 |
| No. 25/26 Wall D | 10.200 | 10.300 | 50.000 | -5.5325 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 11.192 | 10.300 | 50.000 | -5.7484 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 12.185 | 10.300 | 50.000 | -5.9652 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 13.177 | 10.300 | 50.000 | -6.0922 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 14.169 | 10.300 | 50.000 | -6.1353 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.162 | 10.300 | 50.000 | -6.1203 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 16.154 | 10.300 | 50.000 | -6.0603 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 17.146 | 10.300 | 50.000 | -5.9598 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 18.138 | 10.300 | 50.000 | -5.8186 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 19.131 | 10.300 | 50.000 | -5.6327 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 20.123 | 10.300 | 50.000 | -5.3948 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 21.115 | 10.300 | 50.000 | -5.0935 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 22.108 | 10.300 | 50.000 | -4.7115 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 10.300 | 50.000 | -4.2246 | 49.964 | 0.0 | 0.0 | 0.0 |
| No. 25/26 Wall E | 10.200 | 18.000 | 50.000 | -1.6934 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 11.192 | 18.000 | 50.000 | -1.7113 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 12.185 | 18.000 | 50.000 | -1.7214 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 13.177 | 18.000 | 50.000 | -1.7234 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 14.169 | 18.000 | 50.000 | -1.7169 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.162 | 18.000 | 50.000 | -1.7018 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 16.154 | 18.000 | 50.000 | -1.6779 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 17.146 | 18.000 | 50.000 | -1.6453 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 18.138 | 18.000 | 50.000 | -1.6042 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 19.131 | 18.000 | 50.000 | -1.5550 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 20.123 | 18.000 | 50.000 | -1.4983 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 21.115 | 18.000 | 50.000 | -1.4349 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 22.108 | 18.000 | 50.000 | -1.3658 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 18.000 | 50.000 | -1.2923 | 49.964 | 0.0 | 0.0 | 0.0 |
| No. 25/26 Wall F | 10.200 | 22.200 | 50.000 | -1.0030 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 10.933 | 22.200 | 50.000 | -1.0094 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 11.667 | 22.200 | 50.000 | -1.0136 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 12.400 | 22.200 | 50.000 | -1.0155 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 12.400 | 27.300 | 50.000 | -0.56158 | 49.964 | 0.0 | 0.0 | 0.0 |
| No. 25/26 Wall G | 13.373 | 27.300 | 50.000 | -0.56082 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 14.345 | 27.300 | 50.000 | -0.55814 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 15.318 | 27.300 | 50.000 | -0.55356 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 16.291 | 27.300 | 50.000 | -0.54713 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 17.264 | 27.300 | 50.000 | -0.53891 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 18.236 | 27.300 | 50.000 | -0.52897 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 19.209 | 27.300 | 50.000 | -0.51742 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 20.182 | 27.300 | 50.000 | -0.50439 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 21.155 | 27.300 | 50.000 | -0.49001 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 22.127 | 27.300 | 50.000 | -0.47445 | 49.964 | 0.0 | 0.0 | 0.0 |
| | 23.100 | 27.300 | 50.000 | -0.45786 | 49.964 | 0.0 | 0.0 | 0.0 |