Project: 100 Avenue Road Development, London

Job Description: 3D Deformation Monitoring

Monitoring Location: Swiss Cottage Underground Station

Project Reference: SAL-1311-01

Sheet Reference: SAL-1311-01-02 Set 00 - Perpendicular Monitoring Graphs

Survey Associates Limited

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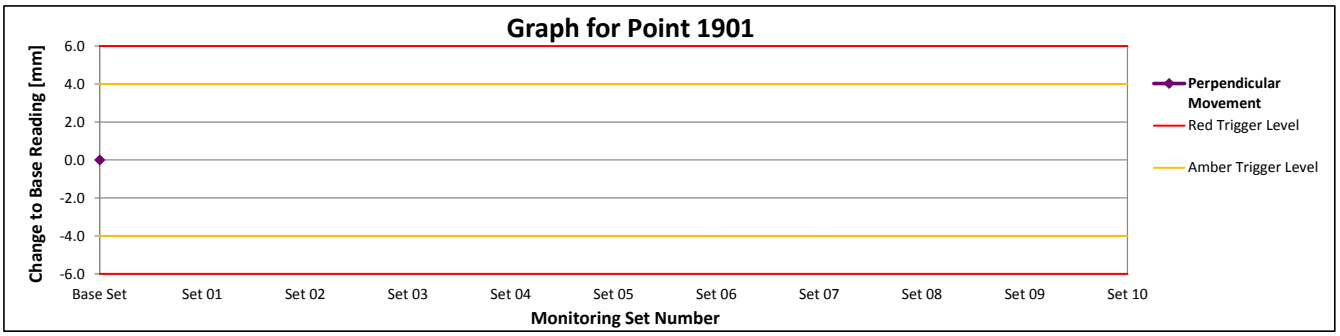

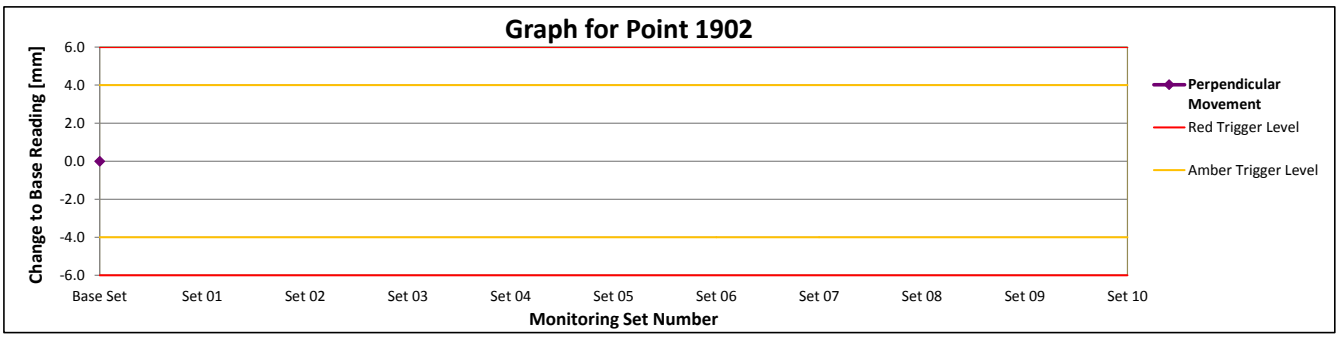

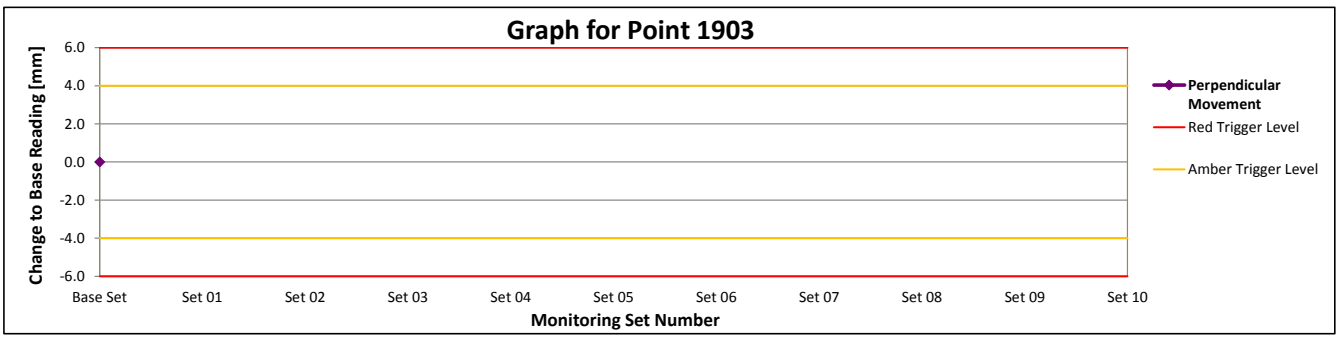

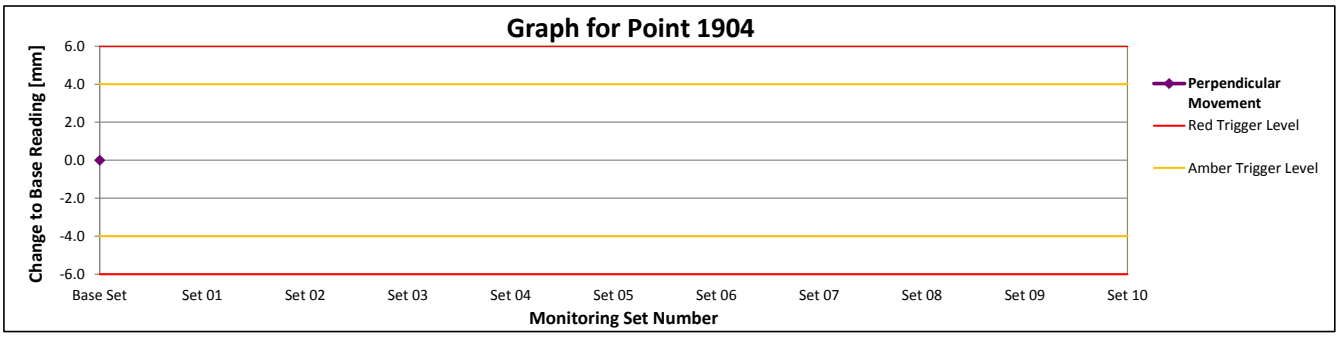

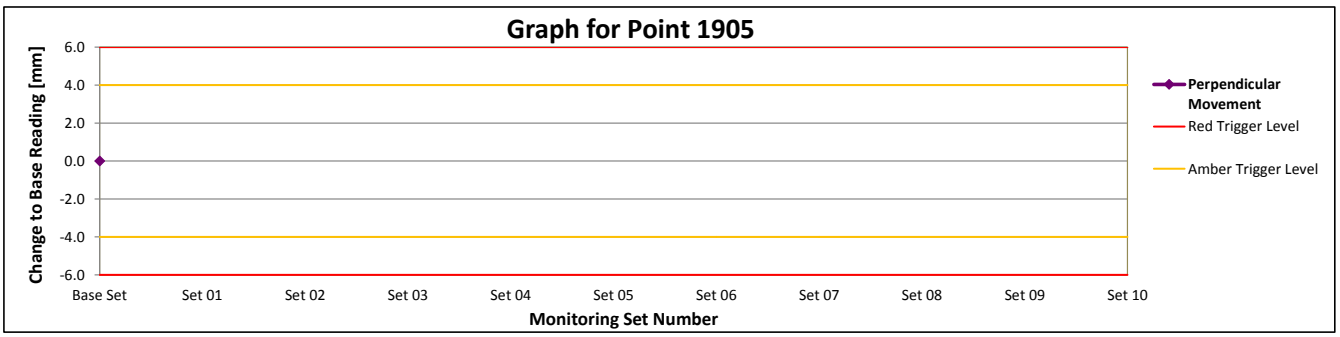

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Job Description: 3D Deformation Monitoring

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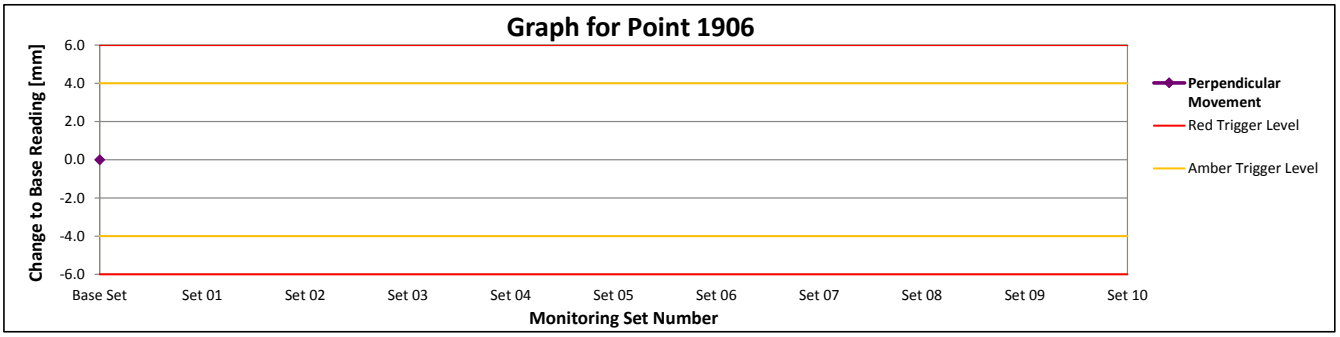

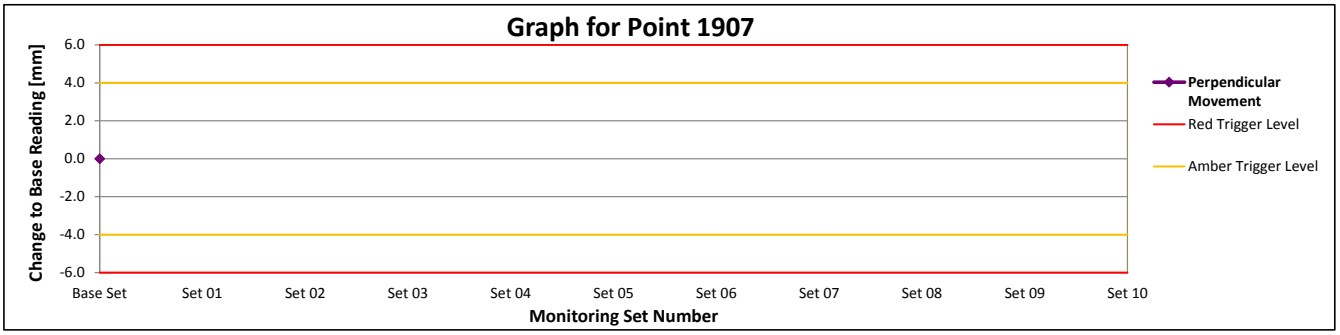

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Job Description: 3D Deformation Monitoring

Monitoring Location: Swiss Cottage Underground Station

Project Reference: SAL-1311-01

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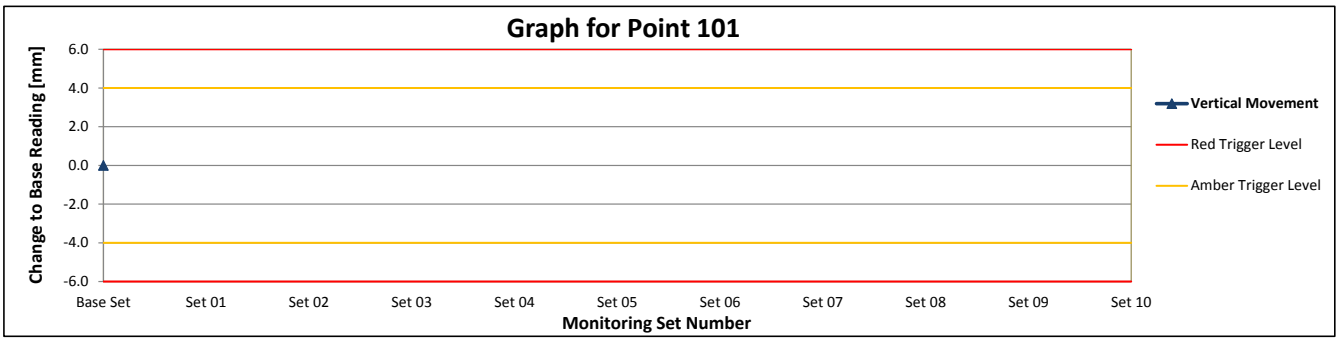

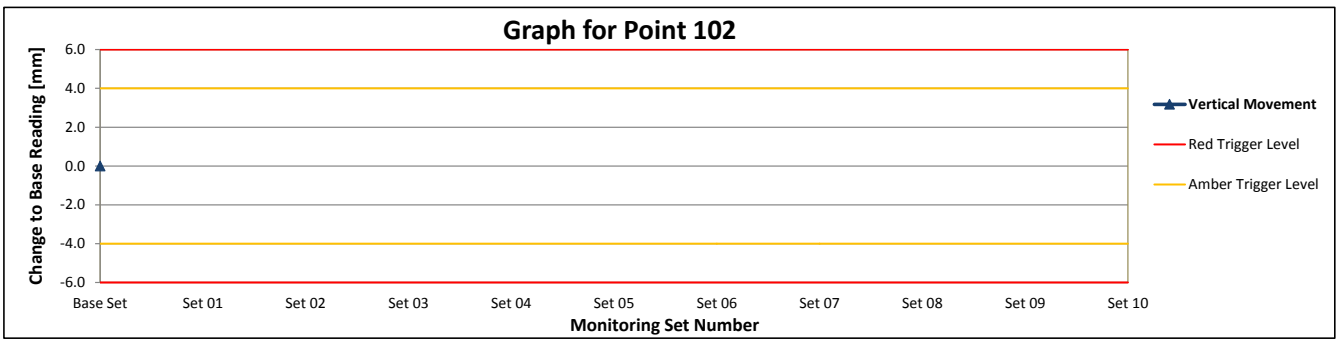

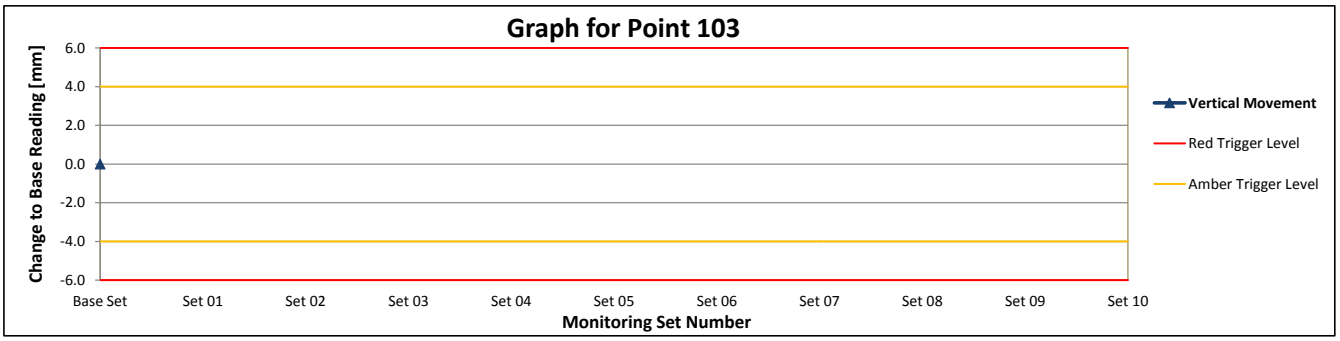

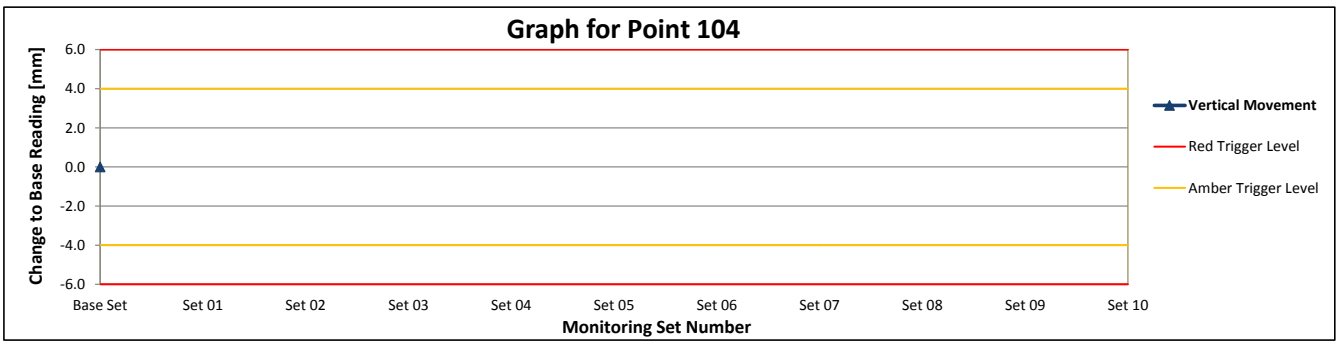

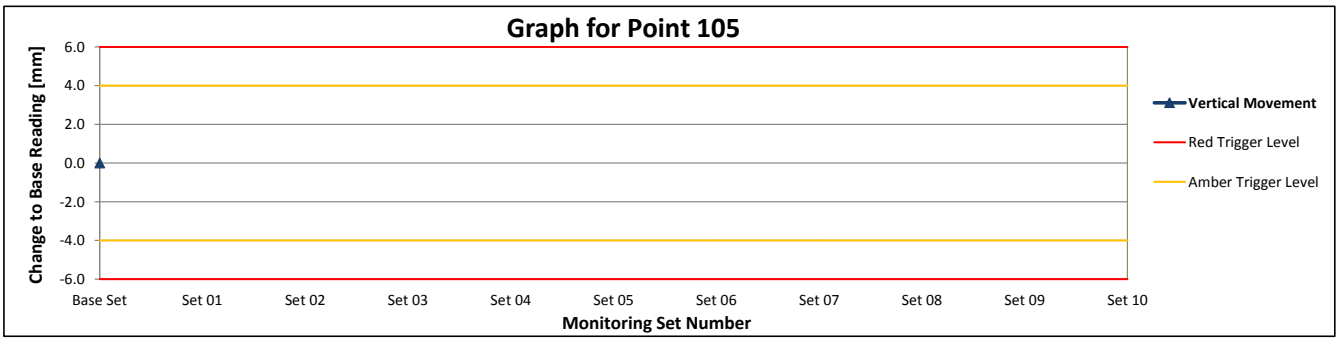

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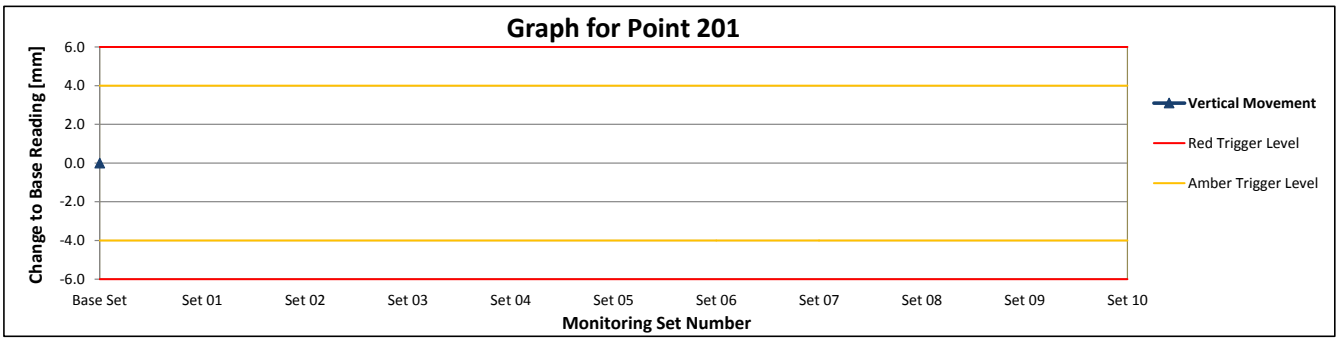

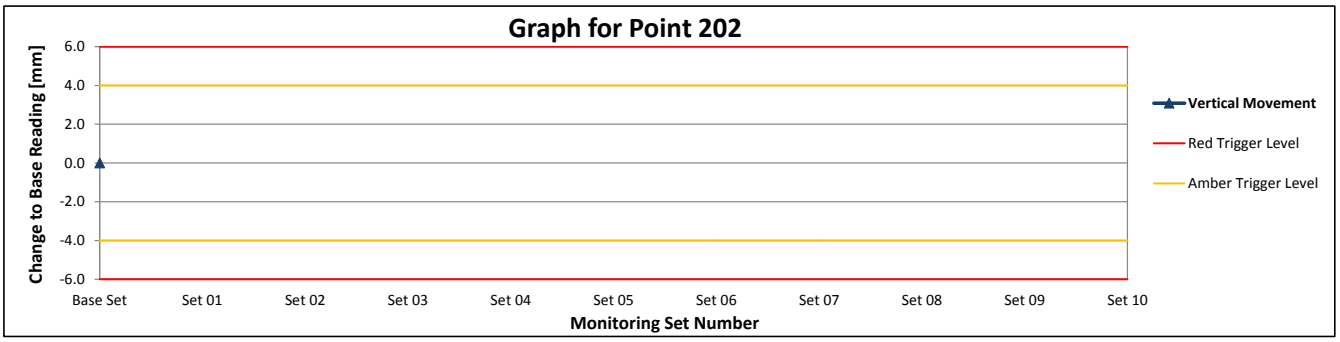

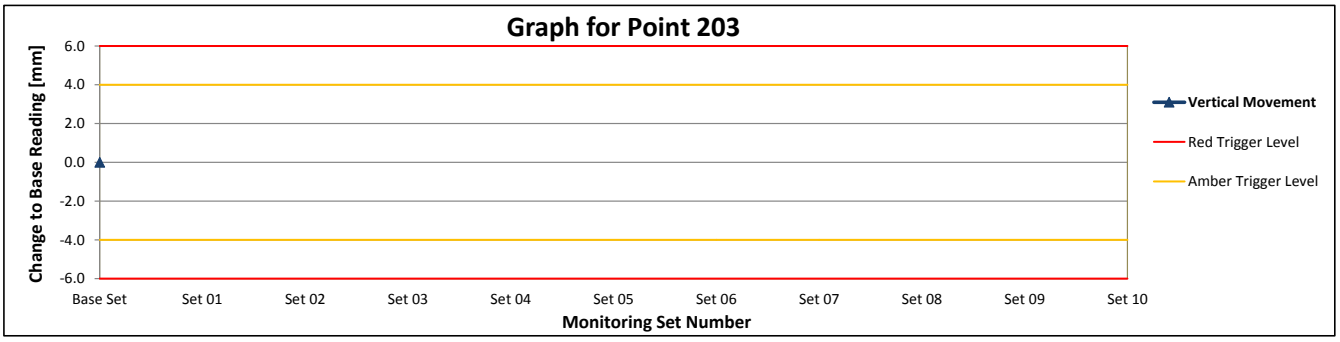

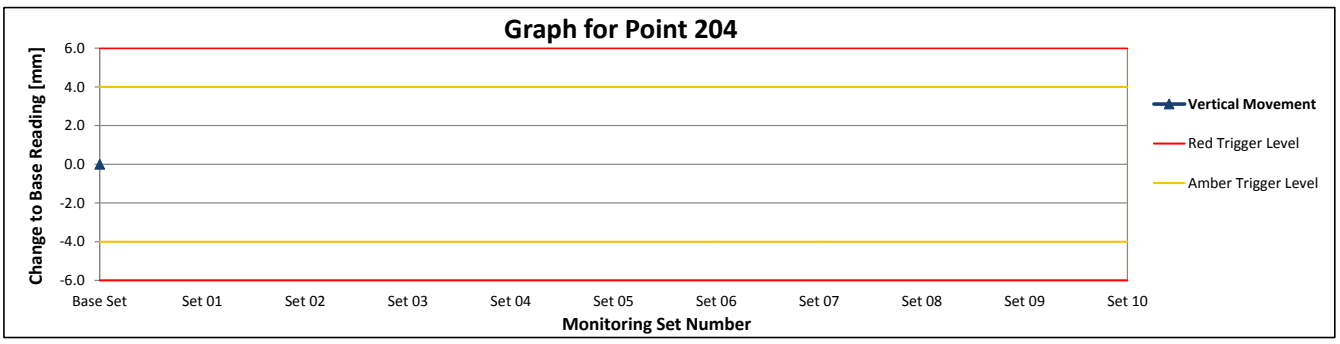

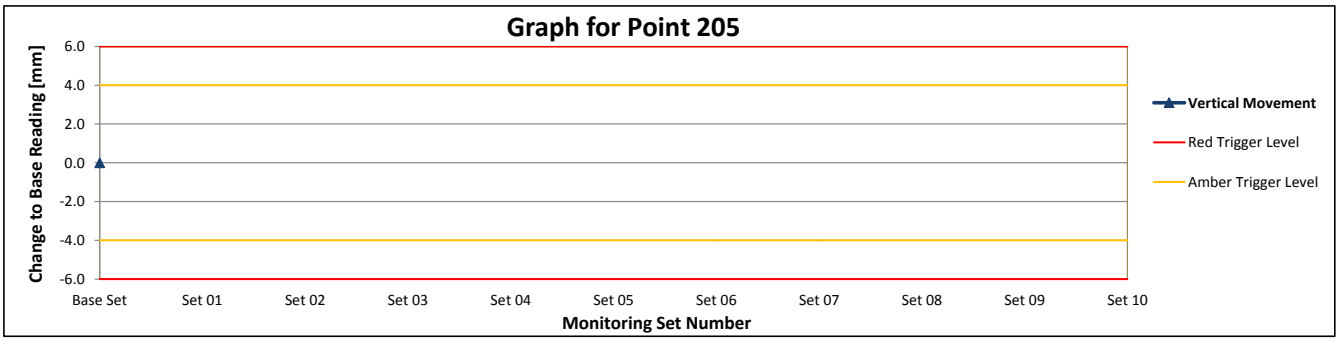

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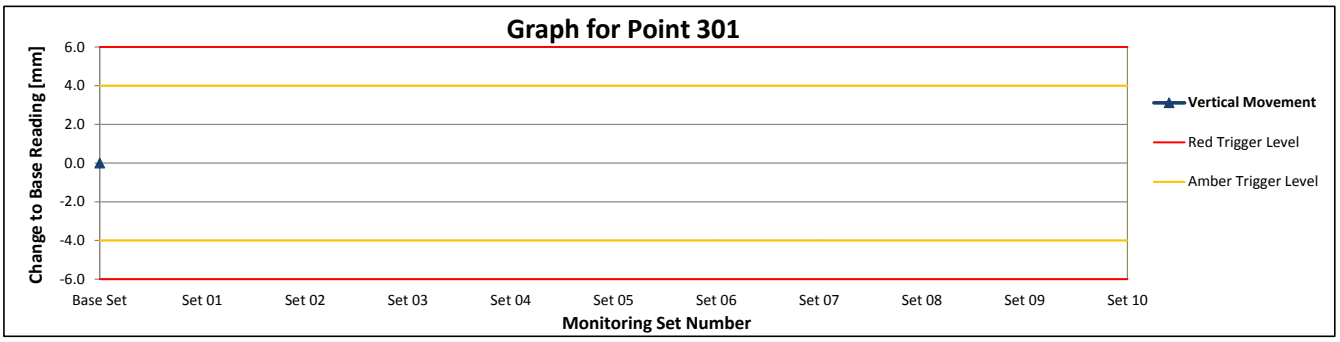

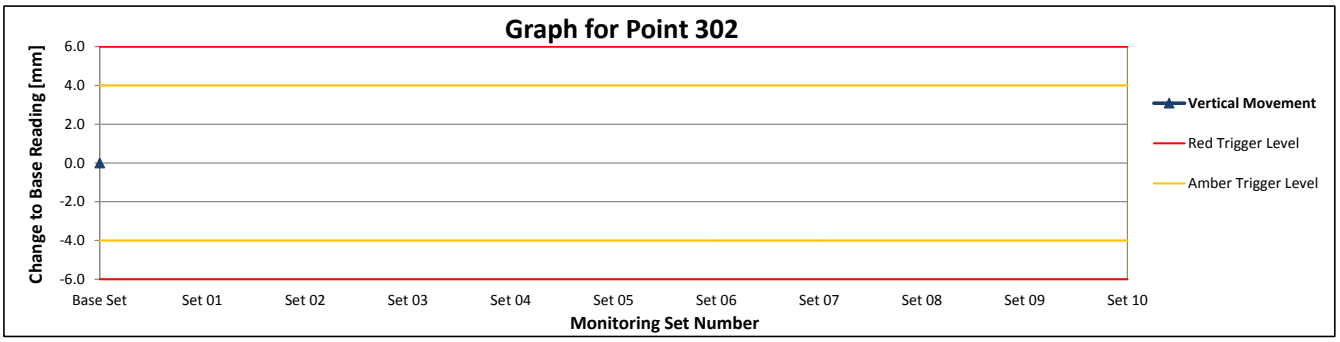

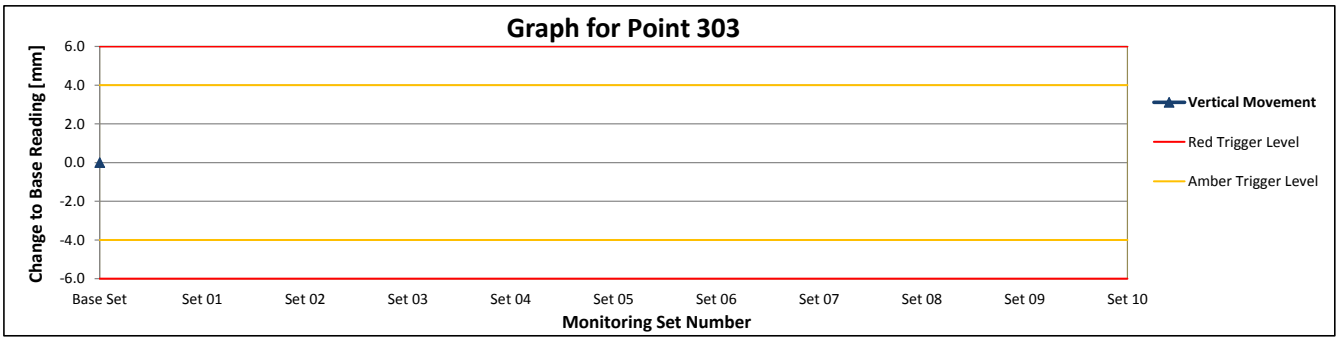

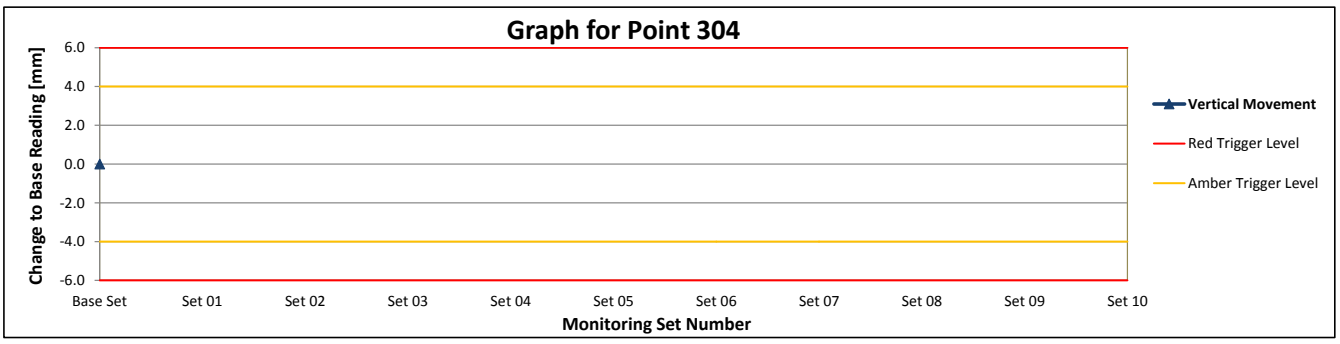

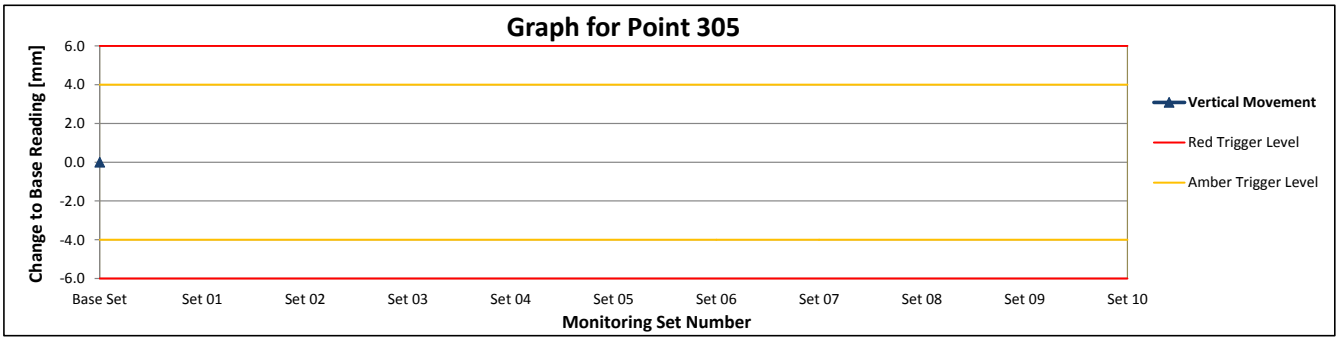

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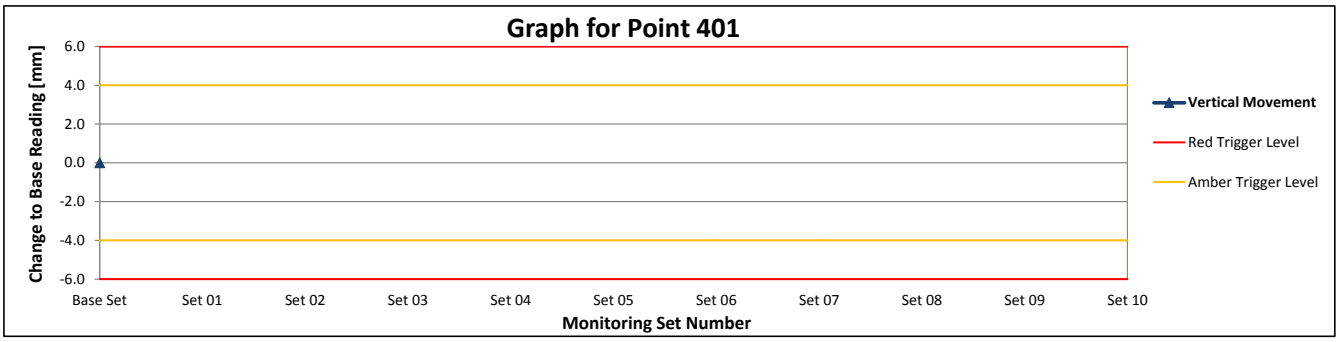

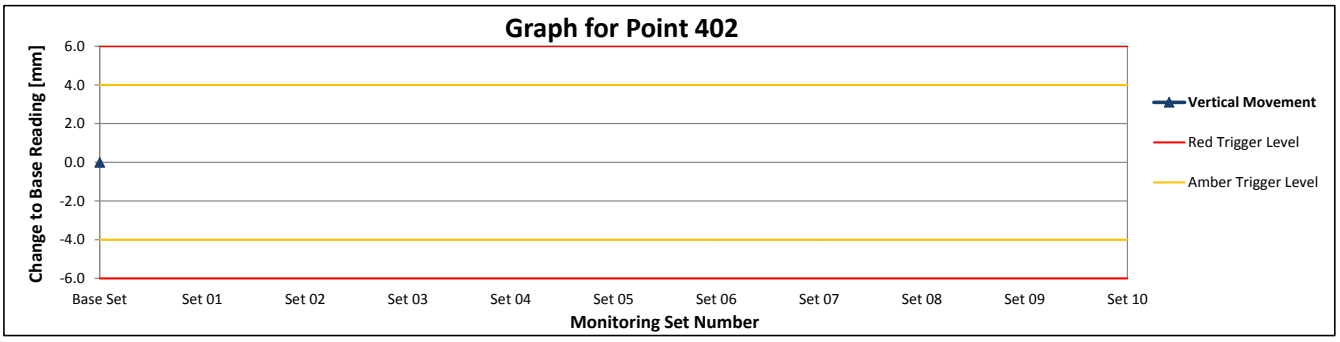

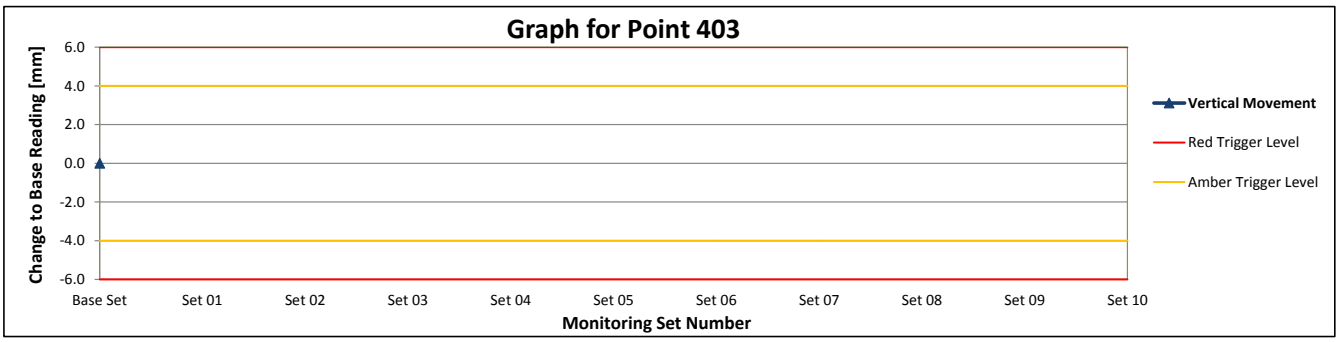

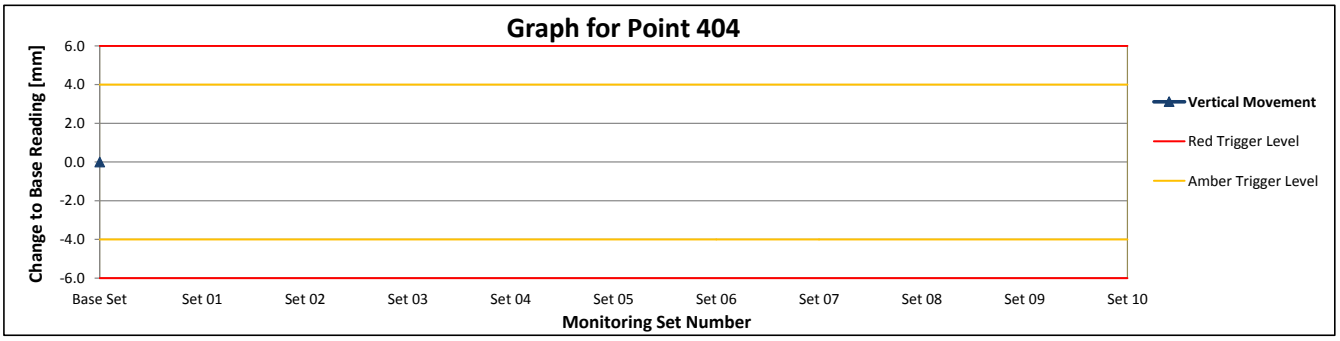

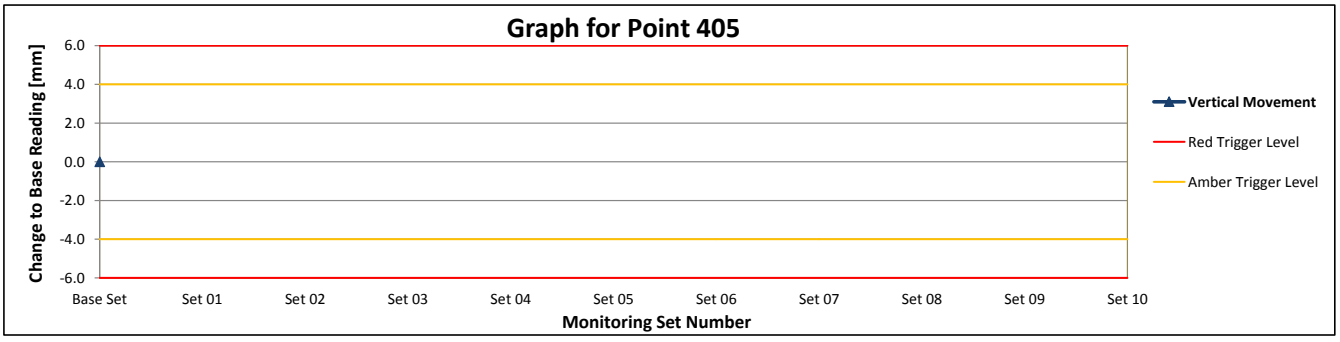

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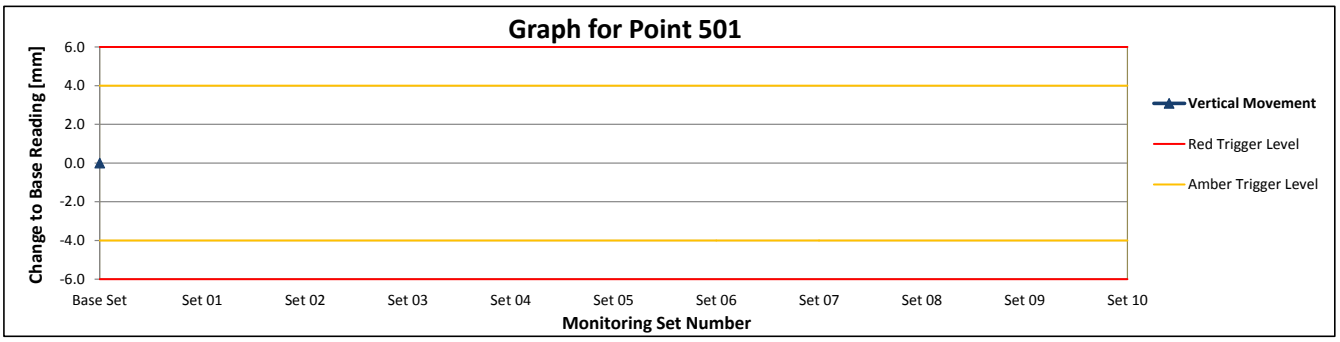

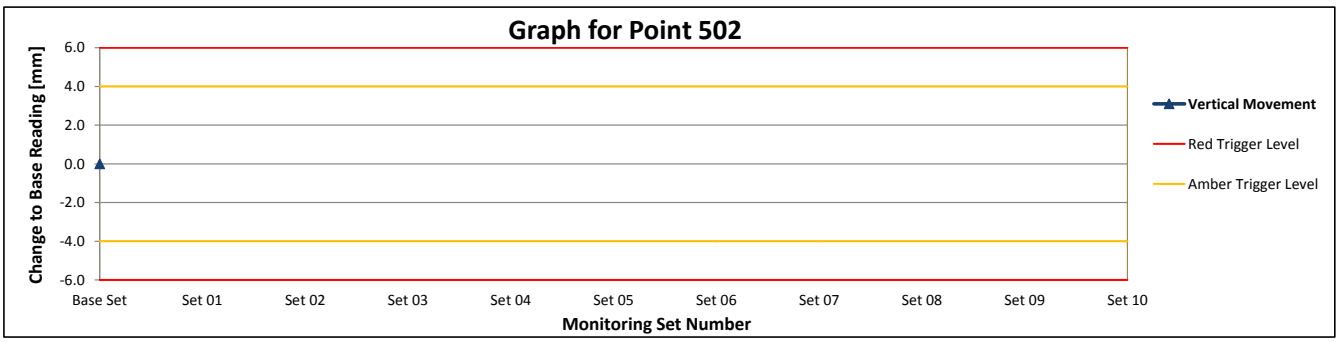

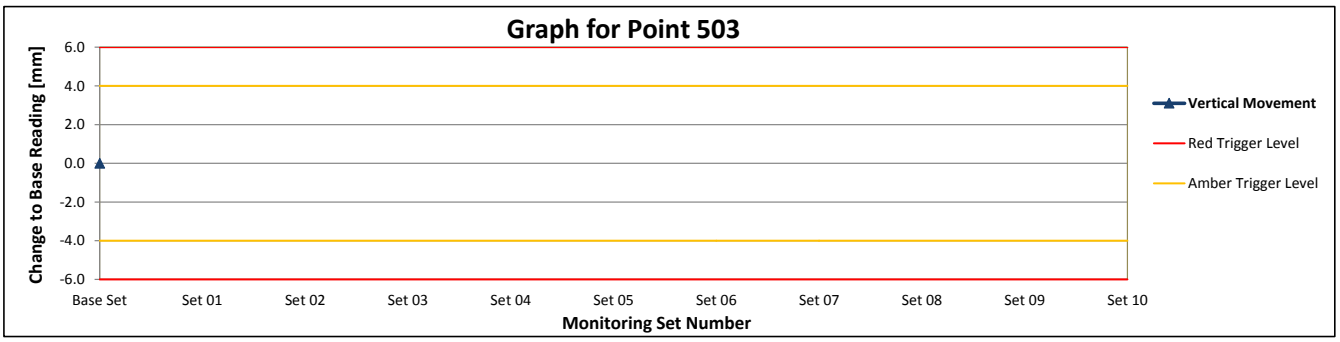

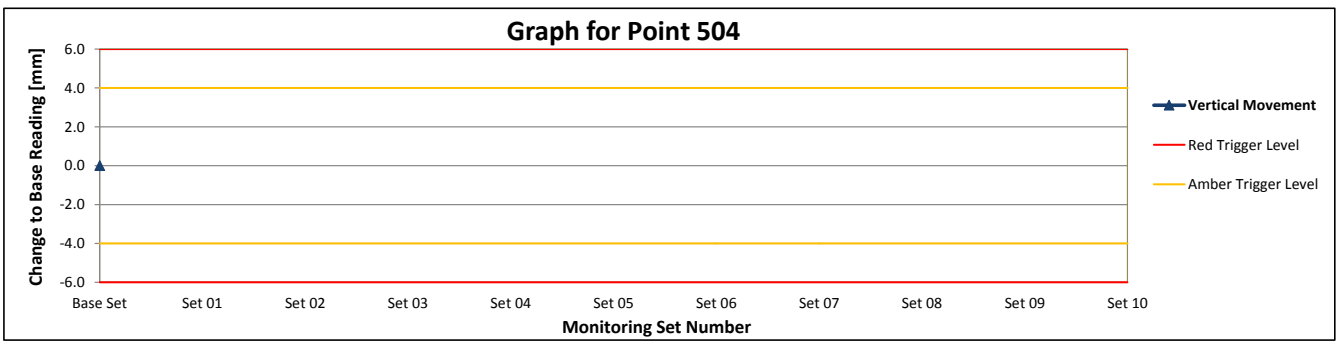

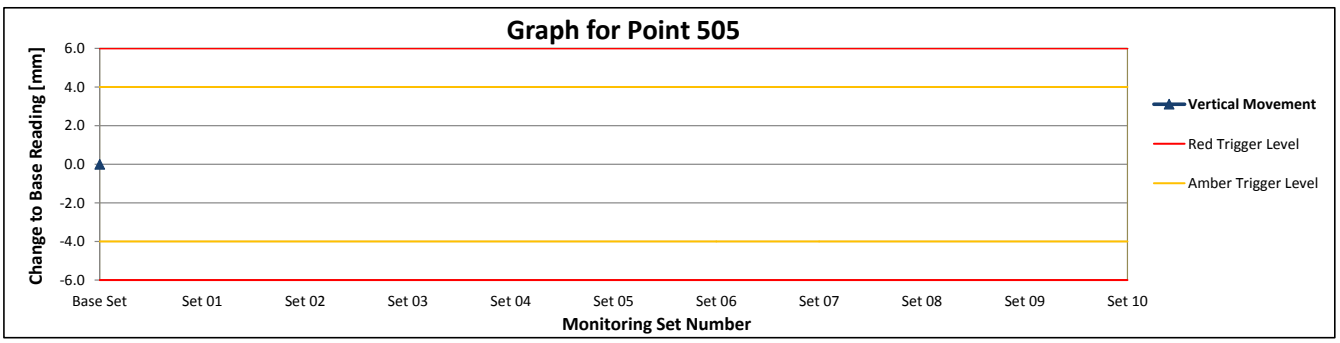

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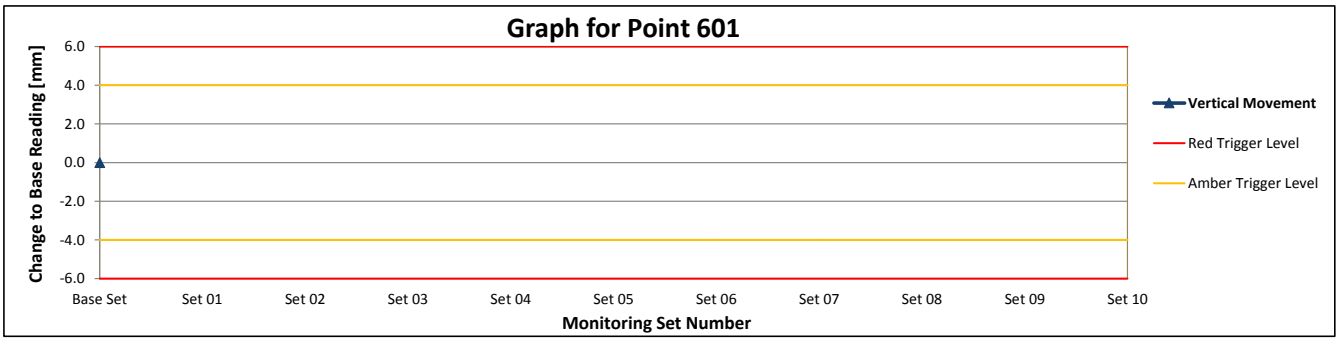

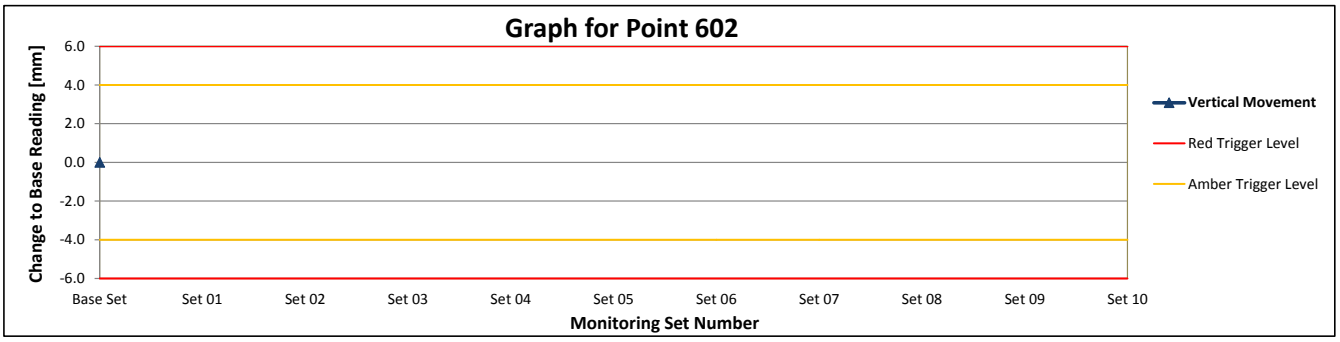

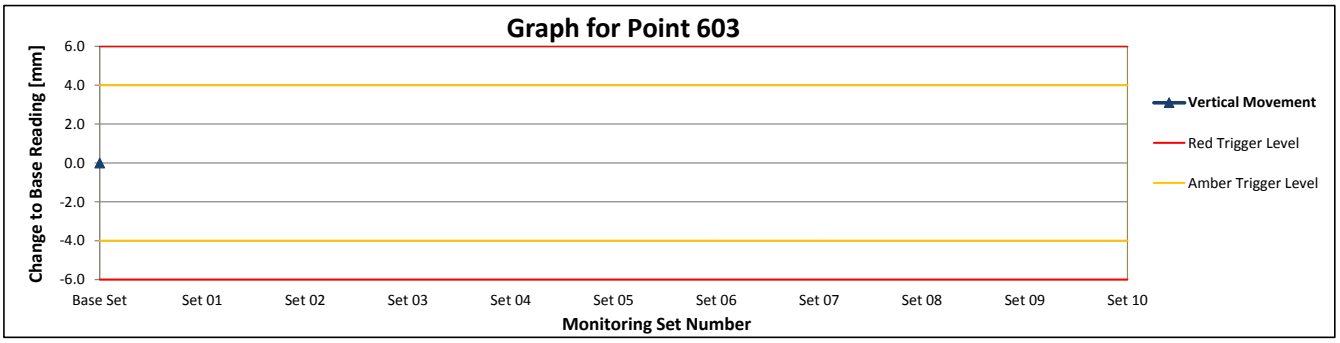

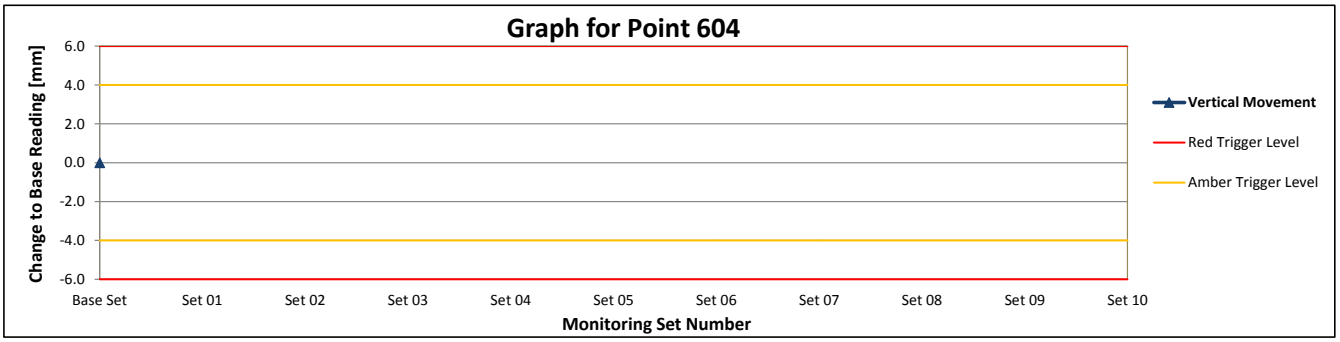

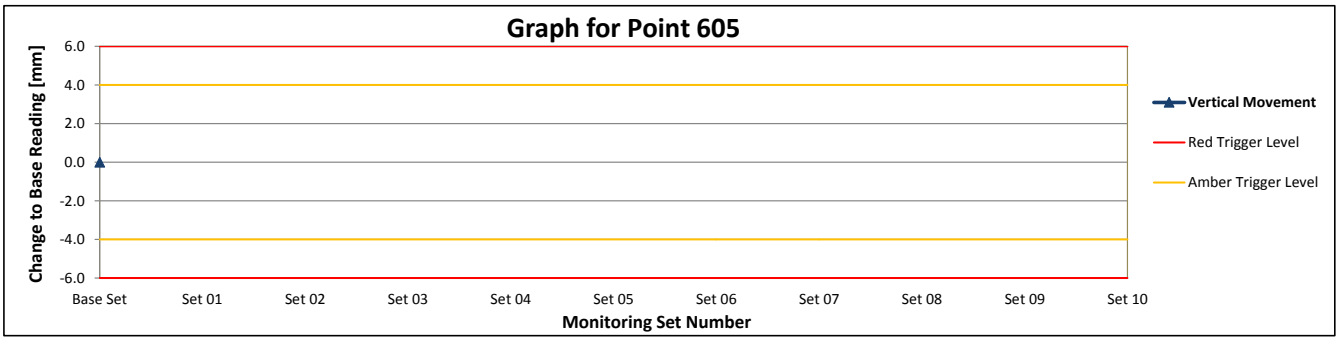

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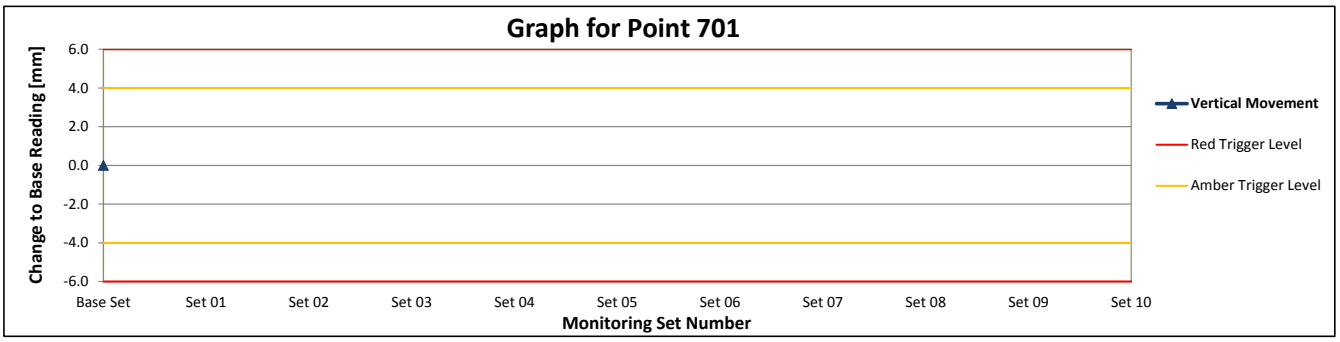

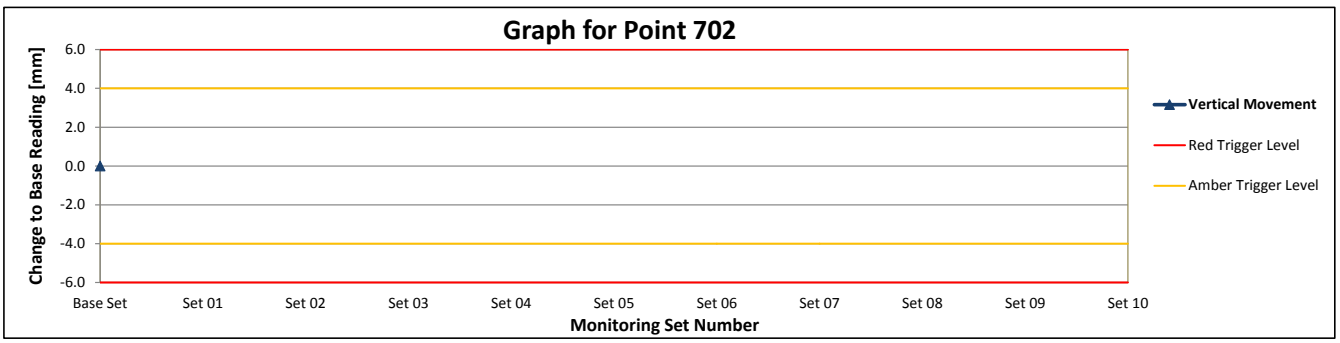

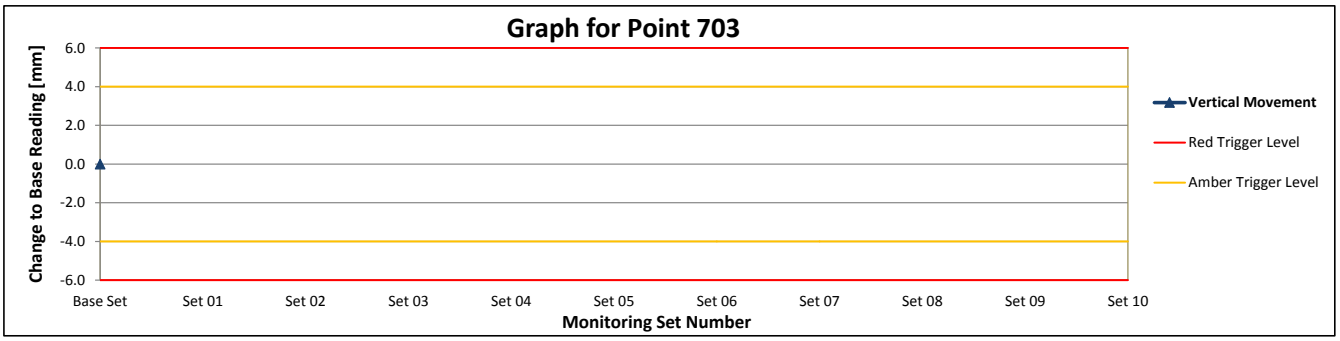

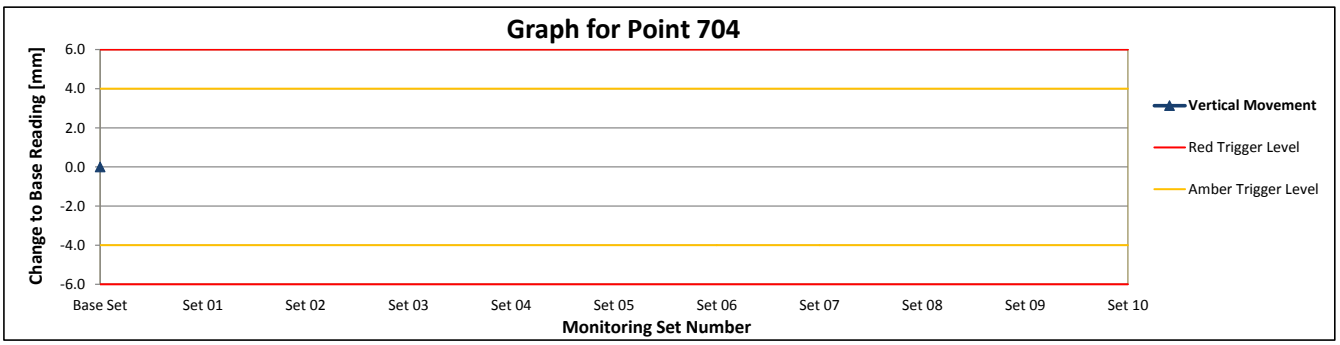

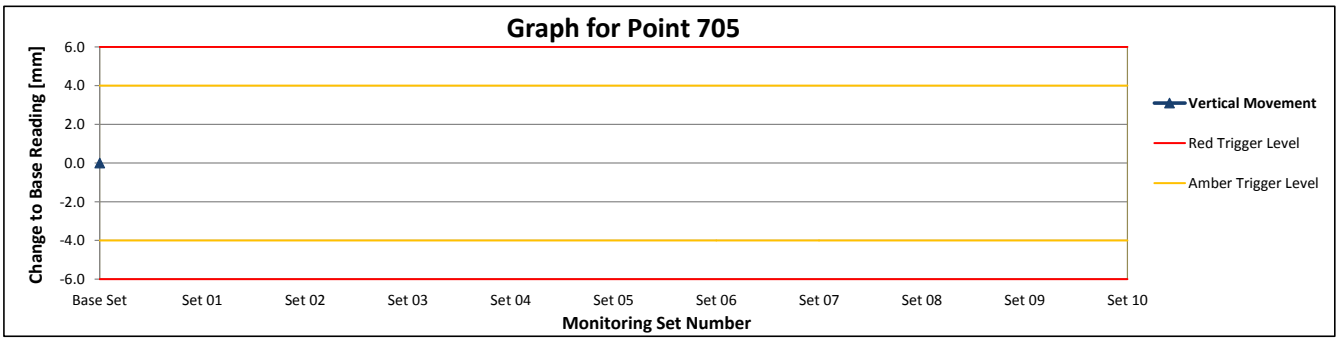

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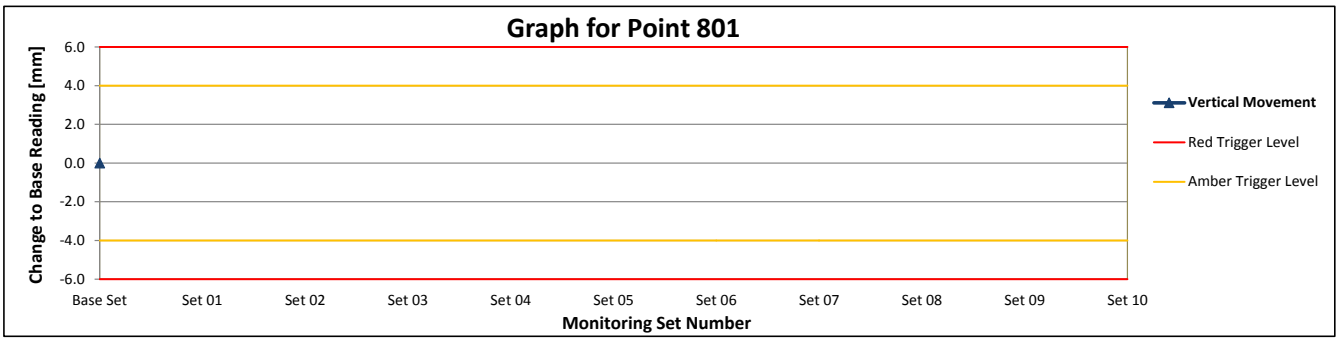

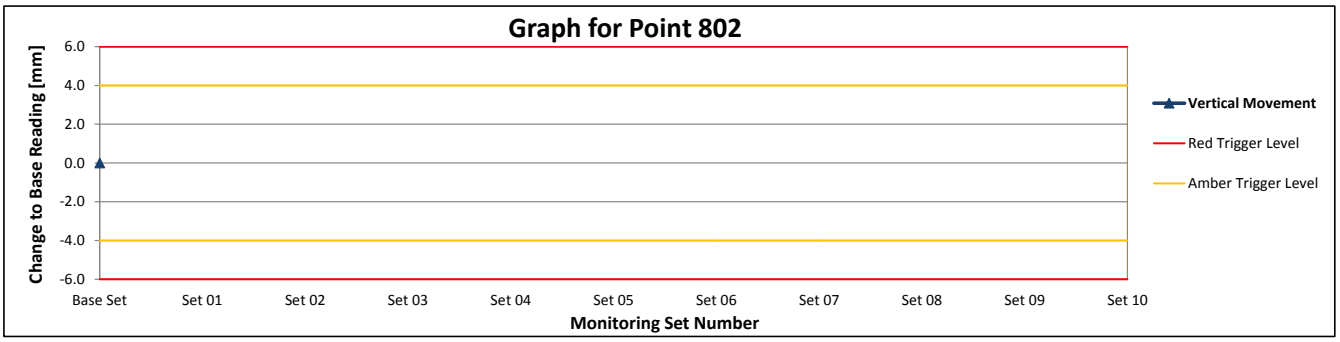

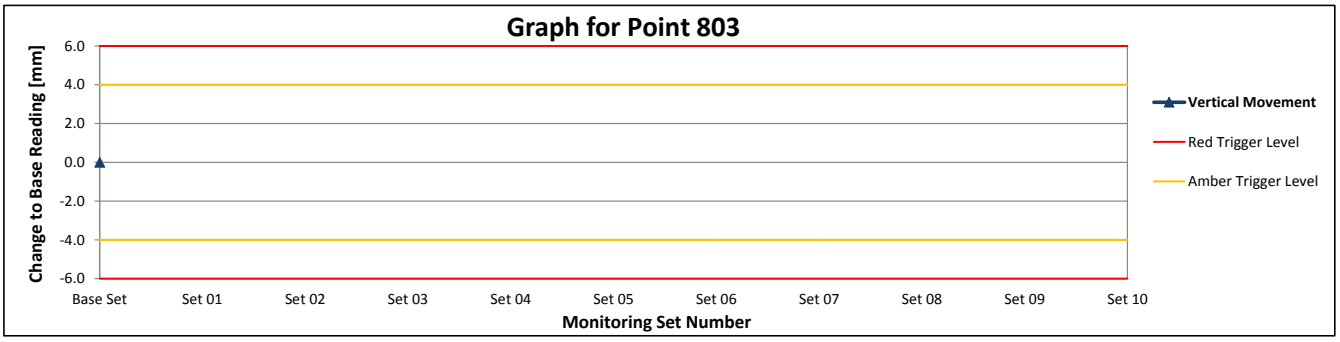

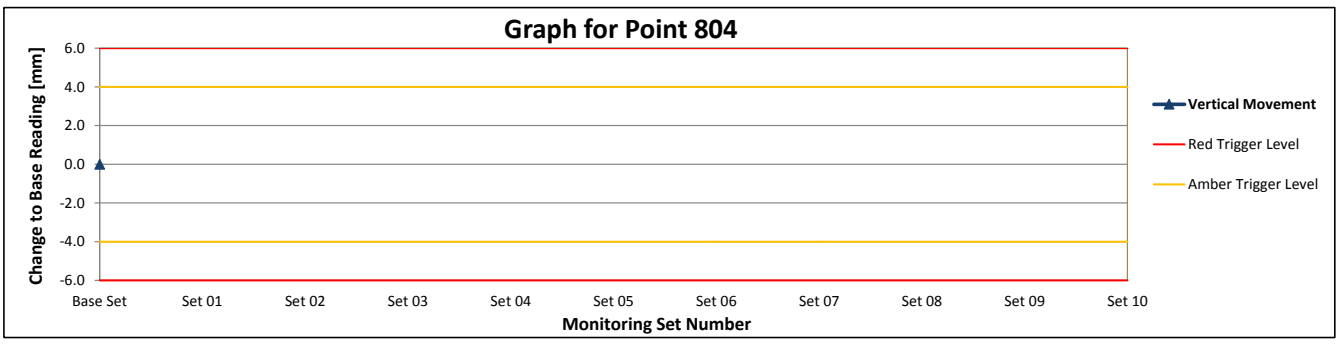

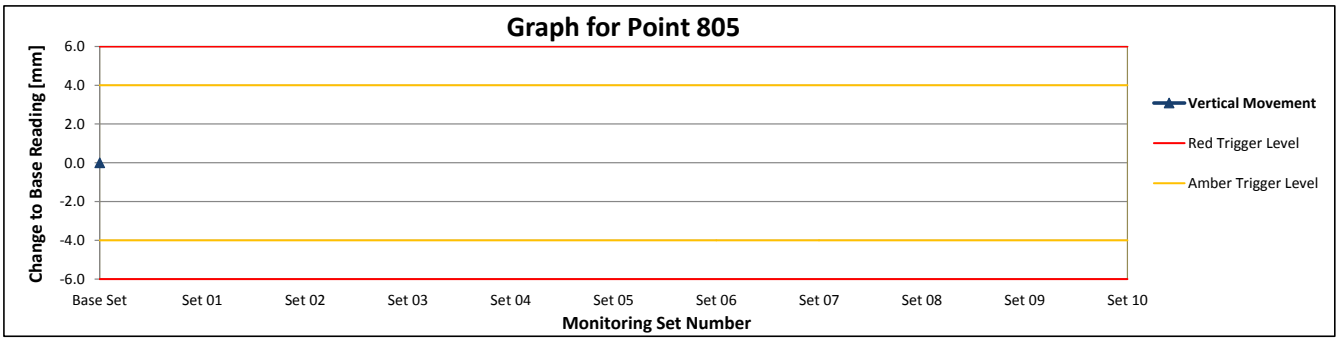

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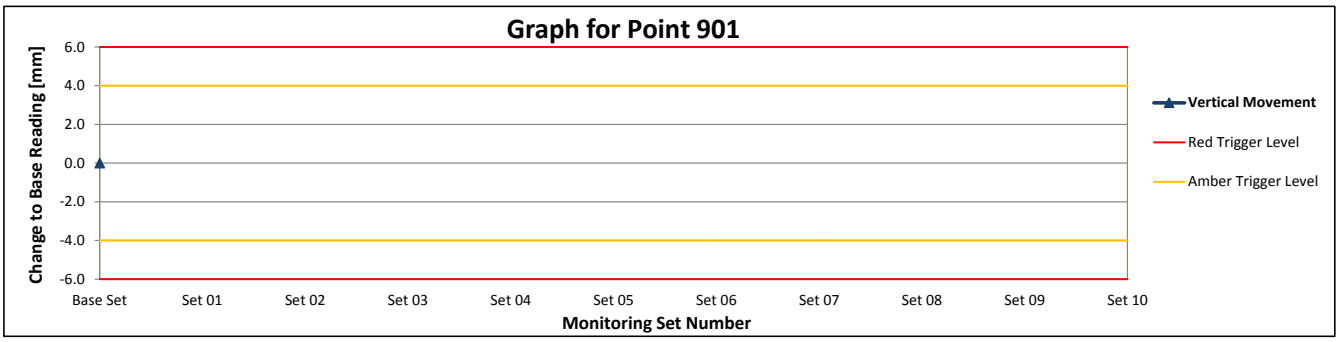

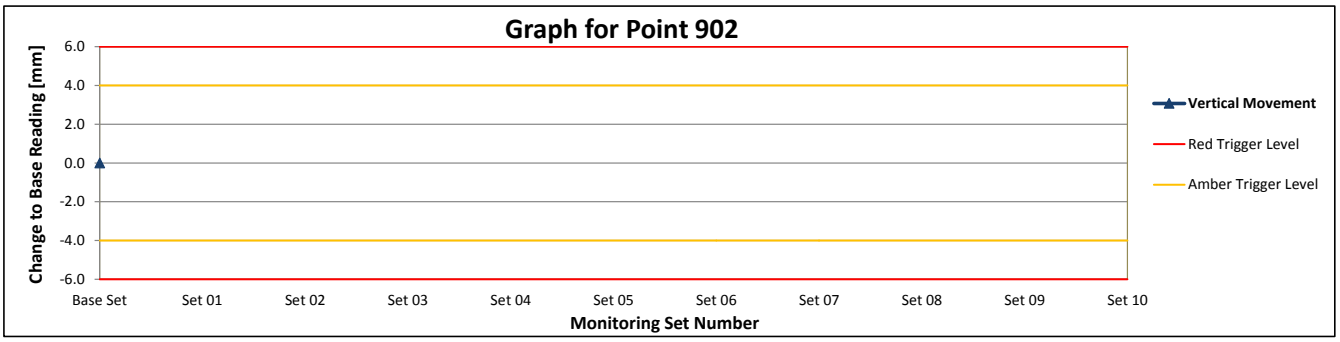

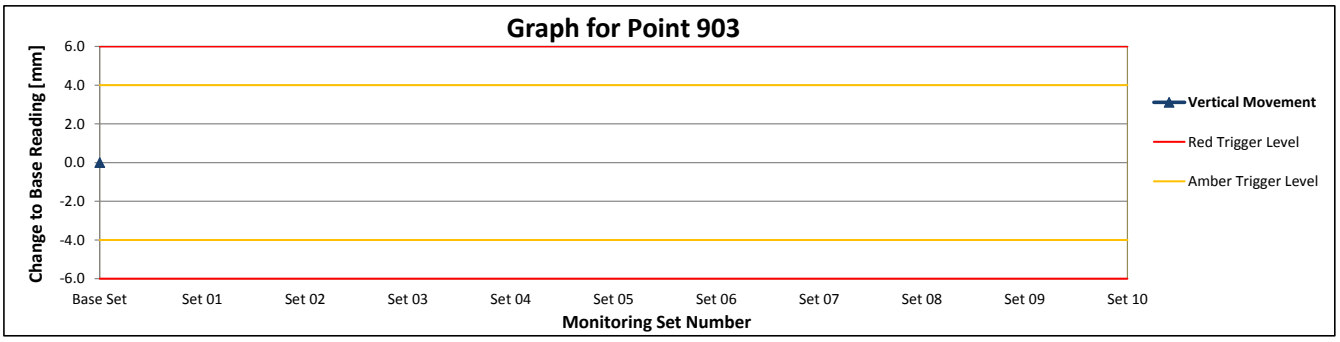

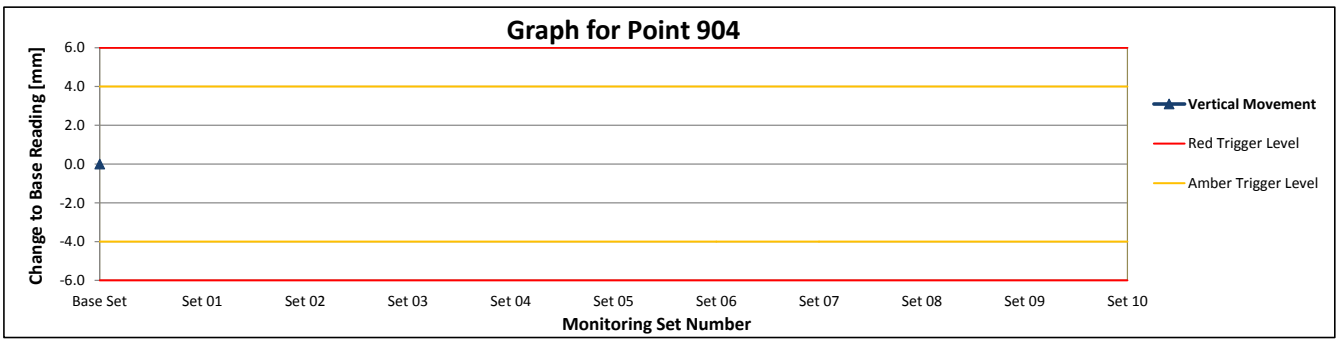

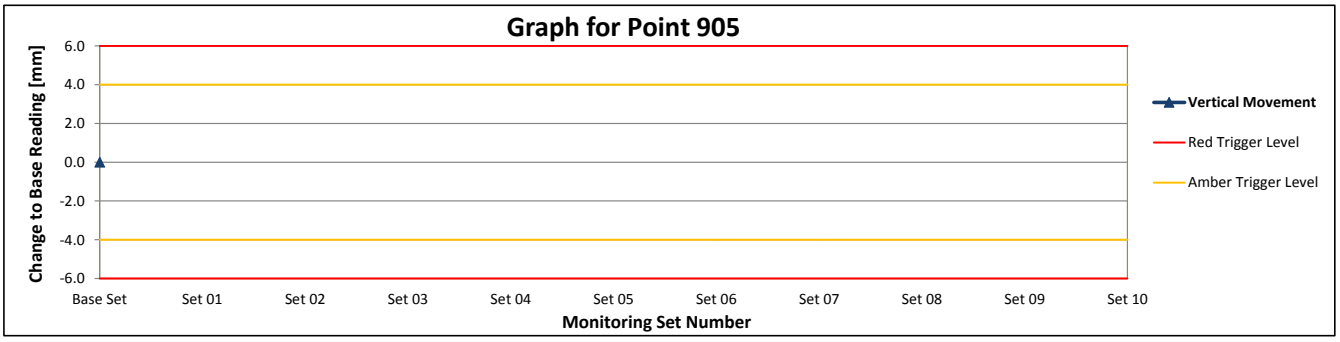

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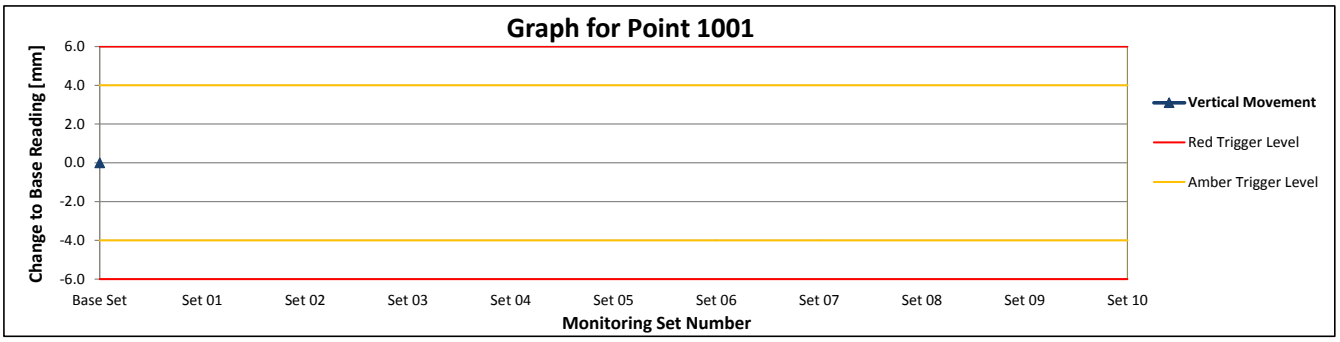

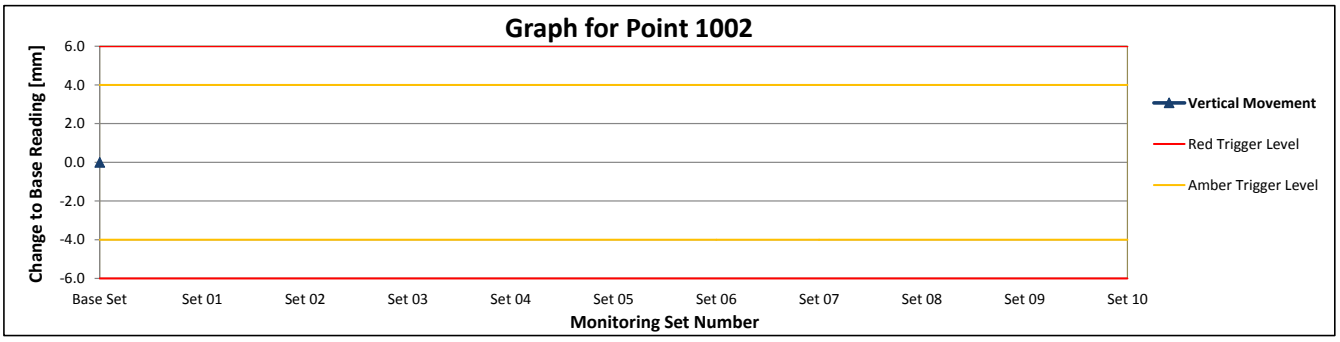

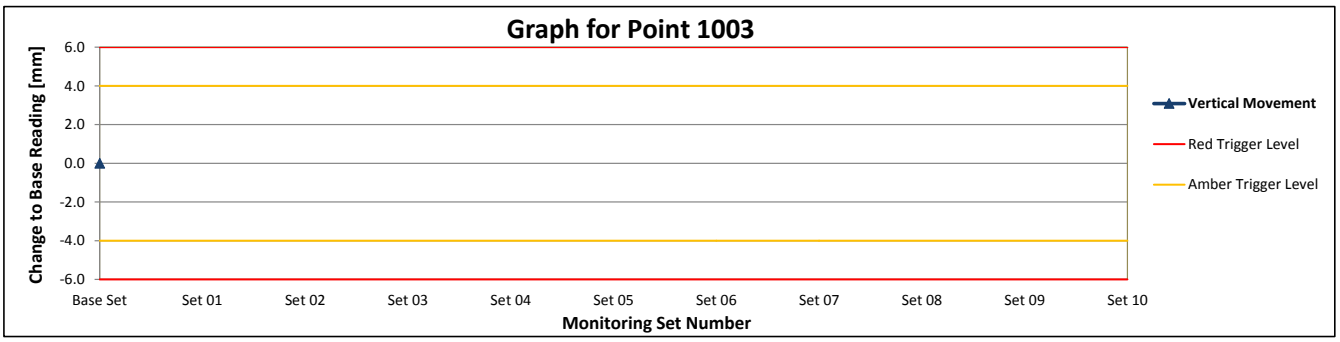

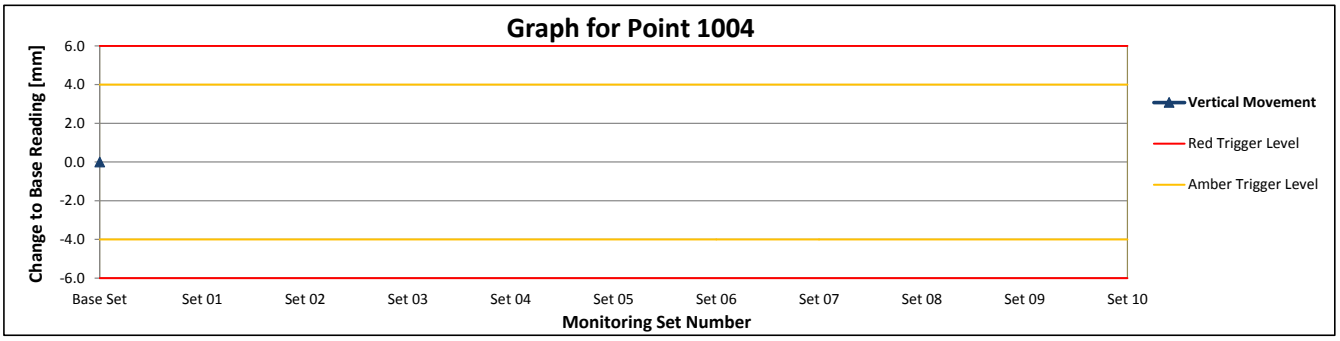

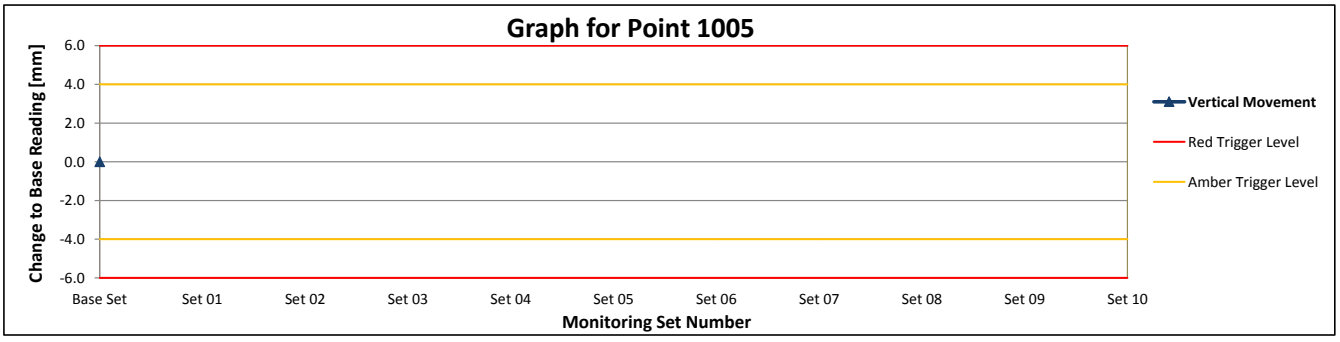

Project: 100 Avenue Road Development, London

Job Description: 3D Deformation Monitoring

Monitoring Location: Swiss Cottage Underground Station

Project Reference: SAL-1311-01

Sheet Reference: SAL-1311-01-02 Set 00 - Vertical Monitoring Graphs

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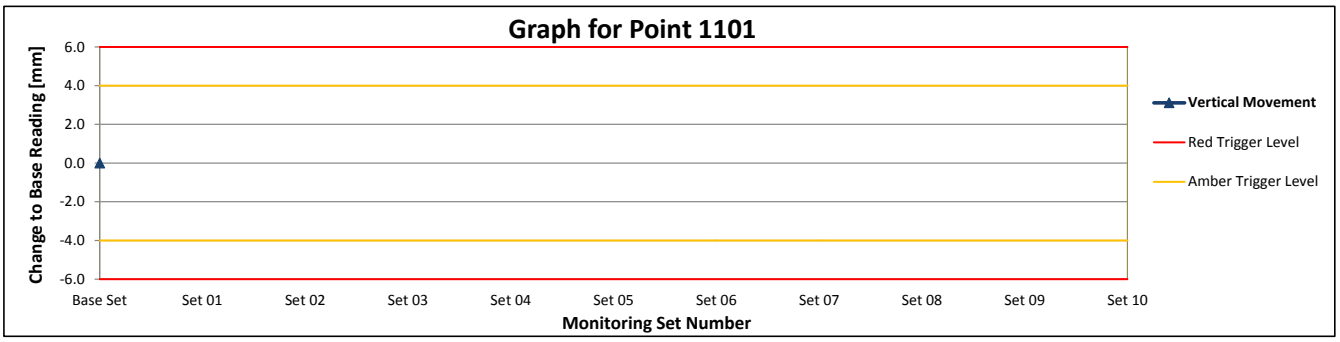

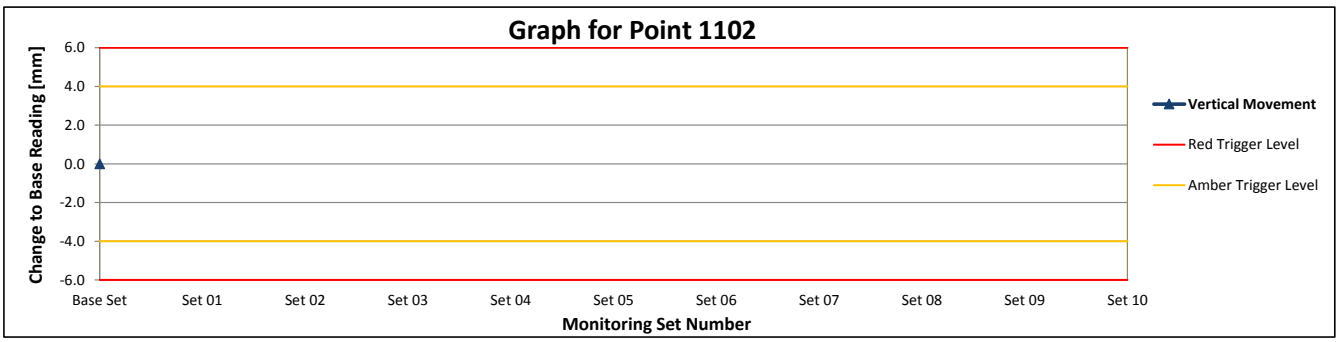

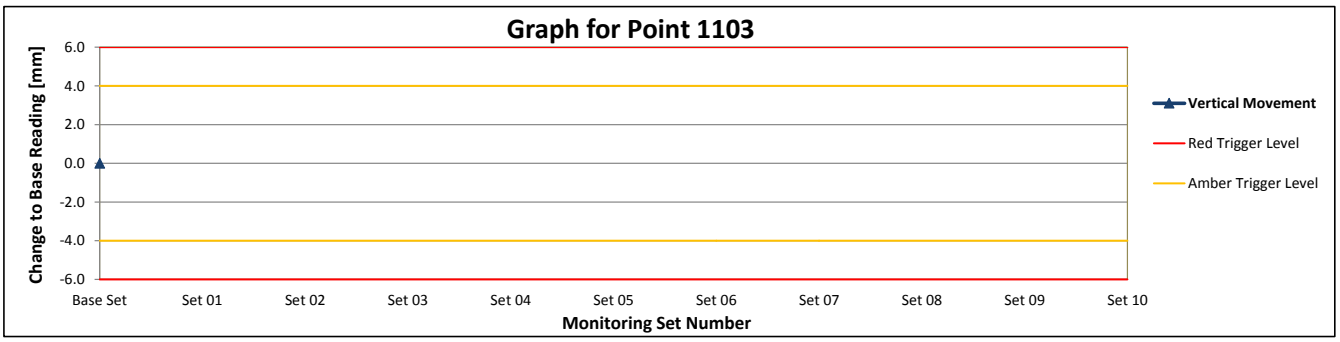

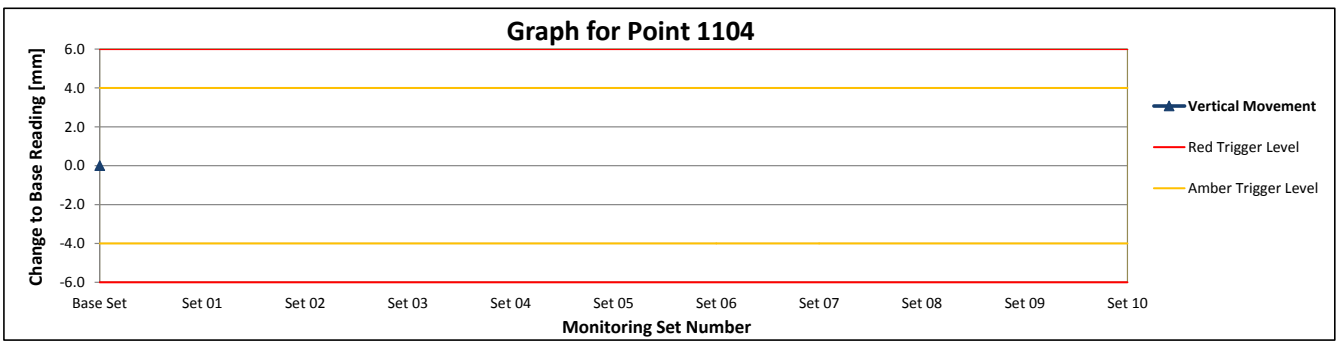

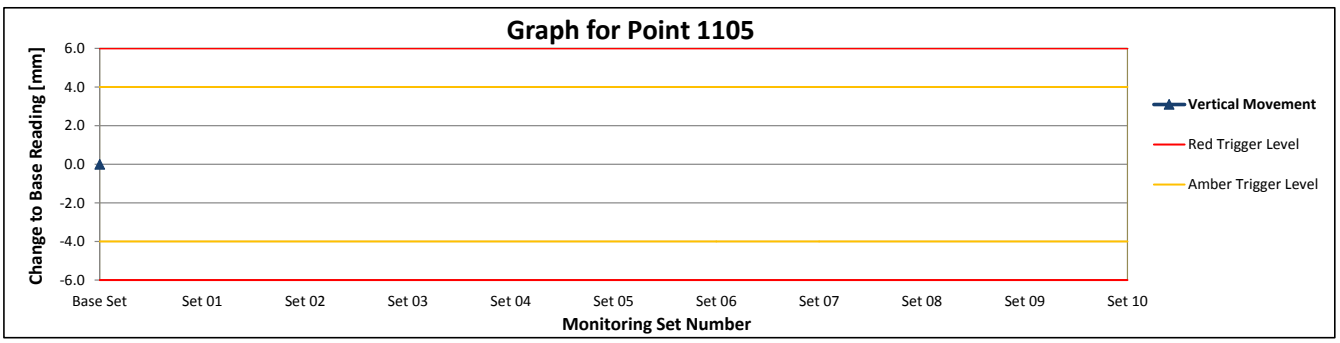

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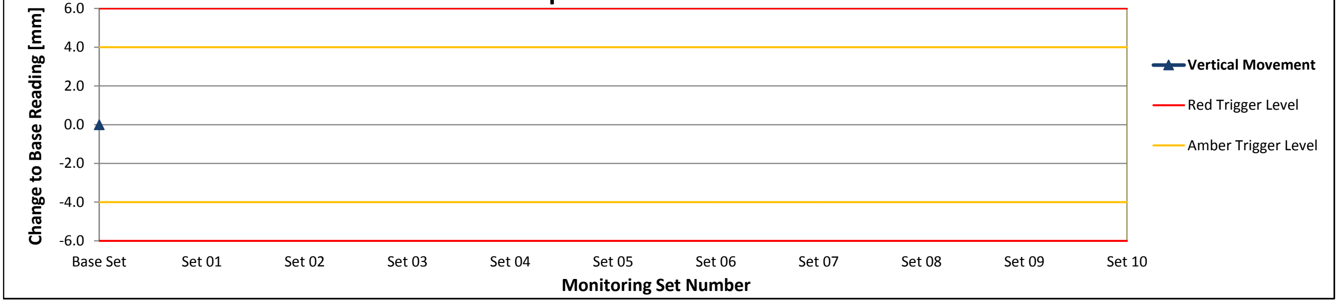
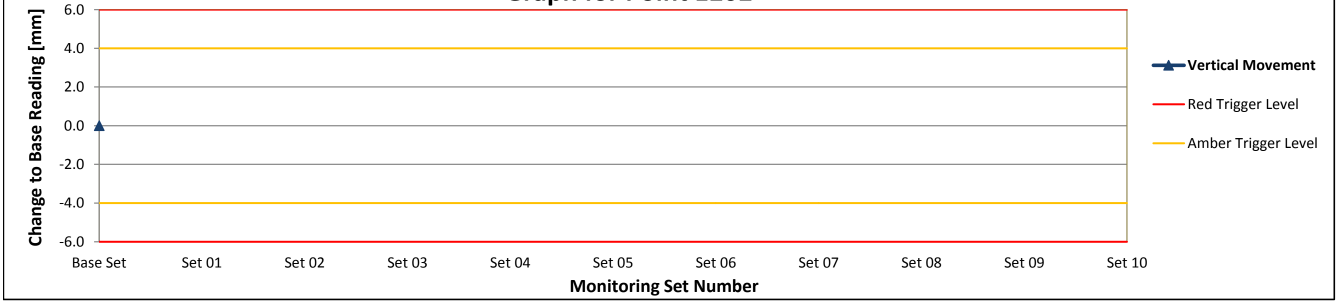
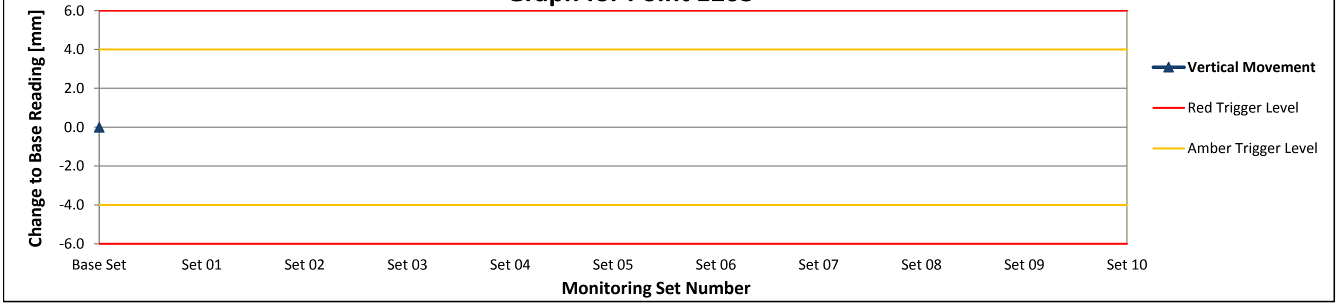
Graph for Point 1201



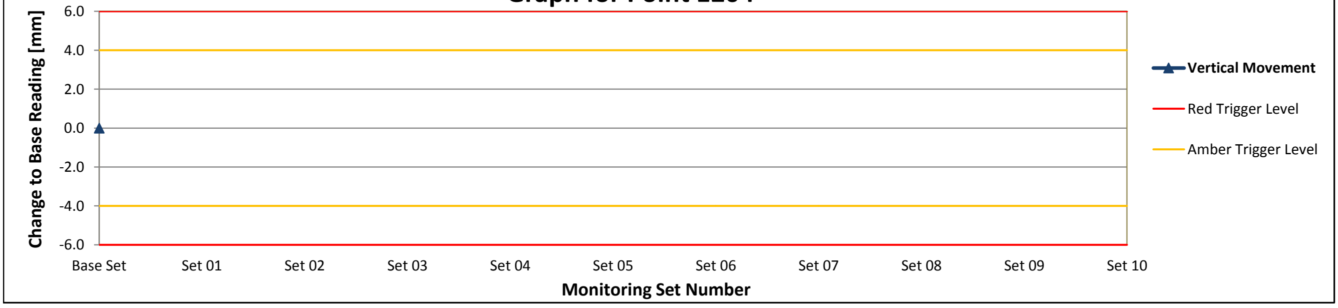
Graph for Point 1202



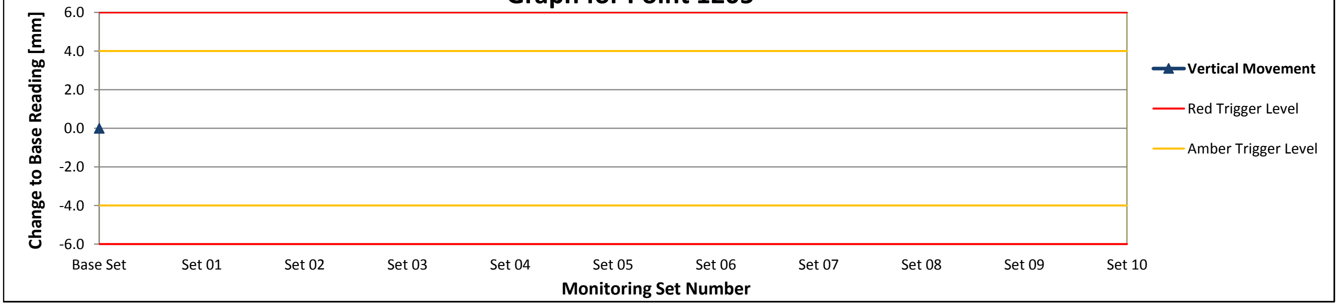
Graph for Point 1203



Graph for Point 1204



Graph for Point 1205



Project: 100 Avenue Road Development, London

Job Description: 3D Deformation Monitoring

Monitoring Location: Swiss Cottage Underground Station

Project Reference: SAL-1311-01

Sheet Reference: SAL-1311-01-02 Set 00 - Vertical Monitoring Graphs

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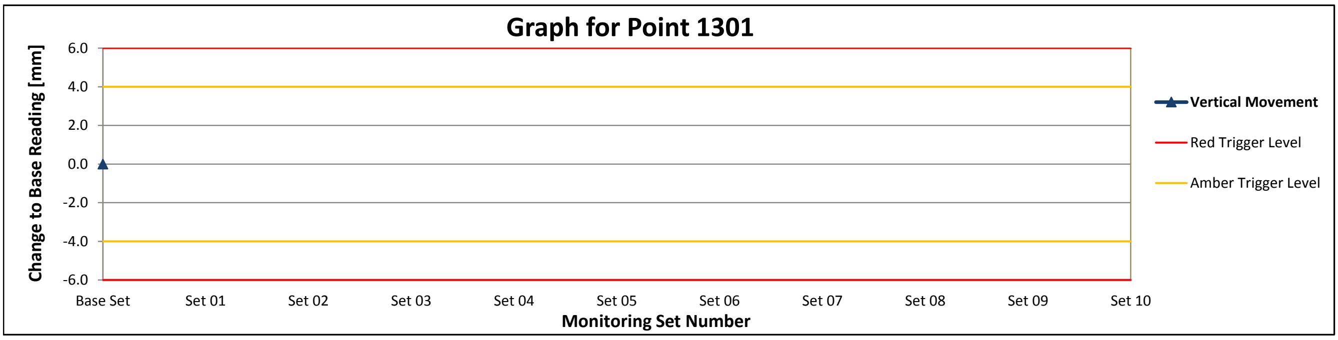

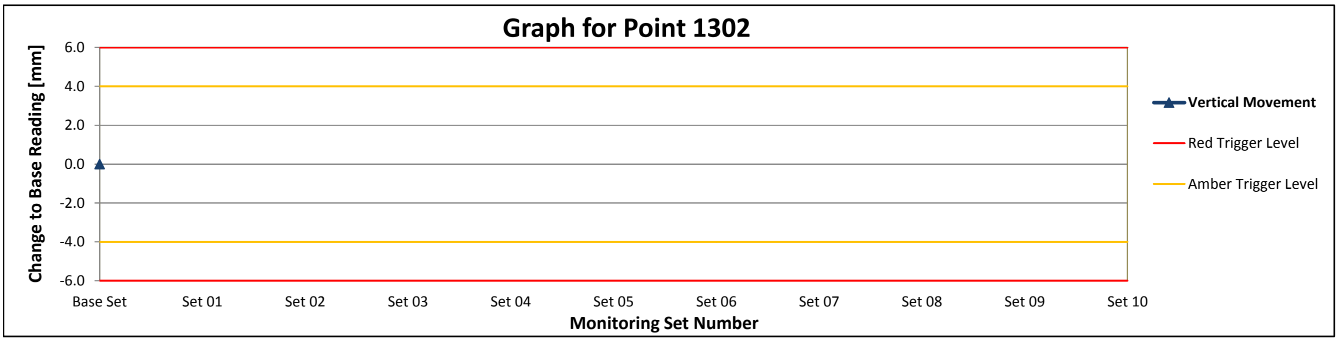

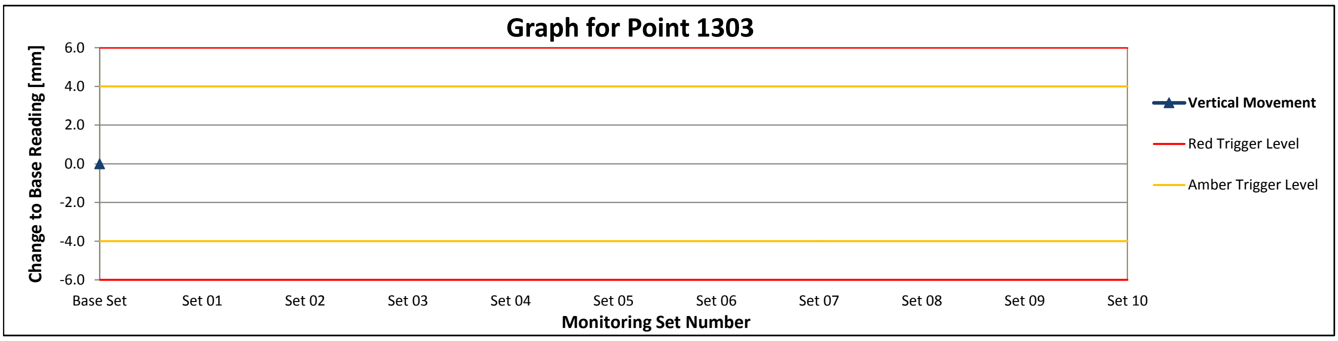

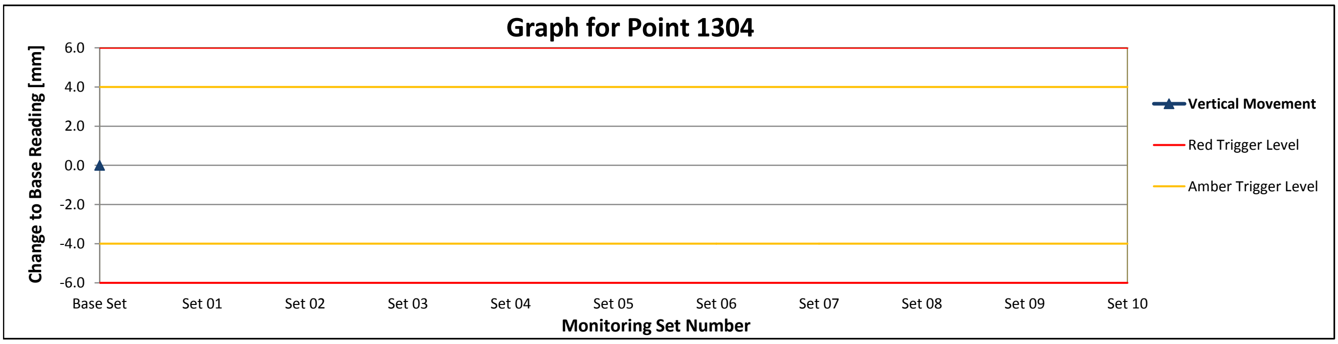

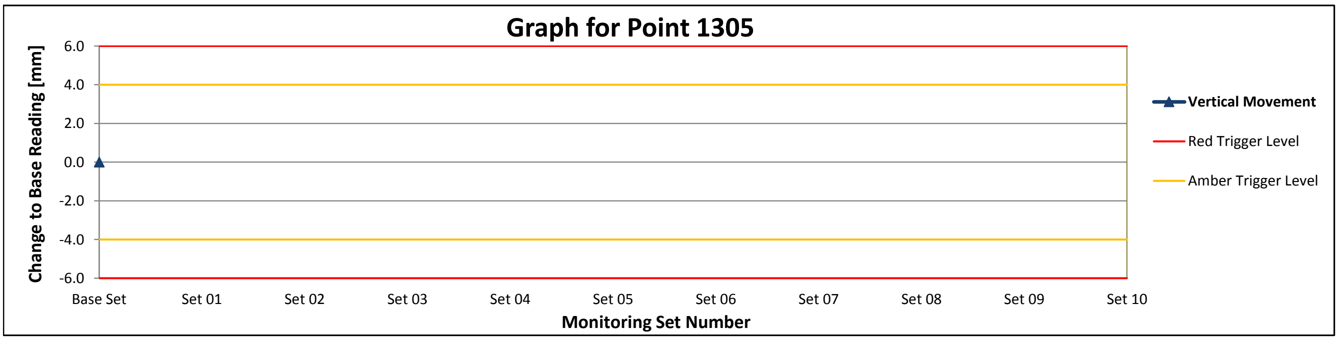

Project: 100 Avenue Road Development, London

Job Description: 3D Deformation Monitoring

Monitoring Location: Swiss Cottage Underground Station

Project Reference: SAL-1311-01

Sheet Reference: SAL-1311-01-02 Set 00 - Vertical Monitoring Graphs

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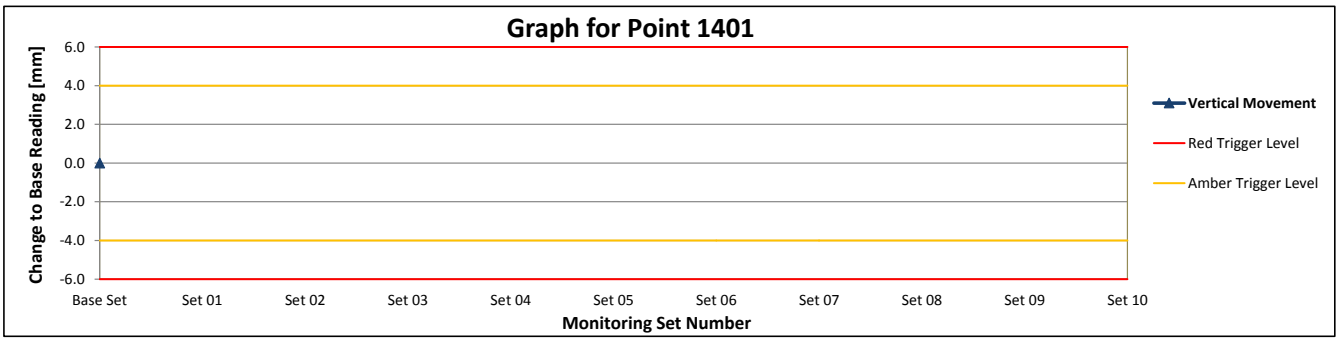

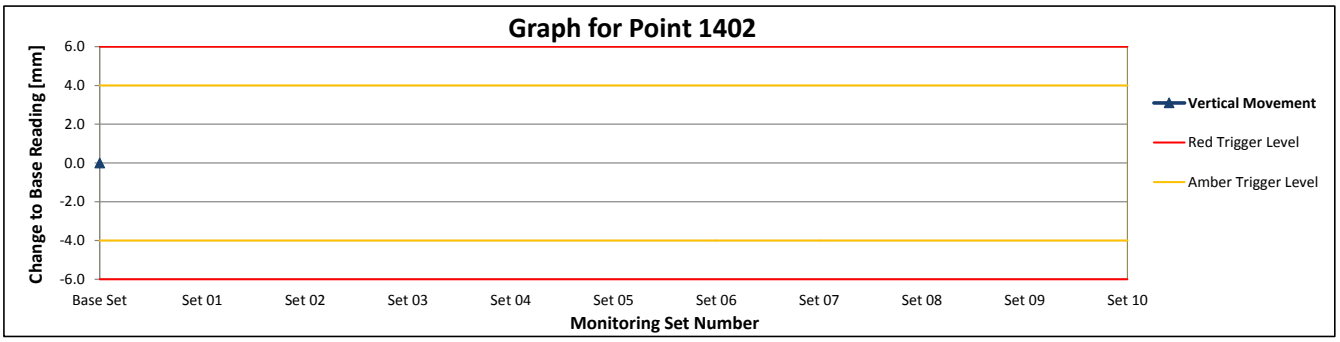

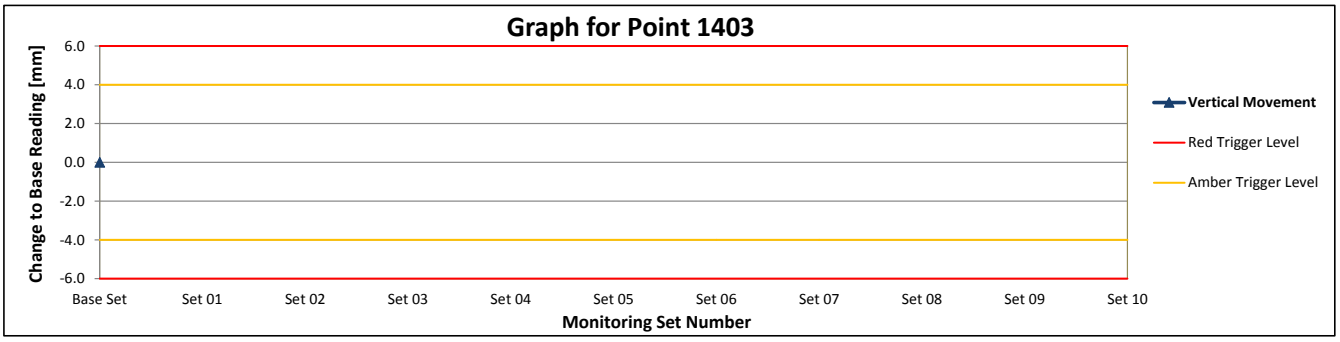

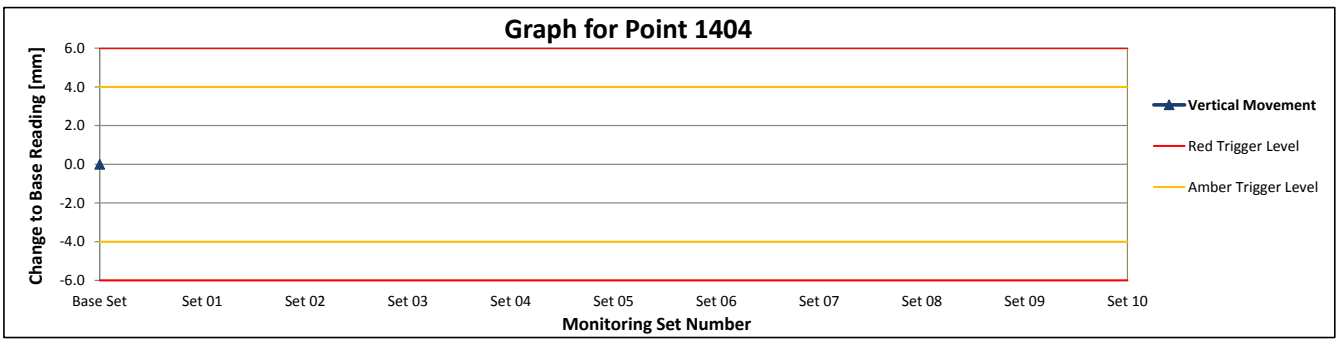

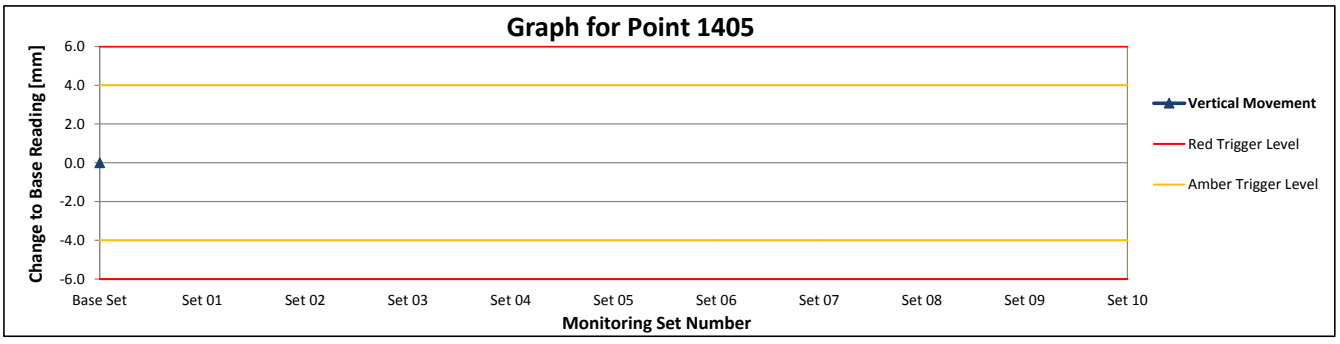

Project: 100 Avenue Road Development, London

Job Description: 3D Deformation Monitoring

Monitoring Location: Swiss Cottage Underground Station

Project Reference: SAL-1311-01

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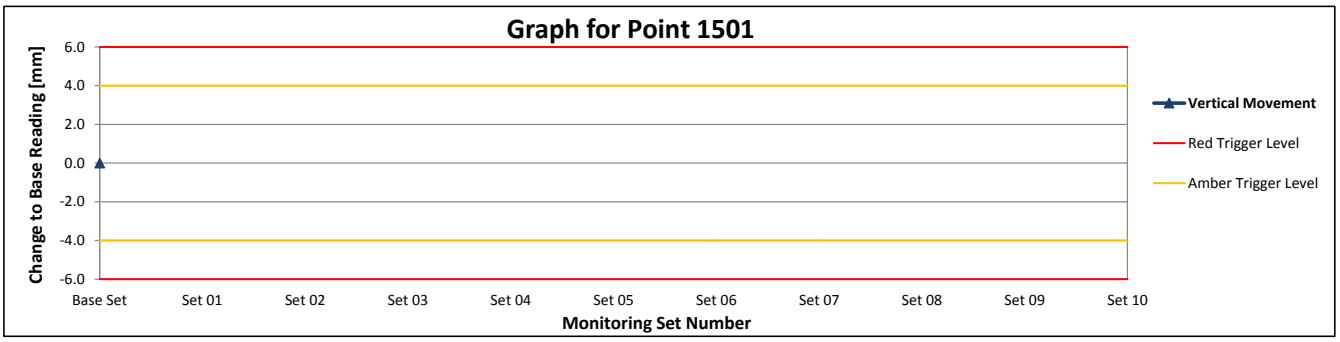

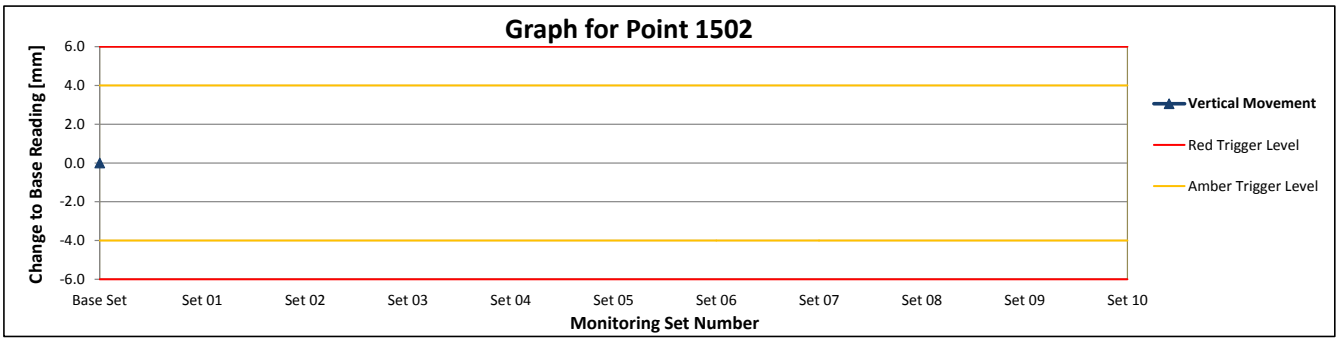

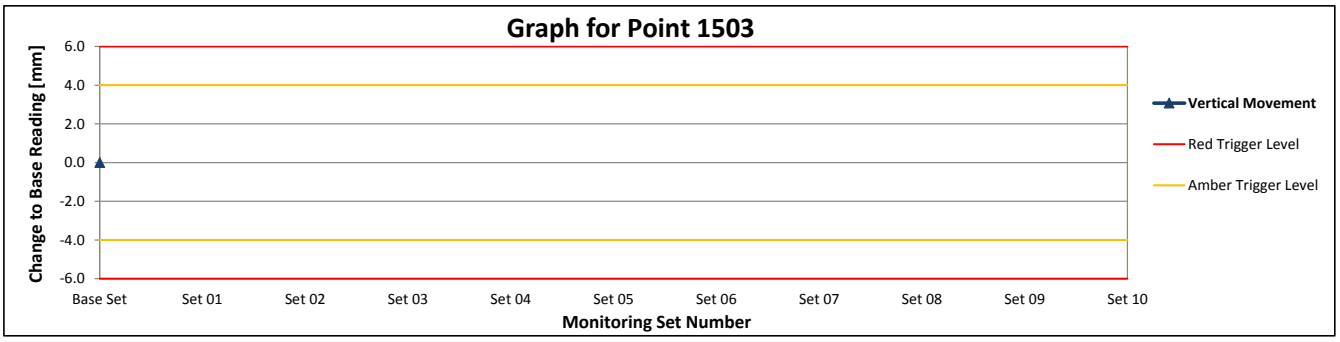

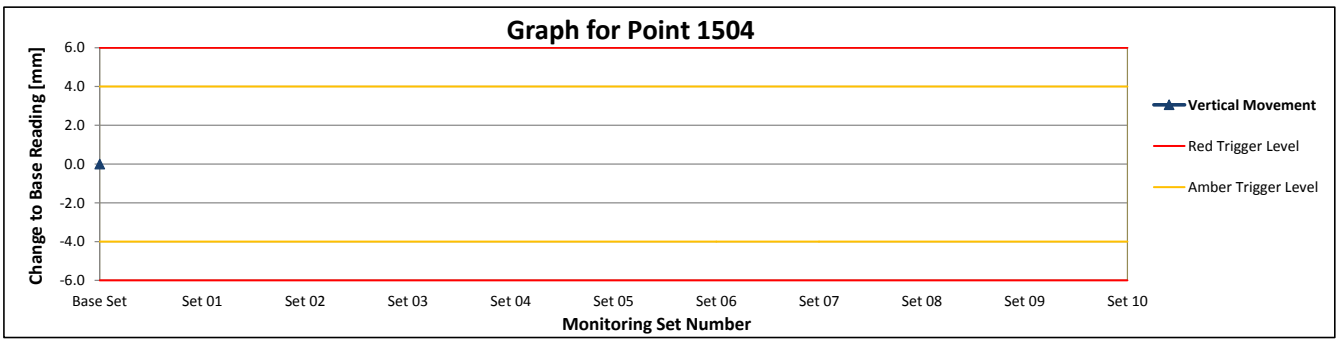

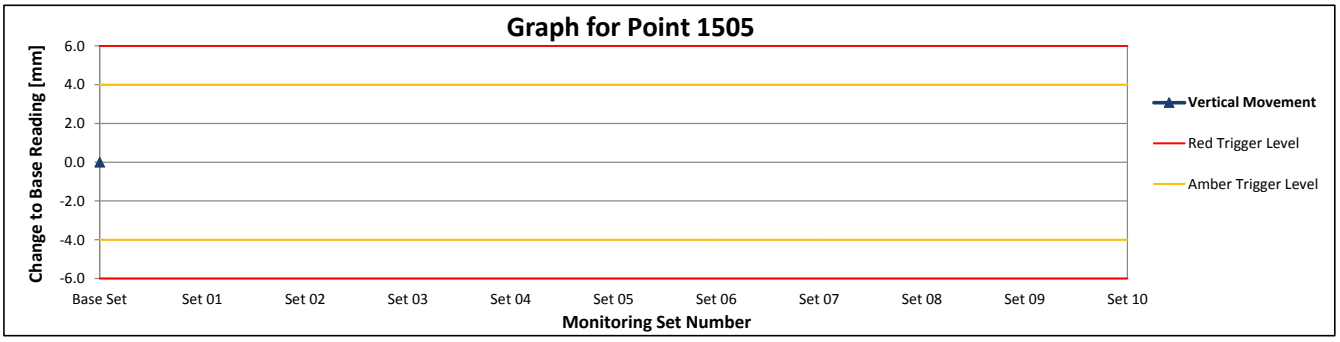

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Job Description: 3D Deformation Monitoring

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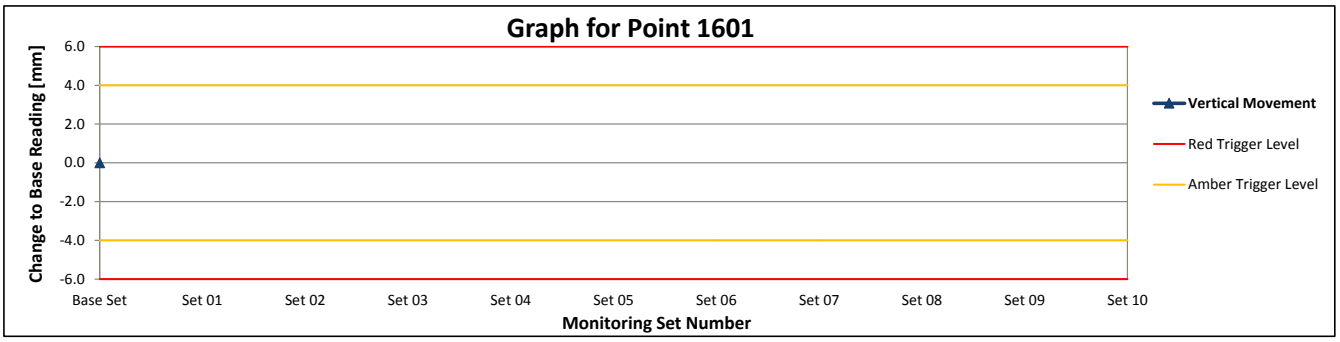

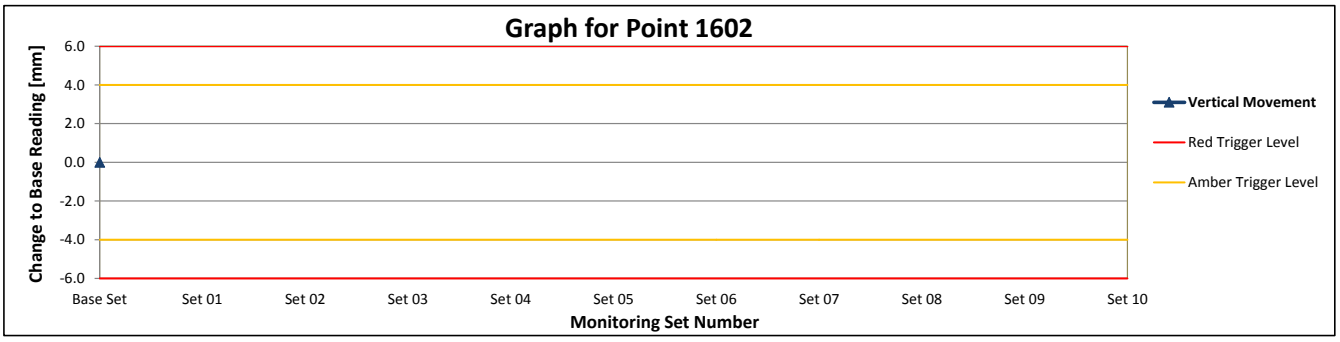

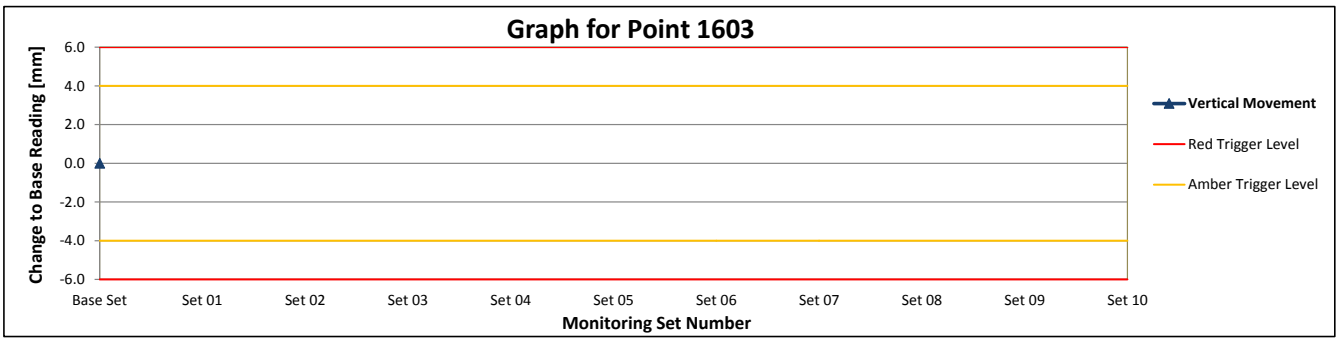

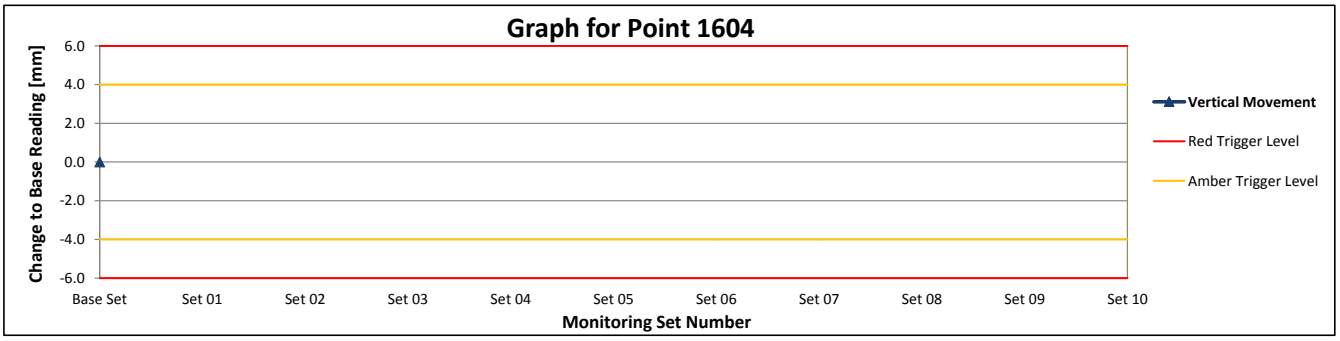

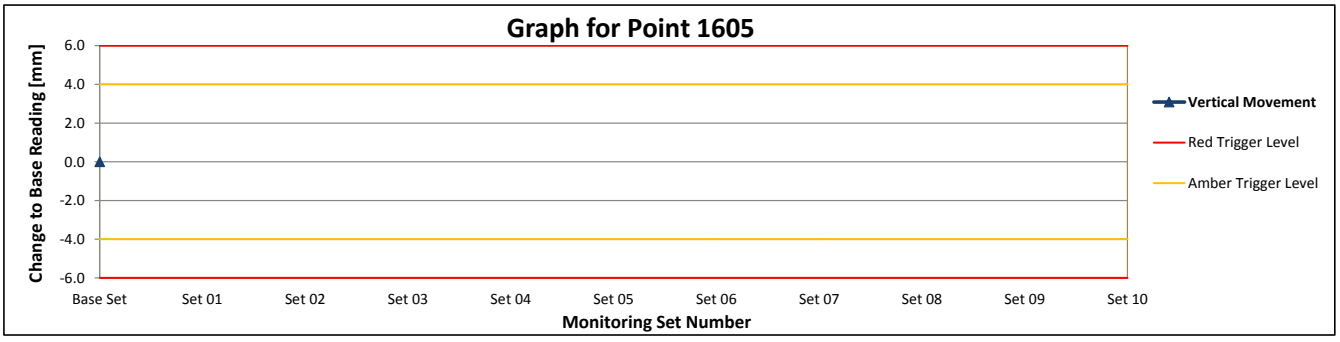

Project: 100 Avenue Road Development, London

Job Description: 3D Deformation Monitoring

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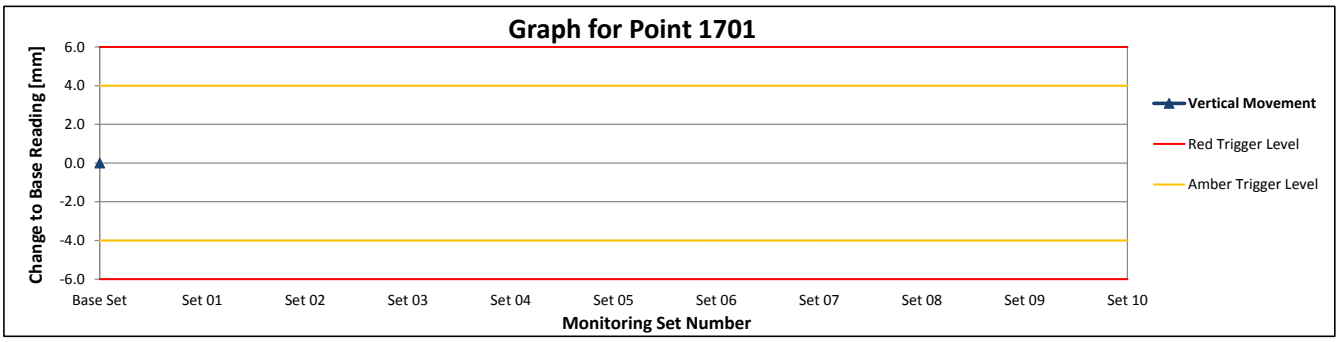

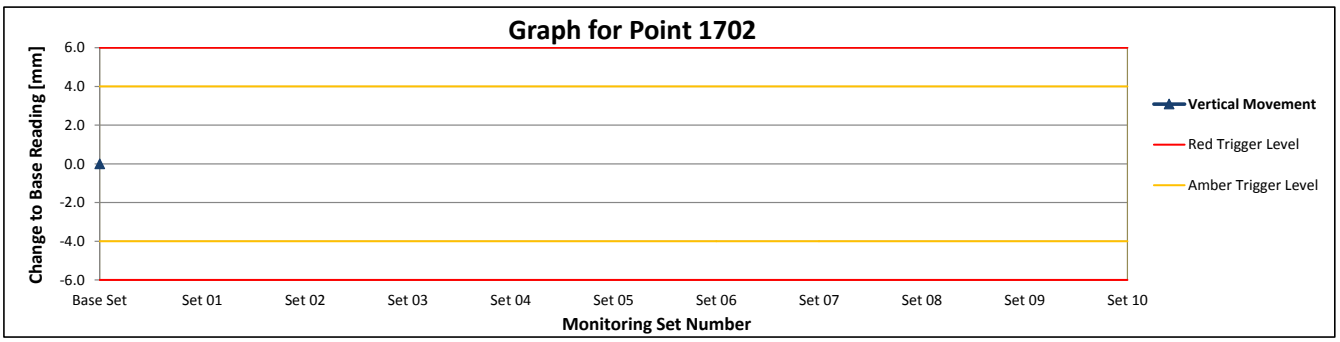

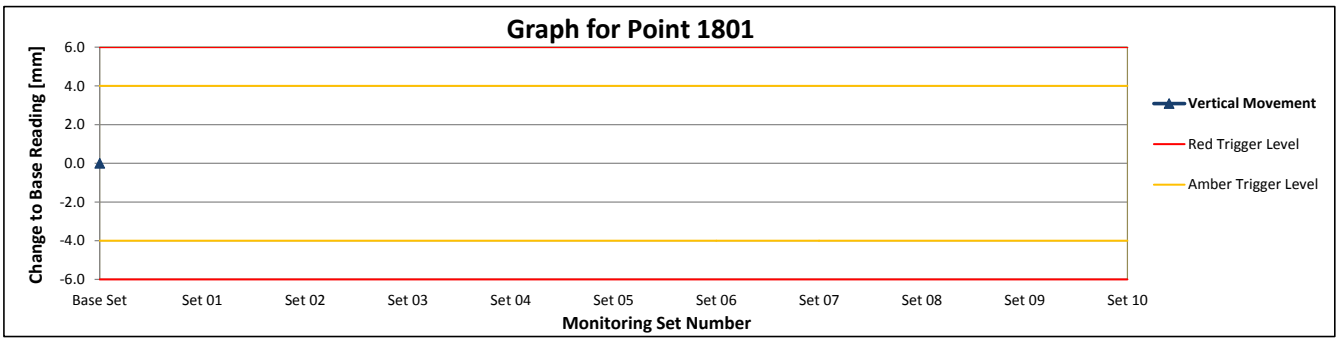

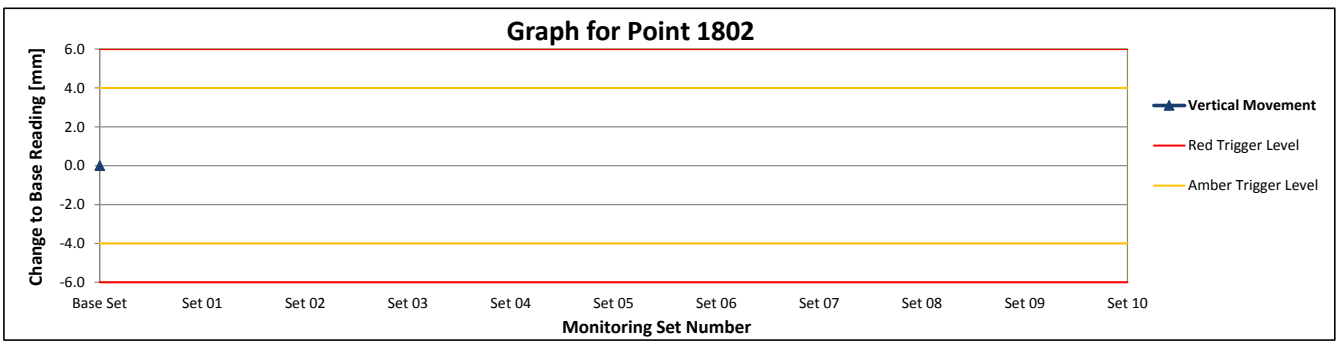

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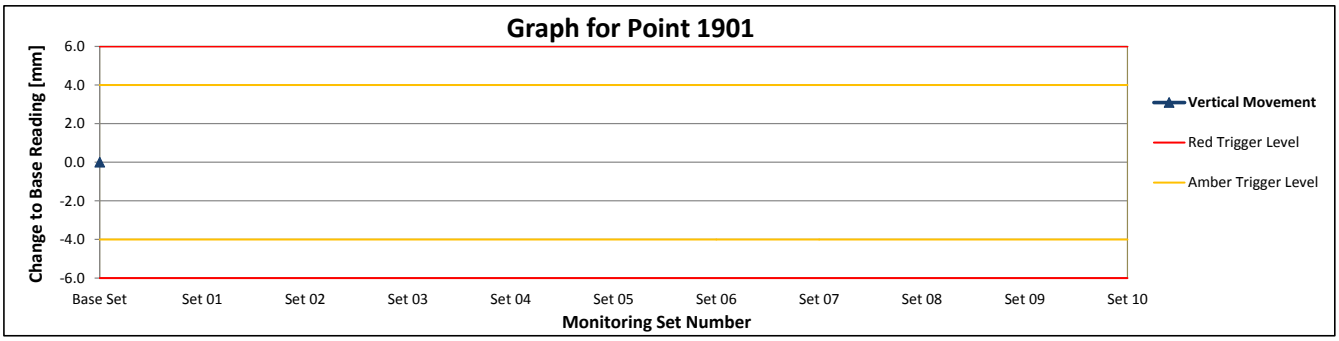

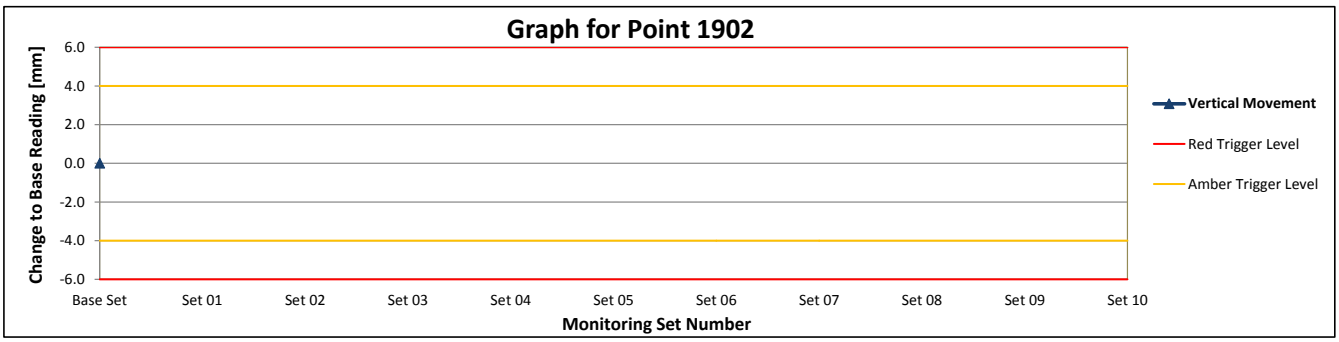

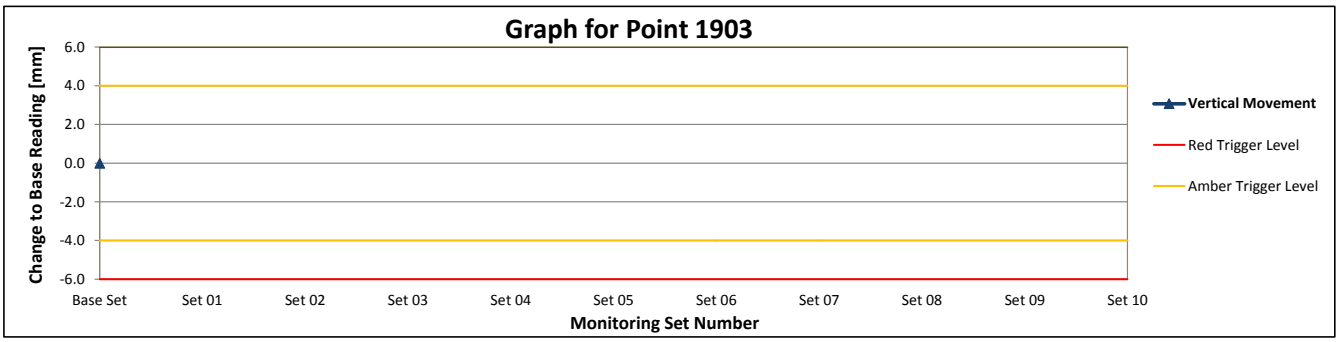

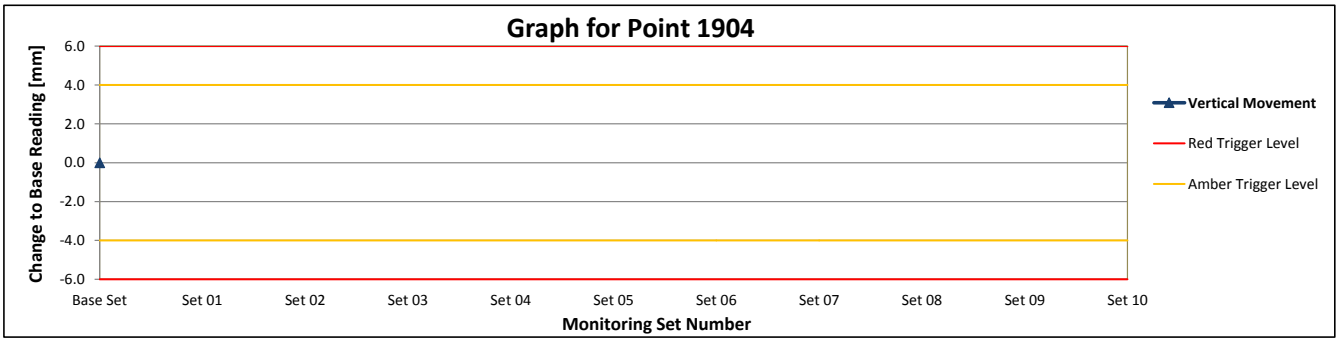

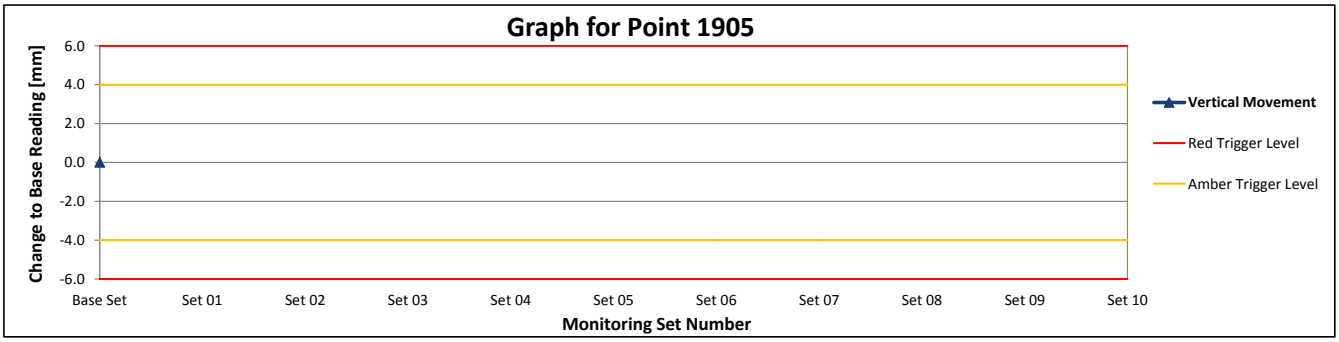

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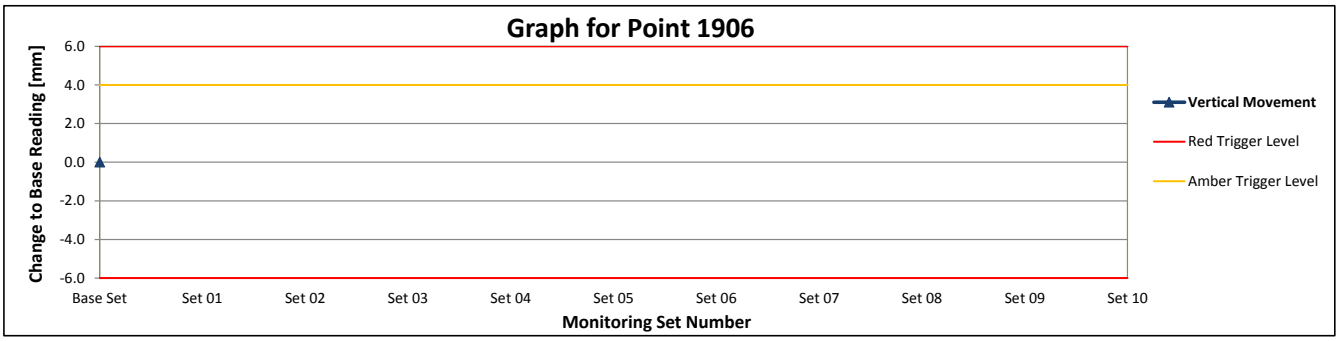

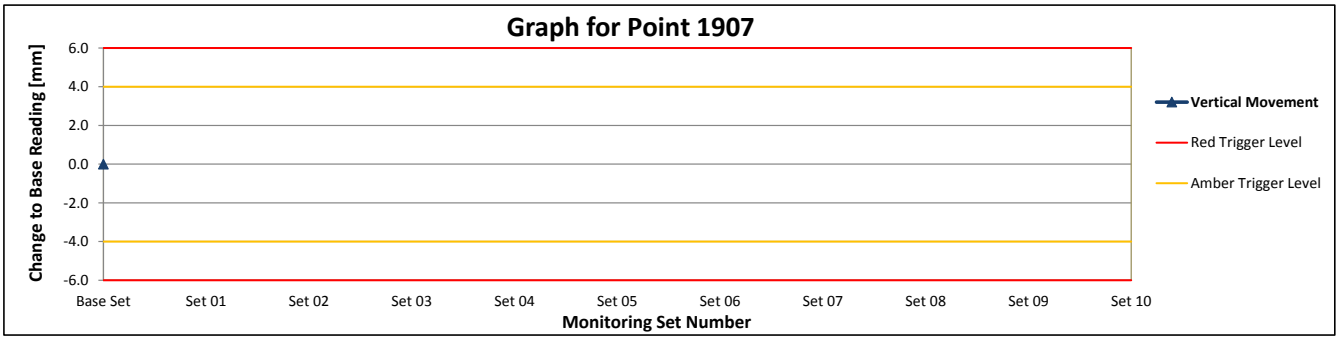

Project: 100 Avenue Road Development, London

Job Description: 3D Deformation Monitoring

Monitoring Location: Swiss Cottage Underground Station

Project Reference: SAL-1311-01

Sheet Reference: SAL-1311-01 Diagram Rev0

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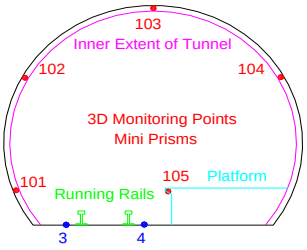
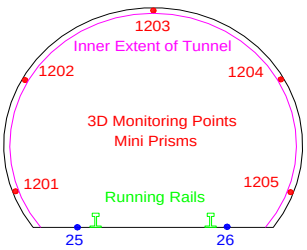
Typical Monitoring Cross Section
Platform



Level Monitoring Points - PK Nails

Typical Monitoring Cross Section
Running Tunnel



Level Monitoring Points - PK Nails

Notes:

1. Cross Sections are viewed in the direction of travel (Southbound)
2. ID 101-1605, 1702 & 1802: 3D Monitoring Points - Mini Prisms
3. ID 1701 & 1801: 3D Monitoring Points - PK Nails
4. ID 1901-1907: 3D Monitoring Points - Retro Targets
5. ID 3-34: Levelling Points - PK Nails
6. This diagram shows approximate position of monitoring points

From:	Trevor Clatworthy
To:	Grandison, Andrew
Subject:	1311-01 - 100 Avenue Road Monitoring Base Readings - 24-11-2015
Date:	27 November 2015 10:19:41
Attachments:	SAL-1311-01-02 Set 00 Rev0 - 3D Monitoring.pdf SAL-1311-01-01 Set 00 Rev0 - Levelling.pdf

Andrew,

I am pleased to forward to you 100 Avenue Road Monitoring Baseline Readings undertaken 24-11-2015

Electronic References:

SAL-1311-01-01 Set 00 Rev0 – Levelling.pdf
SAL-1311-01-02 Set 00 Rev0 - 3D Monitoring.pdf

If you have any queries or require any further information please do not hesitate to contact me.

Regards,

Trevor Clatworthy
(For Survey Associates Limited)

Office Tel: 0845 450 4210 Web: www.sal.uk.com
Office Fax: 0845 450 4220 e-mail: trevorc@sal.uk.com

Project: 100 Avenue Road Development, London

Job Description: Level Deformation Monitoring

Monitoring Location: Swiss Cottage Underground Station

Client: Capita

Address: 65 Gresham Street
London
EC2V 7NQ

Project Reference: SAL-1311-01

Report Reference: SAL-1311-01-01 Set 00 Rev0 - Levelling

Survey Date: 24/11/2015

REPORT BY SURVEY ASSOCIATES LTD

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Uckfield, East Sussex
TN22 1SL
Tel: +44 (0) 845 450 4210
WEB: http://WWW.SAL.UK.COM

Project: 100 Avenue Road Development, London

Job Description: Level Deformation Monitoring

Monitoring Location: Swiss Cottage Underground Station

Project Reference: SAL-1311-01

Sheet Reference: SAL-1311-01-01 Set 00 Rev0 - Levelling - Content

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Content of Monitoring Report:

Section	Content
1	Remarks
2	Base Results - Levelling
3	Monitoring Results - Levelling
4	Graphs
5	Diagram

Project: 100 Avenue Road Development, London

Job Description: Level Deformation Monitoring

Monitoring Location: Swiss Cottage Underground Station

Project Reference: SAL-1311-01

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Survey Date: 24/11/2015

Remarks

Reference	Remarks
1	The locations of the Monitoring Points are detailed on diagram SAL-1311-01 Diagram Rev0 attached at the end of this report.
2	All level monitoring points have been installed in the concrete Track Bed.
3	All Co-ordinates are related to LUL Grid Coordinate and Datum System.
4	The Base Readings are a mean of three independent sets of observations undertaken on 20th November 2015 and 24th November 2015.
5	***Positive Vertical*** Level differences indicate ***heave*** in the tunnel profile, ***negative Vertical*** Level differences indicate ***settlement*** in the tunnel profile.
6	The estimated accuracy of the level monitoring is +/- 0.25mm relative to the Datum Points.

Project: 100 Avenue Road Development, London

Job Description: Level Deformation Monitoring

Monitoring Location: Swiss Cottage Underground Station

Project Reference: SAL-1311-01

Sheet Reference: SAL-1311-01-01 Set 00 Rev0 - Levelling - Baseline Results

Survey Associates Limited
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Survey Date: 24/11/2015

	Base Set A	Base Set B	Base Set C	Diff Set A to Mean	Diff Set B to Mean	Diff Set B to Mean	Mean Baseline Readings
	20/11/2015	24/11/2015	24/11/2015				
Reference	Level [m]	Level [m]	Level [m]	ΔL [mm]	ΔL [mm]	ΔL [mm]	Level [m]
1 - Datum	140.2092	140.2092	140.2092	0.0	0.0	0.0	140.2092
2 - Datum	140.2298	140.2298	140.2299	0.0	0.0	0.0	140.2298
3	140.3638	140.3638	140.3639	0.0	0.0	0.0	140.3638
4	140.3182	140.3183	140.3184	0.1	0.0	-0.1	140.3183
5	140.4046	140.4046	140.4046	0.0	0.0	0.0	140.4046
6	140.3612	140.3613	140.3612	0.0	0.0	0.0	140.3612
7	140.4482	140.4483	140.4483	0.0	0.0	0.0	140.4483
8	140.3939	140.3939	140.3939	0.0	0.0	0.0	140.3939
9	140.4733	140.4734	140.4734	0.1	0.0	0.0	140.4734
10	140.4378	140.4379	140.4380	0.1	0.0	-0.1	140.4379
11	140.4991	140.4992	140.4991	0.0	-0.1	0.0	140.4991
12	140.4707	140.4707	140.4707	0.0	0.0	0.0	140.4707
13	140.5293	140.5294	140.5293	0.0	-0.1	0.0	140.5294
14	140.4922	140.4922	140.4921	0.0	0.0	0.0	140.4922
15	140.5594	140.5594	140.5595	0.1	0.0	0.0	140.5594
16	140.5341	140.5342	140.5342	0.0	0.0	0.0	140.5341
17	140.5903	140.5903	140.5904	0.0	0.0	-0.1	140.5904
18	140.5595	140.5596	140.5596	0.0	0.0	0.0	140.5596
19	140.6219	140.6220	140.6220	0.0	0.0	-0.1	140.6220
20	140.5855	140.5855	140.5856	0.0	0.0	-0.1	140.5855
21	140.6583	140.6584	140.6584	0.1	0.0	-0.1	140.6584
22	140.6147	140.6147	140.6147	0.0	0.0	0.0	140.6147
23	140.6792	140.6793	140.6792	0.0	0.0	0.0	140.6793
24	140.6511	140.6511	140.6511	0.0	0.0	0.0	140.6511
25	140.7228	140.7228	140.7228	0.0	0.0	0.0	140.7228
26	140.6759	140.6759	140.6759	0.0	0.0	0.0	140.6759
27	140.7836	140.7836	140.7836	0.0	0.0	0.0	140.7836
28	140.6956	140.6956	140.6956	0.0	0.0	0.0	140.6956
29	140.7612	140.7612	140.7612	0.0	0.0	0.0	140.7612
30	140.7240	140.7240	140.7240	0.0	0.0	0.0	140.7240
31	140.7997	140.7997	140.7997	0.0	0.0	0.0	140.7997
32	140.7726	140.7725	140.7725	0.0	0.0	0.0	140.7725
33	140.8597	140.8596	140.8596	0.0	0.0	0.0	140.8597
34	140.8305	140.8304	140.8304	0.0	0.0	0.0	140.8304
35 - Datum	141.3915	141.3916	141.3915	0.1	0.0	0.0	141.3915
36 - Datum	141.9923	141.9923	141.9923	0.0	0.0	0.0	141.9923

Project: 100 Avenue Road Development, London

Job Description: Level Deformation Monitoring

Monitoring Location: Swiss Cottage Underground Station

Project Reference: SAL-1311-01

Sheet Reference: SAL-1311-01-01 Set 00 Rev0 - Levelling - Results

Survey Associates Limited
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Survey Date: 24/11/2015

	Base Readings	Set 01		Set 02		Set 03		Set 04		Set 05		Set 06		Set 07	
	24/11/2014														
Reference	Level [m]	Level [m]	ΔL [mm]	Level [m]	ΔL [mm]	Level [m]	ΔL [mm]	Level [m]	ΔL [mm]	Level [m]	ΔL [mm]	Level [m]	ΔL [mm]	Level [m]	ΔL [mm]
1 - Datum	140.2092														
2 - Datum	140.2298														
3	140.3638														
4	140.3183														
5	140.4046														
6	140.3612														
7	140.4483														
8	140.3939														
9	140.4734														
10	140.4379														
11	140.4991														
12	140.4707														
13	140.5294														
14	140.4922														
15	140.5594														
16	140.5341														
17	140.5904														
18	140.5596														
19	140.6220														
20	140.5855														
21	140.6584														
22	140.6147														
23	140.6793														
24	140.6511														

Project: 100 Avenue Road Development, London

Job Description: Level Deformation Monitoring

Monitoring Location: Swiss Cottage Underground Station

Project Reference: SAL-1311-01

Sheet Reference: SAL-1311-01-01 Set 00 Rev0 - Levelling - Results

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Survey Date: 24/11/2015

	Base Readings	Set 01		Set 02		Set 03		Set 04		Set 05		Set 06		Set 07	
	24/11/2014														
Reference	Level [m]	Level [m]	ΔL [mm]	Level [m]	ΔL [mm]	Level [m]	ΔL [mm]	Level [m]	ΔL [mm]	Level [m]	ΔL [mm]	Level [m]	ΔL [mm]	Level [m]	ΔL [mm]
25	140.7228														
26	140.6759														
27	140.7836														
28	140.6956														
29	140.7612														
30	140.7240														
31	140.7997														
32	140.7725														
33	140.8597														
34	140.8304														
35 - Datum	141.3915														
36 - Datum	141.9923														

Project: 100 Avenue Road Development, London

Job Description: Level Deformation Monitoring

Monitoring Location: Swiss Cottage Underground Station

Project Reference: SAL-1311-01

Sheet Reference: SAL-1311-01 - Diagram Rev0

Survey Associates Limited

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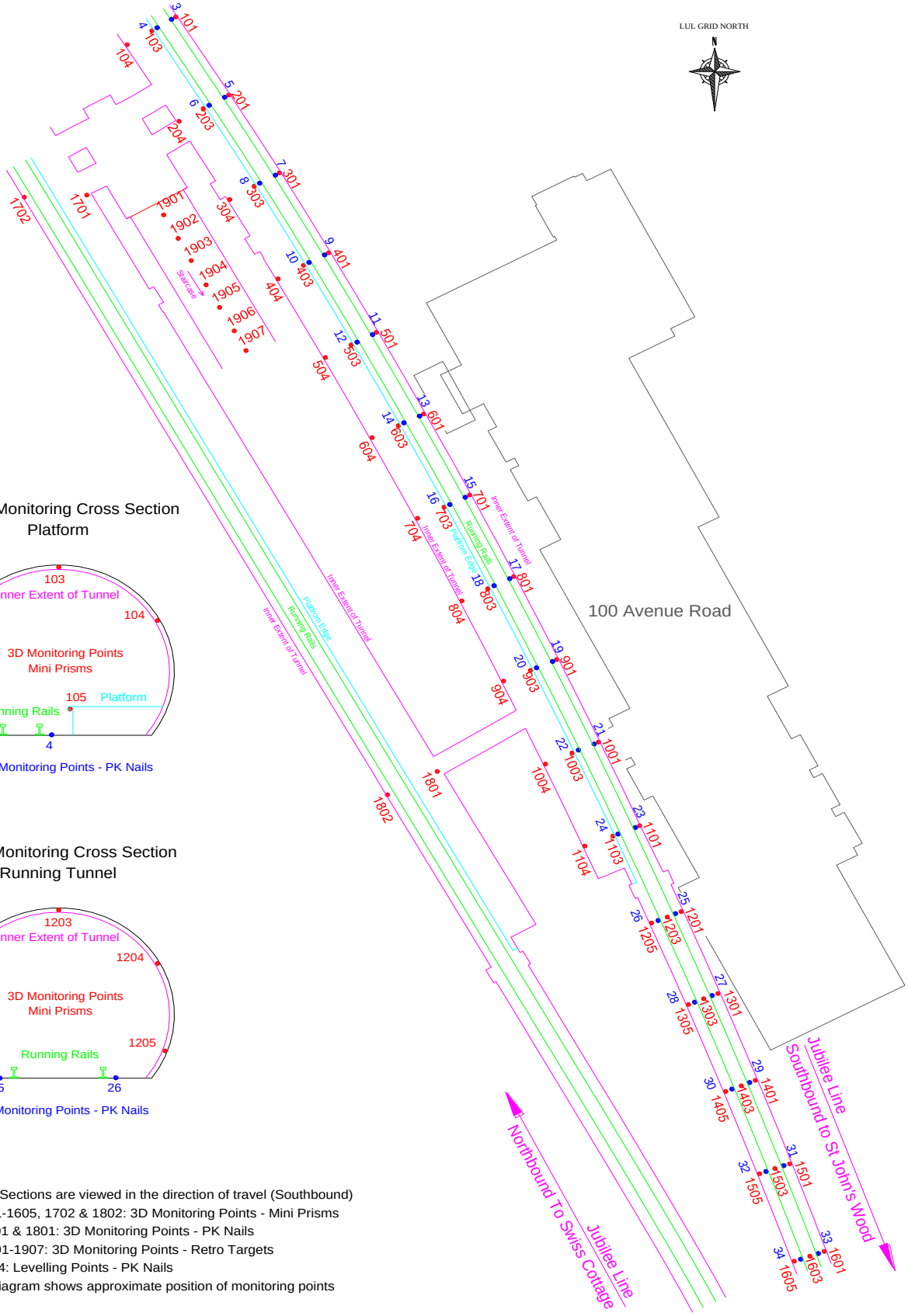
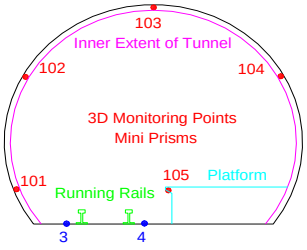
Survey Date: 24/11/2014

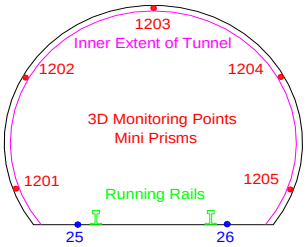


Typical Monitoring Cross Section
Platform



Level Monitoring Points - PK Nails

Typical Monitoring Cross Section
Running Tunnel



Level Monitoring Points - PK Nails

Notes:

1. Cross Sections are viewed in the direction of travel (Southbound)
2. ID 101-1605, 1702 & 1802: 3D Monitoring Points - Mini Prisms
3. ID 1701 & 1801: 3D Monitoring Points - PK Nails
4. ID 1901-1907: 3D Monitoring Points - Retro Targets
5. ID 3-34: Levelling Points - PK Nails
6. This diagram shows approximate position of monitoring points

Project: 100 Avenue Road Development, London

Job Description: 3D Deformation Monitoring

Monitoring Location: Swiss Cottage Underground Station

Client: Capita

Address: 65 Gresham Street
London
EC2V 7NQ

Project Reference: SAL-1311-01

Report Ref.: SAL-1311-01-02 Set 00 Rev0 - 3D Monitoring

Survey Date: 24/11/2015

REPORT BY SURVEY ASSOCIATES LTD

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Project: 100 Avenue Road Development, London

Job Description: 3D Deformation Monitoring

Monitoring Location: Swiss Cottage Underground Station

Project Reference: SAL-1311-01

Sheet Reference: SAL-1311-01-02 Set 00 - Content

Survey Associates Limited
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Survey Date: 24/11/2015

Content of Monitoring Report:

Project: 100 Avenue Road Development, London

Job Description: 3D Deformation Monitoring

Monitoring Location: Swiss Cottage Underground Station

Project Reference: SAL-1311-01

Sheet Reference: SAL-1311-01-02 Set 00 - Remarks

Survey Associates Limited
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Survey Date: 24/11/2015

Remarks:

Reference	Remarks
1	The locations of the Monitoring Points are detailed on diagram SAL-1311-01 Diagram Rev0 attached at the end of this report.
2	3D Monitoring Points are represented by Leica Mini Prisms (Run. Tunnel, Platform) and by Sokkia Retro Targets (Staircase).
3	All Co-ordinates on the "LUL" Results and Graphs Sheet are related to LUL Grid and Datum System.
4	All Co-ordinates on the "Local" Results and Graphs Sheet are related to Grid set parallel to the Tunnel Outline.
5	The estimated accuracy of the 3D monitoring is +/- 1mm relative to Control Points.
6	The Base Set of coordinates is mean of 2 independent sets for all Monitoring Points.
7	The 3D Monitoring consists of multiple observations to each Monitoring Point for each set.
8	Perpendicular movement represents horizontal movement of Development relative to the Tunnel Centerline.

Project: 100 Avenue Road Development, London

Job Description: 3D Deformation Monitoring

Monitoring Location: Swiss Cottage Underground Station

Project Reference: SAL-1311-01

Sheet Reference: SAL 1371-00 - Base Results - LUL Grid

Survey Associates Limited
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Tel: 0845 450 4210 - email: sal.office@sal.uk.com - Web: www.sal.uk.com

Survey Date: 24/11/2015

	Base Readigs Set A			Base Readigs Set B			Diff Set A to Mean			Diff Set B to Mean			Mean Base Readings		
	20/11/2015			24/11/2015											
Ref.	E [m]	N [m]	L [m]	E [m]	N [m]	L [m]	ΔE [mm]	ΔN [mm]	ΔL [mm]	ΔE [mm]	ΔN [mm]	ΔL [mm]	E [m]	N [m]	L [m]
101	77080.5593	39201.7824	140.6709	77080.5594	39201.7828	140.6708	0.1	0.2	0.0	-0.1	-0.2	0.0	77080.5593	39201.7826	140.6708
102	77080.1685	39201.6171	143.9774	77080.1684	39201.6174	143.9776	0.0	0.1	0.1	0.0	-0.1	-0.1	77080.1684	39201.6173	143.9775
103	77078.0066	39200.2306	145.0922	77078.0064	39200.2310	145.0924	-0.1	0.2	0.1	0.1	-0.2	-0.1	77078.0065	39200.2308	145.0923
104	77076.0047	39198.9154	143.8160	77076.0046	39198.9157	143.8159	-0.1	0.2	-0.1	0.1	-0.2	0.1	77076.0047	39198.9156	143.8160
105	77078.2701	39200.3192	140.9368	77078.2699	39200.3196	140.9367	-0.1	0.2	0.0	0.1	-0.2	0.0	77078.2700	39200.3194	140.9368
201	77085.9259	39193.2241	140.7208	77085.9260	39193.2243	140.7208	0.1	0.1	0.0	-0.1	-0.1	0.0	77085.9259	39193.2242	140.7208
202	77085.5412	39193.0164	143.9859	77085.5413	39193.0167	143.9862	0.0	0.1	0.1	0.0	-0.1	-0.1	77085.5413	39193.0166	143.9860
203	77083.3368	39191.7330	145.1088	77083.3367	39191.7331	145.1091	-0.1	0.0	0.2	0.1	0.0	-0.2	77083.3368	39191.7331	145.1089
204	77081.3095	39190.4669	143.8328	77081.3092	39190.4669	143.8330	-0.2	0.0	0.1	0.2	0.0	-0.1	77081.3093	39190.4669	143.8329
205	77083.5613	39191.8874	140.9775	77083.5612	39191.8876	140.9775	-0.1	0.1	0.0	0.1	-0.1	0.0	77083.5612	39191.8875	140.9775
301	77091.0416	39184.7099	140.7664	77091.0418	39184.7098	140.7664	0.1	-0.1	0.0	-0.1	0.1	0.0	77091.0417	39184.7099	140.7664
302	77090.6394	39184.5321	144.0455	77090.6397	39184.5319	144.0456	0.1	-0.1	0.0	-0.2	0.1	0.0	77090.6395	39184.5320	144.0455
303	77088.3432	39183.1860	145.1602	77088.3433	39183.1857	145.1604	0.1	-0.1	0.1	-0.1	0.1	-0.1	77088.3432	39183.1859	145.1603
304	77086.2827	39181.9900	143.7902	77086.2827	39181.9898	143.7903	0.0	-0.1	0.0	0.0	0.1	0.0	77086.2827	39181.9899	143.7902
305	77088.6269	39183.4106	141.0208	77088.6272	39183.4104	141.0207	0.1	-0.1	0.0	-0.1	0.1	0.0	77088.6270	39183.4105	141.0208
401	77096.0275	39175.9706	140.8140	77096.0280	39175.9704	140.8142	0.2	-0.1	0.1	-0.2	0.1	-0.1	77096.0278	39175.9705	140.8141
402	77095.6032	39175.7898	144.0871	77095.6036	39175.7894	144.0871	0.2	-0.2	0.0	-0.2	0.2	0.0	77095.6034	39175.7896	144.0871
403	77093.3116	39174.5228	145.2027	77093.3119	39174.5225	145.2028	0.1	-0.2	0.1	-0.1	0.1	-0.1	77093.3117	39174.5226	145.2028
404	77091.2946	39173.2681	143.9364	77091.2948	39173.2677	143.9365	0.1	-0.2	0.0	-0.1	0.2	0.0	77091.2947	39173.2679	143.9364
405	77093.5821	39174.7868	141.0574	77093.5824	39174.7865	141.0574	0.1	-0.1	0.0	-0.1	0.1	0.0	77093.5822	39174.7867	141.0574
501	77100.8464	39167.2497	140.8456	77100.8467	39167.2494	140.8458	0.1	-0.2	0.1	-0.1	0.2	-0.1	77100.8466	39167.2495	140.8457
502	77100.4578	39167.0509	144.1276	77100.4582	39167.0506	144.1278	0.2	-0.1	0.1	-0.2	0.1	-0.1	77100.4580	39167.0508	144.1277
503	77098.1857	39165.8255	145.2707	77098.1858	39165.8252	145.2710	0.1	-0.1	0.2	-0.1	0.1	-0.2	77098.1858	39165.8254	145.2709
504	77095.9507	39164.6311	143.8145	77095.9510	39164.6308	143.8148	0.1	-0.1	0.1	-0.1	0.1	-0.1	77095.9508	39164.6309	143.8146
505	77098.4336	39166.0225	141.0828	77098.4339	39166.0221	141.0831	0.1	-0.2	0.1	-0.1	0.2	-0.1	77098.4338	39166.0223	141.0829

Project: 100 Avenue Road Development, London

Job Description: 3D Deformation Monitoring

Monitoring Location: Swiss Cottage Underground Station

Project Reference: SAL-1311-01

Sheet Reference: SAL 1371-00 - Base Results - LUL Grid

Survey Associates Limited
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Survey Date: 24/11/2015

	Base Readigs Set A			Base Readigs Set B			Diff Set A to Mean			Diff Set B to Mean			Mean Base Readings		
	20/11/2015			24/11/2015											
Ref.	E [m]	N [m]	L [m]	E [m]	N [m]	L [m]	ΔE [mm]	ΔN [mm]	ΔL [mm]	ΔE [mm]	ΔN [mm]	ΔL [mm]	E [m]	N [m]	L [m]
601	77105.6330	39158.2915	140.8857	77105.6330	39158.2920	140.8857	0.0	0.3	0.0	0.0	-0.3	0.0	77105.6330	39158.2918	140.8857
602	77105.2129	39158.1276	144.1614	77105.2128	39158.1283	144.1613	0.0	0.3	0.0	0.0	-0.3	0.0	77105.2129	39158.1279	144.1613
603	77102.8738	39156.9156	145.2918	77102.8738	39156.9161	145.2918	0.0	0.3	0.0	0.0	-0.3	0.0	77102.8738	39156.9159	145.2918
604	77100.5009	39156.3472	143.9886	77100.5008	39156.3478	143.9886	-0.1	0.3	0.0	0.1	-0.3	0.0	77100.5008	39156.3475	143.9886
605	77103.2195	39157.0813	141.1190	77103.2200	39157.0816	141.1196	0.3	0.1	0.3	-0.3	-0.1	-0.3	77103.2197	39157.0814	141.1193
701	77110.2324	39149.4131	140.9115	77110.2324	39149.4134	140.9114	0.0	0.1	0.0	0.0	-0.1	0.0	77110.2324	39149.4132	140.9115
702	77109.8305	39149.2348	144.1890	77109.8304	39149.2353	144.1890	0.0	0.3	0.0	0.0	-0.3	0.0	77109.8304	39149.2350	144.1890
703	77107.4923	39148.1073	145.3104	77107.4920	39148.1078	145.3101	-0.1	0.2	-0.1	0.1	-0.3	0.1	77107.4921	39148.1075	145.3102
704	77105.3706	39146.9875	144.0248	77105.3705	39146.9878	144.0248	-0.1	0.2	0.0	0.1	-0.2	0.0	77105.3705	39146.9877	144.0248
705	77107.8250	39148.1883	141.1551	77107.8249	39148.1887	141.1550	0.0	0.2	0.0	0.0	-0.2	0.0	77107.8250	39148.1885	141.1550
801	77114.6952	39140.4967	140.9555	77114.6951	39140.4971	140.9554	-0.1	0.2	0.0	0.1	-0.2	0.0	77114.6952	39140.4969	140.9554
802	77114.2933	39140.3267	144.2315	77114.2931	39140.3271	144.2315	-0.1	0.2	0.0	0.1	-0.2	0.0	77114.2932	39140.3269	144.2315
803	77111.9254	39139.1245	145.3559	77111.9251	39139.1250	145.3559	-0.1	0.2	0.0	0.1	-0.2	0.0	77111.9253	39139.1247	145.3559
804	77109.8248	39138.0242	144.0473	77109.8246	39138.0246	144.0472	-0.1	0.2	0.0	0.1	-0.2	0.0	77109.8247	39138.0244	144.0472
805	77112.2776	39139.2782	141.1863	77112.2775	39139.2784	141.1862	0.0	0.1	0.0	0.0	-0.1	0.0	77112.2776	39139.2783	141.1863
901	77119.0442	39131.3739	140.9850	77119.0442	39131.3741	140.9849	0.0	0.1	-0.1	0.0	-0.1	0.0	77119.0442	39131.3740	140.9849
902	77118.6235	39131.2357	144.2543	77118.6234	39131.2360	144.2544	0.0	0.1	0.1	0.1	-0.1	-0.1	77118.6234	39131.2358	144.2543
903	77116.2264	39130.2247	145.3729	77116.2262	39130.2249	145.3730	-0.1	0.1	0.1	0.1	-0.1	-0.1	77116.2263	39130.2248	145.3729
904	77114.0801	39129.1795	144.0834	77114.0798	39129.1796	144.0834	-0.1	0.1	0.0	0.1	-0.1	0.0	77114.0800	39129.1795	144.0834
905	77116.5600	39130.3726	141.2122	77116.5599	39130.3728	141.2121	-0.1	0.1	0.0	0.1	-0.1	0.0	77116.5599	39130.3727	141.2121
1001	77123.2284	39122.3794	141.0049	77123.2287	39122.3792	141.0049	0.2	-0.1	0.0	-0.2	0.1	0.0	77123.2286	39122.3793	141.0049
1002	77122.7963	39122.1678	144.2782	77122.7965	39122.1674	144.2784	0.1	-0.2	0.1	-0.1	0.2	-0.1	77122.7964	39122.1676	144.2783
1003	77120.5152	39121.1813	145.3921	77120.5153	39121.1811	145.3922	0.0	-0.1	0.1	0.0	0.1	-0.1	77120.5152	39121.1812	145.3921
1004	77118.2847	39120.0852	144.0864	77118.2846	39120.0849	144.0864	0.0	-0.1	0.0	0.0	0.1	0.0	77118.2847	39120.0851	144.0864
1005	77120.7505	39121.3225	141.2416	77120.7506	39121.3221	141.2416	0.0	-0.2	0.0	0.0	0.2	0.0	77120.7505	39121.3223	141.2416

Project: 100 Avenue Road Development, London

Job Description: 3D Deformation Monitoring

Monitoring Location: Swiss Cottage Underground Station

Project Reference: SAL-1311-01

Sheet Reference: SAL 1371-00 - Base Results - LUL Grid

Survey Associates Limited
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Survey Date: 24/11/2015

	Base Readigs Set A			Base Readigs Set B			Diff Set A to Mean			Diff Set B to Mean			Mean Base Readings		
	20/11/2015			24/11/2015											
Ref.	E [m]	N [m]	L [m]	E [m]	N [m]	L [m]	ΔE [mm]	ΔN [mm]	ΔL [mm]	ΔE [mm]	ΔN [mm]	ΔL [mm]	E [m]	N [m]	L [m]
1101	77127.3244	39113.1760	141.0425	77127.3246	39113.1759	141.0424	0.1	-0.1	-0.1	-0.1	0.1	0.1	77127.3245	39113.1760	141.0424
1102	77126.8890	39112.9743	144.3152	77126.8892	39112.9741	144.3152	0.1	-0.1	0.0	-0.1	0.1	0.0	77126.8891	39112.9742	144.3152
1103	77124.5422	39111.9107	145.4292	77124.5422	39111.9104	145.4292	0.0	-0.2	0.0	0.0	0.2	0.0	77124.5422	39111.9105	145.4292
1104	77122.1192	39111.5075	144.1431	77122.1193	39111.5071	144.1431	0.1	-0.2	0.0	-0.1	0.2	0.0	77122.1193	39111.5073	144.1431
1105	77124.8075	39112.2233	141.2729	77124.8075	39112.2230	141.2728	0.0	-0.1	-0.1	0.0	0.1	0.1	77124.8075	39112.2231	141.2729
1201	77131.6041	39103.7766	141.2918	77131.6038	39103.7773	141.2918	-0.1	0.3	0.0	0.1	-0.3	0.0	77131.6039	39103.7769	141.2918
1202	77131.4981	39103.7466	143.1386	77131.4977	39103.7470	143.1389	-0.2	0.2	0.1	0.2	-0.2	-0.1	77131.4979	39103.7468	143.1387
1203	77130.0624	39103.1510	143.9505	77130.0620	39103.1515	143.9507	-0.2	0.3	0.1	0.2	-0.3	-0.1	77130.0622	39103.1512	143.9506
1204	77128.7022	39102.5709	143.1547	77128.7020	39102.5714	143.1549	-0.1	0.3	0.1	0.1	-0.3	-0.1	77128.7021	39102.5711	143.1548
1205	77128.7004	39102.5534	141.1232	77128.7002	39102.5540	141.1235	-0.1	0.3	0.1	0.1	-0.3	-0.1	77128.7003	39102.5537	141.1233
1301	77135.2717	39094.7632	141.2301	77135.2715	39094.7638	141.2301	-0.1	0.3	0.0	0.1	-0.3	0.0	77135.2716	39094.7635	141.2301
1302	77135.2009	39094.7538	143.2109	77135.2007	39094.7542	143.2110	-0.1	0.2	0.1	0.1	-0.2	-0.1	77135.2008	39094.7540	143.2109
1303	77133.7629	39094.1817	144.0130	77133.7628	39094.1823	144.0130	0.0	0.3	0.0	0.0	-0.3	0.0	77133.7628	39094.1820	144.0130
1304	77132.4154	39093.6306	143.1905	77132.4152	39093.6309	143.1906	-0.1	0.2	0.0	0.1	-0.2	0.0	77132.4153	39093.6308	143.1905
1305	77132.3979	39093.6082	141.1438	77132.3977	39093.6088	141.1439	-0.1	0.3	0.0	0.1	-0.3	0.0	77132.3978	39093.6085	141.1439
1401	77139.1219	39085.2655	141.3774	77139.1217	39085.2658	141.3774	-0.1	0.2	0.0	0.1	-0.2	0.0	77139.1218	39085.2657	141.3774
1402	77138.9909	39085.2291	143.2351	77138.9907	39085.2295	143.2350	-0.1	0.2	0.0	0.1	-0.2	0.0	77138.9908	39085.2293	143.2351
1403	77137.5125	39084.6740	144.0142	77137.5123	39084.6745	144.0142	-0.1	0.2	0.0	0.1	-0.2	0.0	77137.5124	39084.6742	144.0142
1404	77136.1499	39084.1329	143.2031	77136.1496	39084.1333	143.2031	-0.1	0.2	0.0	0.1	-0.2	0.0	77136.1498	39084.1331	143.2031
1405	77136.1547	39084.1264	141.1589	77136.1545	39084.1268	141.1588	-0.1	0.2	0.0	0.1	-0.2	0.0	77136.1546	39084.1266	141.1588
1501	77142.5378	39076.1698	141.3267	77142.5376	39076.1704	141.3266	-0.1	0.3	-0.1	0.1	-0.3	0.1	77142.5377	39076.1701	141.3266
1502	77142.4607	39076.1495	143.2894	77142.4605	39076.1498	143.2893	-0.1	0.2	0.0	0.1	-0.2	0.1	77142.4606	39076.1496	143.2894
1503	77141.0567	39075.6344	144.0750	77141.0564	39075.6347	144.0750	-0.2	0.1	0.0	0.1	-0.1	0.0	77141.0566	39075.6345	144.0750
1504	77139.5731	39075.0779	143.2423	77139.5729	39075.0781	143.2423	-0.1	0.1	0.0	0.1	-0.1	0.0	77139.5730	39075.0780	143.2423
1505	77139.5951	39075.0773	141.1998	77139.5948	39075.0776	141.1997	-0.2	0.2	-0.1	0.2	-0.2	0.1	77139.5950	39075.0774	141.1997

Project: 100 Avenue Road Development, London

Job Description: 3D Deformation Monitoring

Monitoring Location: Swiss Cottage Underground Station

Project Reference: SAL-1311-01

Sheet Reference: SAL 1371-00 - Base Results - LUL Grid

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Survey Date: 24/11/2015

	Base Readigs Set A			Base Readigs Set B			Diff Set A to Mean			Diff Set B to Mean			Mean Base Readings		
	20/11/2015			24/11/2015											
Ref.	E [m]	N [m]	L [m]	E [m]	N [m]	L [m]	ΔE [mm]	ΔN [mm]	ΔL [mm]	ΔE [mm]	ΔN [mm]	ΔL [mm]	E [m]	N [m]	L [m]
1601	77146.0362	39066.5410	141.3693	77146.0362	39066.5412	141.3691	0.0	0.1	-0.1	0.0	-0.1	0.1	77146.0362	39066.5411	141.3692
1602	77145.9540	39066.5348	143.3097	77145.9540	39066.5349	143.3098	0.0	0.1	0.0	0.0	-0.1	0.0	77145.9540	39066.5349	143.3098
1603	77144.5470	39066.0585	144.1032	77144.5467	39066.0588	144.1036	-0.1	0.1	0.2	0.1	-0.1	-0.2	77144.5468	39066.0587	144.1034
1604	77143.0640	39065.5282	143.3141	77143.0638	39065.5283	143.3142	-0.1	0.0	0.0	0.1	0.0	0.0	77143.0639	39065.5282	143.3141
1605	77143.0181	39065.4844	141.3573	77143.0175	39065.4845	141.3571	-0.3	0.0	-0.1	0.3	0.0	0.1	77143.0178	39065.4845	141.3572
1701	77071.5795	39182.3104	141.0818	77071.5795	39182.3104	141.0818	0.0	0.0	0.0	0.0	0.0	0.0	77071.5795	39182.3104	141.0818
1702	77065.1924	39182.0650	142.0370	77065.1924	39182.0650	142.0370	0.0	0.0	0.0	0.0	0.0	0.0	77065.1924	39182.0650	142.0370
1801	77106.9472	39119.1545	141.3065	77106.9469	39119.1542	141.3063	-0.2	-0.2	-0.1	0.2	0.2	0.1	77106.9470	39119.1543	141.3064
1802	77101.8522	39116.5973	142.2752	77101.8519	39116.5973	142.2751	-0.1	0.0	0.0	0.1	0.0	0.0	77101.8520	39116.5973	142.2751
1901	77079.3527	39180.1352	141.2476	77079.3527	39180.1354	141.2478	0.0	0.1	0.1	0.0	-0.1	-0.1	77079.3527	39180.1353	141.2477
1902	77080.8290	39177.5246	142.8602	77080.8291	39177.5245	142.8602	0.0	0.0	0.0	0.0	0.0	0.0	77080.8290	39177.5245	142.8602
1903	77082.1862	39175.0849	144.6449	77082.1864	39175.0849	144.6449	0.1	0.0	0.0	-0.1	0.0	0.0	77082.1863	39175.0849	144.6449
1904	77083.6352	39172.4578	146.2436	77083.6353	39172.4578	146.2437	0.0	0.0	0.1	0.0	0.0	-0.1	77083.6353	39172.4578	146.2436
1905	77085.0072	39170.0270	148.0248	77085.0072	39170.0269	148.0250	0.0	0.0	0.1	0.0	0.0	-0.1	77085.0072	39170.0269	148.0249
1906	77086.4723	39167.4045	149.6276	77086.4724	39167.4045	149.6276	0.0	0.0	0.0	0.0	0.0	0.0	77086.4724	39167.4045	149.6276
1907	77087.6693	39165.1983	151.2325	77087.6695	39165.1986	151.2325	0.1	0.1	0.0	-0.1	-0.1	0.0	77087.6694	39165.1984	151.2325

Project: 100 Avenue Road Development, London

Job Description: 3D Deformation Monitoring

Monitoring Location: Swiss Cottage Underground Station

Project Reference: SAL-1311-01

Sheet Reference: SAL-1311-01-02 Set 00 - Monitoring Results - LUL Grid

Survey Associates Limited
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Survey Date: 24/11/2015

	Mean Base Readings			Set 01			Diff Set 01 to Base			Set 02			Diff Set 02 to Base			Set 03			Diff Set 03 to Base			Set 04			Diff Set 04 to Base		
Ref.	E [m]	N [m]	L [m]	E [m]	N [m]	L [m]	ΔE [mm]	ΔN [mm]	ΔL [mm]	E [m]	N [m]	L [m]	ΔE [mm]	ΔN [mm]	ΔL [mm]	E [m]	N [m]	L [m]	ΔE [mm]	ΔN [mm]	ΔL [mm]	E [m]	N [m]	L [m]	ΔE [mm]	ΔN [mm]	ΔL [mm]
101	77080.5593	39201.7826	140.6708																								
102	77080.1684	39201.6173	143.9775																								
103	77078.0065	39200.2308	145.0923																								
104	77076.0047	39198.9156	143.8160																								
105	77078.2700	39200.3194	140.9368																								
201	77085.9259	39193.2242	140.7208																								
202	77085.5413	39193.0166	143.9860																								
203	77083.3368	39191.7331	145.1089																								
204	77081.3093	39190.4669	143.8329																								
205	77083.5612	39191.8875	140.9775																								
301	77091.0417	39184.7099	140.7664																								
302	77090.6395	39184.5320	144.0455																								
303	77088.3432	39183.1859	145.1603																								
304	77086.2827	39181.9899	143.7902																								
305	77088.6270	39183.4105	141.0208																								

Project: 100 Avenue Road Development, London

Job Description: 3D Deformation Monitoring

Monitoring Location: Swiss Cottage Underground Station

Project Reference: SAL-1311-01

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	Mean Base Readings			Set 01			Diff Set 01 to Base			Set 02			Diff Set 02 to Base			Set 03			Diff Set 03 to Base			Set 04			Diff Set 04 to Base		
Ref.	E [m]	N [m]	L [m]	E [m]	N [m]	L [m]	ΔE [mm]	ΔN [mm]	ΔL [mm]	E [m]	N [m]	L [m]	ΔE [mm]	ΔN [mm]	ΔL [mm]	E [m]	N [m]	L [m]	ΔE [mm]	ΔN [mm]	ΔL [mm]	E [m]	N [m]	L [m]	ΔE [mm]	ΔN [mm]	ΔL [mm]
401	77096.0278	39175.9705	140.8141																								
402	77095.6034	39175.7896	144.0871																								
403	77093.3117	39174.5226	145.2028																								
404	77091.2947	39173.2679	143.9364																								
405	77093.5822	39174.7867	141.0574																								
501	77100.8466	39167.2495	140.8457																								
502	77100.4580	39167.0508	144.1277																								
503	77098.1858	39165.8254	145.2709																								
504	77095.9508	39164.6309	143.8146																								
505	77098.4338	39166.0223	141.0829																								
601	77105.6330	39158.2918	140.8857																								
602	77105.2129	39158.1279	144.1613																								
603	77102.8738	39156.9159	145.2918																								
604	77100.5008	39156.3475	143.9886																								
605	77103.2197	39157.0814	141.1193																								

Project: 100 Avenue Road Development, London

Job Description: 3D Deformation Monitoring

Monitoring Location: Swiss Cottage Underground Station

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	Mean Base Readings			Set 01			Diff Set 01 to Base			Set 02			Diff Set 02 to Base			Set 03			Diff Set 03 to Base			Set 04			Diff Set 04 to Base		
Ref.	E [m]	N [m]	L [m]	E [m]	N [m]	L [m]	ΔE [mm]	ΔN [mm]	ΔL [mm]	E [m]	N [m]	L [m]	ΔE [mm]	ΔN [mm]	ΔL [mm]	E [m]	N [m]	L [m]	ΔE [mm]	ΔN [mm]	ΔL [mm]	E [m]	N [m]	L [m]	ΔE [mm]	ΔN [mm]	ΔL [mm]
701	77110.2324	39149.4132	140.9115																								
702	77109.8304	39149.2350	144.1890																								
703	77107.4921	39148.1075	145.3102																								
704	77105.3705	39146.9877	144.0248																								
705	77107.8250	39148.1885	141.1550																								
801	77114.6952	39140.4969	140.9554																								
802	77114.2932	39140.3269	144.2315																								
803	77111.9253	39139.1247	145.3559																								
804	77109.8247	39138.0244	144.0472																								
805	77112.2776	39139.2783	141.1863																								
901	77119.0442	39131.3740	140.9849																								
902	77118.6234	39131.2358	144.2543																								
903	77116.2263	39130.2248	145.3729																								
904	77114.0800	39129.1795	144.0834																								
905	77116.5599	39130.3727	141.2121																								

Project: 100 Avenue Road Development, London

Job Description: 3D Deformation Monitoring

Monitoring Location: Swiss Cottage Underground Station

Project Reference: SAL-1311-01

Sheet Reference: SAL-1311-01-02 Set 00 - Monitoring Results - LUL Grid

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	Mean Base Readings			Set 01			Diff Set 01 to Base			Set 02			Diff Set 02 to Base			Set 03			Diff Set 03 to Base			Set 04			Diff Set 04 to Base		
Ref.	E [m]	N [m]	L [m]	E [m]	N [m]	L [m]	ΔE [mm]	ΔN [mm]	ΔL [mm]	E [m]	N [m]	L [m]	ΔE [mm]	ΔN [mm]	ΔL [mm]	E [m]	N [m]	L [m]	ΔE [mm]	ΔN [mm]	ΔL [mm]	E [m]	N [m]	L [m]	ΔE [mm]	ΔN [mm]	ΔL [mm]
1001	77123.2286	39122.3793	141.0049																								
1002	77122.7964	39122.1676	144.2783																								
1003	77120.5152	39121.1812	145.3921																								
1004	77118.2847	39120.0851	144.0864																								
1005	77120.7505	39121.3223	141.2416																								
1101	77127.3245	39113.1760	141.0424																								
1102	77126.8891	39112.9742	144.3152																								
1103	77124.5422	39111.9105	145.4292																								
1104	77122.1193	39111.5073	144.1431																								
1105	77124.8075	39112.2231	141.2729																								
1201	77131.6039	39103.7769	141.2918																								
1202	77131.4979	39103.7468	143.1387																								
1203	77130.0622	39103.1512	143.9506																								
1204	77128.7021	39102.5711	143.1548																								
1205	77128.7003	39102.5537	141.1233																								

Project: 100 Avenue Road Development, London

Job Description: 3D Deformation Monitoring

Monitoring Location: Swiss Cottage Underground Station

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	Mean Base Readings			Set 01			Diff Set 01 to Base			Set 02			Diff Set 02 to Base			Set 03			Diff Set 03 to Base			Set 04			Diff Set 04 to Base		
Ref.	E [m]	N [m]	L [m]	E [m]	N [m]	L [m]	ΔE [mm]	ΔN [mm]	ΔL [mm]	E [m]	N [m]	L [m]	ΔE [mm]	ΔN [mm]	ΔL [mm]	E [m]	N [m]	L [m]	ΔE [mm]	ΔN [mm]	ΔL [mm]	E [m]	N [m]	L [m]	ΔE [mm]	ΔN [mm]	ΔL [mm]
1301	77135.2716	39094.7635	141.2301																								
1302	77135.2008	39094.7540	143.2109																								
1303	77133.7628	39094.1820	144.0130																								
1304	77132.4153	39093.6308	143.1905																								
1305	77132.3978	39093.6085	141.1439																								
1401	77139.1218	39085.2657	141.3774																								
1402	77138.9908	39085.2293	143.2351																								
1403	77137.5124	39084.6742	144.0142																								
1404	77136.1498	39084.1331	143.2031																								
1405	77136.1546	39084.1266	141.1588																								
1501	77142.5377	39076.1701	141.3266																								
1502	77142.4606	39076.1496	143.2894																								
1503	77141.0566	39075.6345	144.0750																								
1504	77139.5730	39075.0780	143.2423																								
1505	77139.5950	39075.0774	141.1997																								

Project: 100 Avenue Road Development, London

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Survey Date: 24/11/2015

	Mean Base Readings			Set 01			Diff Set 01 to Base			Set 02			Diff Set 02 to Base			Set 03			Diff Set 03 to Base			Set 04			Diff Set 04 to Base		
Ref.	E [m]	N [m]	L [m]	E [m]	N [m]	L [m]	ΔE [mm]	ΔN [mm]	ΔL [mm]	E [m]	N [m]	L [m]	ΔE [mm]	ΔN [mm]	ΔL [mm]	E [m]	N [m]	L [m]	ΔE [mm]	ΔN [mm]	ΔL [mm]	E [m]	N [m]	L [m]	ΔE [mm]	ΔN [mm]	ΔL [mm]
1601	77146.0362	39066.5411	141.3692																								
1602	77145.9540	39066.5349	143.3098																								
1603	77144.5468	39066.0587	144.1034																								
1604	77143.0639	39065.5282	143.3141																								
1605	77143.0178	39065.4845	141.3572																								
1701	77071.5795	39182.3104	141.0818																								
1702	77065.1924	39182.0650	142.0370																								
1801	77106.9470	39119.1543	141.3064																								
1802	77101.8520	39116.5973	142.2751																								
1901	77079.3527	39180.1353	141.2477																								
1902	77080.8290	39177.5245	142.8602																								
1903	77082.1863	39175.0849	144.6449																								
1904	77083.6353	39172.4578	146.2436																								
1905	77085.0072	39170.0269	148.0249																								
1906	77086.4724	39167.4045	149.6276																								
1907	77087.6694	39165.1984	151.2325																								

Project: 100 Avenue Road Development, London

Job Description: 3D Deformation Monitoring

Monitoring Location: Swiss Cottage Underground Station

Project Reference: SAL-1311-01

Sheet Reference: SAL-1311-01-02 Set 00 - Perpendicular Tunnel Movement

Survey Associates Limited
Eden House, The Office Village, River Way
Uckfield, East Sussex. TN22 1SL
Tel: 0845 450 4210 - email: sal.office@sal.uk.com - Web: www.sal.uk.com

Survey Date: 24/11/2015

Point Ref.	Base Set	Set 01	Set 02	Set 03	Set 04	Set 05	Set 06	Set 07	Set 08	Set 09	Set 10
	24/11/2015										
101	0.0 mm										
102	0.0 mm										
103	0.0 mm										
104	0.0 mm										
105	0.0 mm										
201	0.0 mm										
202	0.0 mm										
203	0.0 mm										
204	0.0 mm										
205	0.0 mm										
301	0.0 mm										
302	0.0 mm										
303	0.0 mm										
304	0.0 mm										
305	0.0 mm										
401	0.0 mm										
402	0.0 mm										
403	0.0 mm										
404	0.0 mm										
405	0.0 mm										
501	0.0 mm										
502	0.0 mm										
503	0.0 mm										
504	0.0 mm										
505	0.0 mm										
601	0.0 mm										
602	0.0 mm										
603	0.0 mm										
604	0.0 mm										
605	0.0 mm										

Project: 100 Avenue Road Development, London

Job Description: 3D Deformation Monitoring

Monitoring Location: Swiss Cottage Underground Station

Project Reference: SAL-1311-01

Sheet Reference: SAL-1311-01-02 Set 00 - Perpendicular Tunnel Movement

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Survey Date: 24/11/2015

Point Ref.	Base Set	Set 01	Set 02	Set 03	Set 04	Set 05	Set 06	Set 07	Set 08	Set 09	Set 10
	24/11/2015										
701	0.0 mm										
702	0.0 mm										
703	0.0 mm										
704	0.0 mm										
705	0.0 mm										
801	0.0 mm										
802	0.0 mm										
803	0.0 mm										
804	0.0 mm										
805	0.0 mm										
901	0.0 mm										
902	0.0 mm										
903	0.0 mm										
904	0.0 mm										
905	0.0 mm										
1001	0.0 mm										
1002	0.0 mm										
1003	0.0 mm										
1004	0.0 mm										
1005	0.0 mm										
1101	0.0 mm										
1102	0.0 mm										
1103	0.0 mm										
1104	0.0 mm										
1105	0.0 mm										
1201	0.0 mm										
1202	0.0 mm										
1203	0.0 mm										
1204	0.0 mm										
1205	0.0 mm										

Project: 100 Avenue Road Development, London

Job Description: 3D Deformation Monitoring

Monitoring Location: Swiss Cottage Underground Station

Project Reference: SAL-1311-01

Sheet Reference: SAL-1311-01-02 Set 00 - Perpendicular Tunnel Movement

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Survey Date: 24/11/2015

Point Ref.	Base Set	Set 01	Set 02	Set 03	Set 04	Set 05	Set 06	Set 07	Set 08	Set 09	Set 10
	24/11/2015										
1301	0.0 mm										
1302	0.0 mm										
1303	0.0 mm										
1304	0.0 mm										
1305	0.0 mm										
1401	0.0 mm										
1402	0.0 mm										
1403	0.0 mm										
1404	0.0 mm										
1405	0.0 mm										
1501	0.0 mm										
1502	0.0 mm										
1503	0.0 mm										
1504	0.0 mm										
1505	0.0 mm										
1601	0.0 mm										
1602	0.0 mm										
1603	0.0 mm										
1604	0.0 mm										
1605	0.0 mm										
1701	0.0 mm										
1702	0.0 mm										
1801	0.0 mm										
1802	0.0 mm										
1901	0.0 mm										
1902	0.0 mm										
1903	0.0 mm										
1904	0.0 mm										
1905	0.0 mm										
1906	0.0 mm										
1907	0.0 mm										

Project: 100 Avenue Road Development, London

Job Description: 3D Deformation Monitoring

Monitoring Location: Swiss Cottage Underground Station

Project Reference: SAL-1311-01

Sheet Reference: SAL-1311-01 Diagram Rev0

Survey Associates Limited

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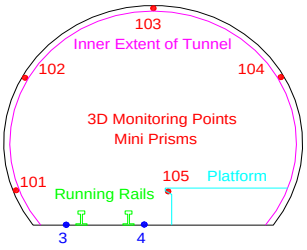
Uckfield, East Sussex. TN22 1SL

Tel: 0845 450 4210 - email: sal.office@sal.uk.com - Web: www.sal.uk.com

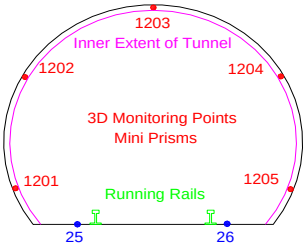
Survey Date: 24/11/2015

Typical Monitoring Cross Section
Platform



Level Monitoring Points - PK Nails

Typical Monitoring Cross Section
Running Tunnel



Level Monitoring Points - PK Nails

Notes:

1. Cross Sections are viewed in the direction of travel (Southbound)
2. ID 101-1605, 1702 & 1802: 3D Monitoring Points - Mini Prisms
3. ID 1701 & 1801: 3D Monitoring Points - PK Nails
4. ID 1901-1907: 3D Monitoring Points - Retro Targets
5. ID 3-34: Levelling Points - PK Nails
6. This diagram shows approximate position of monitoring points

APPENDIX G STATION & TUNNEL CONDITION SURVEY

Schedule of Condition

At

SWISS COTTAGE STATION

LIMITED TO THOSE AREAS IN THE IMMEDIATE VICINITY OF 100 Avenue Road, London, NW3 3HF

STATION TICKET HALL, EXITS AND SOUTHBOUND PLATFORM

6 May 2016

RECORDED ON 6 MAY 2016

SIGNED_____
Building Owner's Surveyor

SIGNED_____
Adjoining Owner's Surveyor

ITEM	DESCRIPTION	CONDITION
This schedule of condition should be read alongside the JRP photographic CD held on file by both surveyors. The area references refer to the Station Layout Plan Drawing Number B111-05S issued by Peter Brierley. “QC” refer to site notes/photographs taken by Brian Doherty of Quoin Building Consultants.		
Rear Elevation to Area 1/602	Brickwork structures to rear of area 1/602	Vertical open junction at mastic joint between rear elevation and return wall (Photo 3503). 2no. vertical cracks to pointing detail to parapet capping detail (Photo 3517).
Area 1/602	Exit 1 - steps leading to Avenue Road	(QC) Horizontal fine crack extending across width of landing, 5no. courses below top of parapet wall, with moss growth along line of cracking (Photo 3556/3558/ QC3). (QC) Vertical hairline crack approximately 300mm to left of ‘Emergency’ sign, starting 4 courses above wall tiles and extending up through mortar joints to 8nr. courses of brick (QC4). (QC) Vertical crack approximately 900mm to left of ‘Emergency Sign’ extends full height of brick. Crack is hairline at the base and opens up to fine crack 2-3mm wide at the top (3558/QC4/5). (QC) Opening up of vertical mastic joint at junction with return wall, above bottom stair tread (QC6).
Area 1/203	Lobby area leading to Exit 1	(QC) Hairline crack to ceiling at bottom of stairs, approx. 1500mm away from North wall

		and approx. 2m in length (QC8/9). (QC) 1nr. hairline and 1no. fine crack leading from curved wall on the northern side extending 1m and 1.5m towards the centre of the ceiling (3594, QC 11). (QC) Damp ingress and blistering decorations adjacent curved wall on the northern side (QC12). (QC) Generally there is hairline cracking and crazing to the centre of ceiling (3611, 3619, QC13). (QC) Hairline crack above top tread of the lower flight of stairs which extends across the full width of stairs (3632, 3633, QC 14). Separation cracking around full perimeter of ceiling hatch (3595). Crazed cracking to wall tiles at junction with area 2/205 (3616).
Area 2/205	Passage and lower light of stairs between ticket hall and exit 1	(QC) Fine crack above the bottom tread of the lower flight of stairs, where the plaster ceiling abuts the suspended ceiling. The crack extends across the full width of stairs (3638, QC 16). Impact cracking noted to 2no.tiles to foot of steps. Metal ceiling tiles in this area have dropped and are uneven.

		Loose grout to wall tiles around store cupboard 2-081 (3711,3715).
Area 2/001	Main ticket hall	(QC) No evident defects.
Area 2/204	Upper level passage between exits 1 and 2	(QC) Damp staining from ceiling above tube map poster on southern wall (QC17). (QC) Damaged grout and wall tiles are loose to left of door 02/081 (QC18). (QC) Generally the suspended ceiling tiles are dented and uneven. (QC Horizontal hairline cracks to 2nr. wall tiles to the left of the ATM's. The cracked tiles are 4nr. courses above the floor (QC 19).
Room 2 / 081	ATM Room	No Access possible.
Room 2/951	Store Room	2no. areas of damage to blockwork nib (3900/3901).
Area 1/605	Lower flight of stairs to exit 2	(QS) Vertical hairline crack to 150x150 wall tiles. Crack is positioned above the 5th stair tread from the bottom and extends up through the top 8no. wall tiles.
Area 1/202	Landing on stairs to exit 2	No evident defects.
Area 1/603	Upper flight of stairs exit 2	(QC) Vertical crack through grout to 100 x 200 wall tiles, extending up from bottom end of the handrail on the southern wall. Tiles adjacent are loose (QC 22-24, 3800). (QC) Vertical hairline crack in skirting on northern wall, at half landing (QC 25,3805). General crazing of tiles adjacent to shutters (3802).

		Cracking to top plinth above" Swiss Cottage" sign (3814). Cracking to 2no. floor tiles to half landing (3815).
Exit 2	External Areas	(QC) Impact damage to stone cladding under railings, in several locations (QC 26, 3854). (QC) Vertical Crack in stone cladding on northern parapet wall (QC 27). Damage to northern parapet capping detail (3869,3872).
<u>Station</u>		
Southbound Platform		(QC) Vertical crack to left hand side of arch on the Northern headwall (3911). (QC) Damp patch to ceiling with black staining approx. 5m from north headwall, which extends down to right shoulder. Intermittent staining to crown of tunnel in 2nr. locations before cross passage 3/201. (QC) Damp staining to right shoulder above door 3/411. To the left hand arch to the passage leading to ticket hall escalator (as facing from the platform), there are 2no. horizontal cracks and damage to the finish (3954/3957). (QC) Damp staining to crown of tunnel at cross passage 3/201 and above arch of 3/201.

(QC) Damp staining to right shoulder above cross passage 3/202.

(QC) Intermittent damp staining to crown, left and right shoulders between cross passage 3/202 and train arrival sign.

(QC) Damp staining to crown and left shoulder from train arrival sign to end of platform.

(QC) Damp staining to right shoulder between 2nd and 3rd bench away from south end of platform.

(QC) Damp staining to right shoulder between 1st and 2nd bench away from south end of platform.

(QC) Hairline cracking to centre of arch above cross passage 3/205.

(QC) 5nr vertical hairline cracks to right shoulder between cross passage 3/205 and southern headwall (4120).

Schedule of Condition

At

SWISS COTTAGE STATION

LIMITED TO THOSE AREAS IN THE IMMEDIATE VICINITY OF 100 Avenue Road, London, NW3 3HF

SOUTHBOUND JUBILEE LINE TUNNEL AND ESCALATOR HALL

24 May 2016

SIGNED_____
Building Owner Surveyor

SIGNED_____
Adjoining Owner Surveyor

The following schedule of condition covers the 70m in the southbound direction of the southbound Jubilee line tunnel.

70/3 refers to a starting point of 70 meters from the tunnel entrance, and the 3rd steel section as heading back toward the platform (section numbering starts at 0 at each chainage marker).

11 o'clock refers to the upper left of the tunnel as heading northbound in the tunnel.

A sample set of photographs follow this report, with the full set issued digitally.

ITEM	DESCRIPTION	CONDITION (with defect position description)
1	Bolted Steel Plate Sections	70/1 @ 11 o'clock Photo-15 minor water seepage about hole and panel joint ~300x500mm
2	Bolted Steel Plate Sections	70/1 @ 2 o'clock Photo-17 discolouration ~300mm
3	Bolted Steel Plate Sections	70/2 @ 12 o'clock Photo-20 discolouration
4	Bolted Steel Plate Sections	70/4 @ 12 o'clock Photo-21 discolouration
5	Bolted Steel Plate Sections	70/5 @ 11 o'clock Photo-22 discolouration
6	Bolted Steel Plate Sections	70/6 @ 12 o'clock Photo-23 discolouration
7	Bolted Steel Plate Sections	70/8 @ 12 o'clock Photo-25 2No spots water ingress
8	Bolted Steel Plate Sections	70/8 @ 11 o'clock Photo-27 encrustation ~300mm
9	Bolted Steel Plate Sections	70/8-9 @ 3 o'clock Photo-28 discolouration
10	Bolted Steel Plate Sections	70/9 @ 11 o'clock Photo-30 encrustation
11	Bolted Steel Plate Sections	70/9-10 @ 2 o'clock Photo-31 discolouration

ITEM	DESCRIPTION	CONDITION (with defect position description)
12	Bolted Steel Plate Sections	70/9 @ 3 o'clock Photo-33 discolouration
13	Bolted Steel Plate Sections	70/10 @ 12 o'clock Photo-34 discolouration
14	Bolted Steel Plate Sections	70/12-13 @ 8 o'clock Photo-35 discolouration
15	Bolted Steel Plate Sections	70/12 @ 12 o'clock Photo-36 minor water ingress
16	Bolted Steel Plate Sections	70/12-13 @ 3 o'clock Photo-37-38 discolouration ~2m
17	Bolted Steel Plate Sections	70/14 @ 12-1 o'clock Photo-39-40 discolouration
18	Bolted Steel Plate Sections	70/15 @ 9 o'clock Photo-41 discolouration
19	Bolted Steel Plate Sections	70/15-16 @ 8-9 o'clock Photo-42 discolouration
20	Bolted Steel Plate Sections	70/16 @ 7 o'clock Photo-43 encrustation
21	Bolted Steel Plate Sections	70/16 @ 9 o'clock Photo-44 discolouration
22	Bolted Steel Plate Sections	70/16 @ 3 o'clock Photo-45 encrustation
23	Bolted Steel Plate Sections	70-60/16-0 @ 2 o'clock Photo-46 encrustation
24	Bolted Steel Plate Sections	60/1-2 @ 7-8 o'clock Photo-48-49 encrustation
25	Bolted Steel Plate Sections	60/1-2 @ 10 o'clock Photo-50 discolouration
26	Bolted Steel Plate Sections	60/2 @ 12 o'clock Photo-51 discolouration

ITEM	DESCRIPTION	CONDITION (with defect position description)
27	Bolted Steel Plate Sections	60/3 @ 11-3 o'clock Photo-52-55 encrustation
28	Bolted Steel Plate Sections	60/4 @ 10 o'clock Photo-57 encrustation of hole
29	Bolted Steel Plate Sections	60/4-5 @ 3 o'clock Photo-58 encrustation
30	Bolted Steel Plate Sections	60/6 @ 10-11 o'clock Photo-59 encrustation of hole
31	Bolted Steel Plate Sections	60/6-7 @ 1-2 o'clock Photo-60 water seepage
32	Bolted Steel Plate Sections	60/7 @ 7 o'clock Photo-61 encrustation
33	Bolted Steel Plate Sections	60/7-8 @ 7-8 o'clock Photo-62 encrustation at boundary
34	Bolted Steel Plate Sections	60/7-8 @ 3 o'clock Photo-63 missing bolt
35	Bolted Steel Plate Sections	60/9 @ 8 o'clock Photo-64 encrustation
36	Bolted Steel Plate Sections	60/10 @ 11 o'clock Photo-65-66 staining
37	Bolted Steel Plate Sections	60/10 @ 12 o'clock Photo-67 staining
38	Bolted Steel Plate Sections	60/11 @ 7-1 o'clock Photo-68-72 encrustation
39	Bolted Steel Plate Sections	60/12 @ 11 o'clock Photo-73 encrustation
40	Bolted Steel Plate Sections	60/12 @ 4 o'clock Photo-74 encrustation
41	Bolted Steel Plate Sections	60/13-14 @ 3 o'clock Photo-75 encrustation

ITEM	DESCRIPTION	CONDITION (with defect position description)
42	Bolted Steel Plate Sections	60/15 @ 7 o'clock Photo-76 encrustation
43	Bolted Steel Plate Sections	60/15 @ 10 o'clock Photo-77 encrustation
44	Bolted Steel Plate Sections	60/16 @ 11 o'clock Photo-78 encrustation
45	Bolted Steel Plate Sections	60/17 @ 10 o'clock Photo-80 encrustation
46	Bolted Steel Plate Sections	60/17 @ 2 o'clock Photo-81 encrustation and staining
47	Bolted Steel Plate Sections	60/17 @ 5 o'clock Photo-82 encrustation
48	Bolted Steel Plate Sections	60/18 @ 11 o'clock Photo-84 encrustation
49	Bolted Steel Plate Sections	60/19 @ 9-11 o'clock Photo-85-86 encrustation
50	Bolted Steel Plate Sections	60/19-20 @ 3 o'clock Photo-88 encrustation
51	Bolted Steel Plate Sections	50/0-1 @ 2-4 o'clock Photo-90-90 encrustation
52	Bolted Steel Plate Sections	50/1-2 @ 2-4 o'clock Photo-94-95 encrustation
53	Bolted Steel Plate Sections	50/2 @ 12 o'clock Photo-96 discolouration
54	Bolted Steel Plate Sections	50/3 @ 5 o'clock Photo-97 encrustation
55	Bolted Steel Plate Sections	50/3 @ 4 o'clock Photo-98 encrustation at boundary
56	Bolted Steel Plate Sections	50/4-6 @ 8 o'clock Photo-99-100 encrustation

ITEM	DESCRIPTION	CONDITION (with defect position description)
57	Bolted Steel Plate Sections	50/4 @ 3 o'clock Photo-101 build up
58	Bolted Steel Plate Sections	50/7 @ 9 o'clock Photo-102 encrustation
59	Bolted Steel Plate Sections	50/7 @ 3 o'clock Photo-103 encrustation
60	Bolted Steel Plate Sections	50/8 @ 10 o'clock Photo-104 encrustation
61	Bolted Steel Plate Sections	50/8 @ 12 o'clock Photo-105 corroding bolt
62	Bolted Steel Plate Sections	50/8 @ 2-4 o'clock Photo-106-108 lots of encrustation and discolouration
63	Bolted Steel Plate Sections	50/9-10 @ 9-11 o'clock Photo-109-110 discolouration
64	Bolted Steel Plate Sections	50/9 @ 2 o'clock Photo-111 encrustation and discolouration
65	Bolted Steel Plate Sections	50/10-11 @ 1-3 o'clock Photo-112-113 encrustation and discolouration
66	Bolted Steel Plate Sections	50/11 @ 11 o'clock Photo-114 encrustation and discolouration, with slight corrosion
67	Bolted Steel Plate Sections	50/11 @ 2 o'clock Photo-115 encrustation
68	Bolted Steel Plate Sections	50/11-12 @ 2 o'clock Photo-115 encrustation
69	Bolted Steel Plate Sections	50/11-12 @ 9 o'clock Photo-116 encrustation
70	Bolted Steel Plate Sections	50/12 @ 1 o'clock Photo-117 encrustation

ITEM	DESCRIPTION	CONDITION (with defect position description)
71	Bolted Steel Plate Sections	50/14 @ 10-11 o'clock Photo-118 staining
72	Bolted Steel Plate Sections	50/15 @ 11 o'clock Photo-119 staining
73	Bolted Steel Plate Sections	50/16-17 @ 12-2 o'clock Photo-120 encrustation
74	Bolted Steel Plate Sections	50/17 @ 7 o'clock Photo-121 encrustation
75	Bolted Steel Plate Sections	50-40/17-0 @ 1-2 o'clock Photo-122 encrustation
76	Bolted Steel Plate Sections	40/1 @ 11 o'clock Photo-126 water staining and water
77	Bolted Steel Plate Sections	40/1 @ 12 o'clock Photo-127 encrustation
78	Bolted Steel Plate Sections	40/2 @ 8 o'clock Photo-128 encrustation
79	Bolted Steel Plate Sections	40/2 @ 12 o'clock Photo-129 water staining
80	Bolted Steel Plate Sections	40/2 @ 3 o'clock Photo-130-131 encrustation
81	Bolted Steel Plate Sections	40/3 @ 4 o'clock Photo-132 encrustation
82	Bolted Steel Plate Sections	40/3-4 @ 12 o'clock Photo-133 discolouration
83	Bolted Steel Plate Sections	40/4-5 @ 2 o'clock Photo-134 encrustation
84	Bolted Steel Plate Sections	40/5 @ 2-3 o'clock Photo-135-136 encrustation
85	Bolted Steel Plate Sections	40/8 @ 12-1 o'clock Photo-137-138 encrustation and discolouration

ITEM	DESCRIPTION	CONDITION (with defect position description)
86	Bolted Steel Plate Sections	40/9 @ 9-11 o'clock Photo-139 encrustation and discolouration
87	Bolted Steel Plate Sections	40/9-10 @ 11-2 o'clock Photo-140 encrustation and discolouration
88	Bolted Steel Plate Sections	40/11 @ 9 o'clock Photo-142 encrustation and stalactites
89	Bolted Steel Plate Sections	40/11-12 @ 11 o'clock Photo-143 discolouration
90	Bolted Steel Plate Sections	40/11 @ 5 o'clock Photo-144 encrustation and discolouration
91	Bolted Steel Plate Sections	40/12 @ 8 o'clock Photo-145 encrustation on lining
92	Bolted Steel Plate Sections	40/12-13 @ 8 o'clock Photo-146 encrustation and discolouration
93	Bolted Steel Plate Sections	40/12 @ 12 o'clock Photo-147 discolouration
94	Bolted Steel Plate Sections	40/13 @ 9 o'clock Photo-148 encrustation and discolouration
95	Bolted Steel Plate Sections	40/13 @ 3 o'clock Photo-149 encrustation
96	Bolted Steel Plate Sections	40/14 @ 12-1 o'clock Photo-151 discolouration
97	Bolted Steel Plate Sections	40/15 @ 11 o'clock Photo-152 discolouration
98	Bolted Steel Plate Sections	40/15 @ 3-4 o'clock Photo-153-154 encrustation and discolouration
99	Bolted Steel Plate Sections	40/16 @ 3 o'clock Photo-155 discolouration
100	Bolted Steel Plate Sections	40/18 @ 9 o'clock Photo-156 encrustation

ITEM	DESCRIPTION	CONDITION (with defect position description)
101	Bolted Steel Plate Sections	40/15 @ 12 o'clock Photo-157 discolouration
102	Bolted Steel Plate Sections	40/19 @ 8 o'clock Photo-158 encrustation
103	Bolted Steel Plate Sections	40/19 @ 5 o'clock Photo-156 encrustation
104	Bolted Steel Plate Sections	30/0 @ 8 o'clock Photo-157 encrustation
105	Bolted Steel Plate Sections	30/0 @ 2-4 o'clock Photo-158 encrustation
106	Bolted Steel Plate Sections	30/2 @ 12 o'clock Photo-159 discolouration
107	Bolted Steel Plate Sections	30/2-3 @ 3 o'clock Photo-160 encrustation
108	Bolted Steel Plate Sections	30/2 @ 5 o'clock Photo-164 cracked concrete at base
109	Bolted Steel Plate Sections	30/3 @ 1 o'clock Photo-165 discolouration
110	Bolted Steel Plate Sections	30/3 @ 4 o'clock Photo-166 encrustation
111	Bolted Steel Plate Sections	30/4 @ 12 o'clock Photo-167 discolouration
112	Bolted Steel Plate Sections	30/4 @ 1 o'clock Photo-168 discolouration
113	Bolted Steel Plate Sections	30/5 @ 3-4 o'clock Photo-169 encrustation and discolouration
114	Bolted Steel Plate Sections	30/6 @ 7-8 o'clock Photo-170-171 encrustation
115	Bolted Steel Plate Sections	30/6 @ 11 o'clock Photo-172 discolouration

ITEM	DESCRIPTION	CONDITION (with defect position description)
116	Bolted Steel Plate Sections	30/6 @ 12 o'clock Photo-173 encrustation and discolouration
117	Bolted Steel Plate Sections	30/6 @ 3 o'clock Photo-174 encrustation and discolouration
118	Bolted Steel Plate Sections	30/7 @ 1 o'clock Photo-175 encrustation and discolouration
119	Bolted Steel Plate Sections	30/8 @ 12 o'clock Photo-176 encrustation and discolouration
120	Bolted Steel Plate Sections	30/8 @ 3 o'clock Photo-177 encrustation and discolouration
121	Bolted Steel Plate Sections	30/9 @ 7 o'clock Photo-178 encrustation and discolouration
122	Bolted Steel Plate Sections	30/9 @ 9 o'clock Photo-179 encrustation and discolouration
123	Bolted Steel Plate Sections	30/10 @ 12-2 o'clock Photo-180-181 encrustation and discolouration
124	Bolted Steel Plate Sections	30/12 @ 3 o'clock Photo-182 encrustation and discolouration
125	Bolted Steel Plate Sections	30/13 @ 1-2 o'clock Photo-183 encrustation
126	Bolted Steel Plate Sections	30/14 @ 12 o'clock Photo-184 discolouration
127	Bolted Steel Plate Sections	30/14 @ 1 o'clock Photo-185 discolouration
128	Bolted Steel Plate Sections	30/15 @ 9-10 o'clock Photo-186 encrustation and discolouration
129	Bolted Steel Plate Sections	30/15 @ 12 o'clock Photo-187 discolouration
130	Bolted Steel Plate Sections	20/1 @ 11 o'clock Photo-188 discolouration and water

ITEM	DESCRIPTION	CONDITION (with defect position description)
131	Bolted Steel Plate Sections	20/1 @ 12-3 o'clock Photo-189-192 encrustation and discolouration
132	Bolted Steel Plate Sections	20/1-2 @ 4-5 o'clock Photo-193 encrustation and discolouration
133	Bolted Steel Plate Sections	20/2 @ 5 o'clock Photo-194 encrustation and discolouration
134	Bolted Steel Plate Sections	20/3 @ 12-1 o'clock Photo-195 discolouration
135	Mortar Under Bolted Steel Plate Sections	20/4 @ 5 o'clock Photo-196 crack to mortar at track side and encrustation and discolouration
136	Bolted Steel Plate Sections	20/7 @ 1 o'clock Photo-197 encrustation
137	Bolted Steel Plate Sections	20/8 @ 12 o'clock Photo-198 discolouration
138	Bolted Steel Plate Sections	20/8 @ 1 o'clock Photo-199 discolouration
139	Bolted Steel Plate Sections	20/10 @ 12-1 o'clock Photo-200-201 discolouration
140	Bolted Steel Plate Sections	20/11 @ 5 o'clock Photo-202 encrustation
141	Bolted Steel Plate Sections	20/12 @ 12 o'clock Photo-203 discolouration
142	Bolted Steel Plate Sections	20/13 @ 12 o'clock Photo-204 discolouration
143	Bolted Steel Plate Sections	20/14 @ 12 o'clock Photo-205 discolouration
144	Bolted Steel Plate Sections	20/15-16 @ 9-10 o'clock Photo-206 encrustation

ITEM	DESCRIPTION	CONDITION (with defect position description)
145	Bolted Steel Plate Sections	20/15-18 @ 7 o'clock Photo-207 encrustation and water
146	Bolted Steel Plate Sections	20/16 @ 12-1 o'clock Photo-208-209 encrustation and discolouration
147	Bolted Steel Plate Sections	20/16 @ 3 o'clock Photo-210 encrustation and discolouration
148	Bolted Steel Plate Sections	20/17-18 @ 8-9 o'clock Photo-211 encrustation and discolouration
149	Bolted Steel Plate Sections	20/17 @ 11 o'clock Photo-212 encrustation and discolouration
150	Bolted Steel Plate Sections	20/17-18 @ 3-4 o'clock Photo-213 encrustation and discolouration
151	Bolted Steel Plate Sections	20/18 @ 11 o'clock Photo-214 encrustation and discolouration
152	Bolted Steel Plate Sections	20/18 @ 12 o'clock Photo-215 discolouration
153	Bolted Steel Plate Sections	10/0 @ 7 o'clock Photo-216 crack
154	Bolted Steel Plate Sections	10/1 @ 7 o'clock Photo-217 encrustation and discolouration
155	Bolted Steel Plate Sections	10/1 @ 12 o'clock Photo-218 discolouration
156	Bolted Steel Plate Sections	10/2 @ 12 o'clock Photo-219 corrosion
157	Bolted Steel Plate Sections	10/2 @ 5 o'clock Photo-220 discolouration
158	Bolted Steel Plate Sections	10/3 @ 2-3 o'clock Photo-221 encrustation
159	Bolted Steel Plate Sections	10/4 @ 12-2 o'clock Photo-223 encrustation and discolouration

ITEM	DESCRIPTION	CONDITION (with defect position description)
160	Bolted Steel Plate Sections	10/4 @ 5 o'clock Photo-224 discolouration of mortar under power rail
161	Bolted Steel Plate Sections	10/7 @ 3 o'clock Photo-225 discolouration
162	Bolted Steel Plate Sections	10/8 @ 12 o'clock Photo-226 discolouration
163	Bolted Steel Plate Sections	10/9 @ 8 o'clock Photo-227 paint off
164	Bolted Steel Plate Sections	10/9 @ 2 o'clock Photo-228 corrosion
165	Bolted Steel Plate Sections	10/10 @ 2 o'clock Photo-229 discolouration and corrosion
166	Bolted Steel Plate Sections	10/11 @ 5 o'clock Photo-230 encrustation and discolouration
167	Bolted Steel Plate Sections	10/13 @ 9 o'clock Photo-231 encrustation and discolouration
168	Mortar filled Steel Plate Sections	South end head wall @ 12 o'clock Photo-233 missing mortar
169	Brick wall behind Steel sheeting	South end head wall @ 2-5 o'clock Photo-235-237 Water running down brickwork wall, organic growth present
170	Rendered Wall over arch	South end head wall @ 11 o'clock Photo-238 Crack in head wall render
171	Rendered Wall over arch	South end head wall @ 12 o'clock Photo-239 Crack in head wall render
172	Rendered Wall over arch	North end head wall @ o'clock Photo-240 possible repaired crack
173	Mortar filled Steel Plate Sections	North end head wall @ o'clock Photo-241 poor quality infill

ITEM	DESCRIPTION	CONDITION (with defect position description)
174	Escalator hall, rendered walls and ceiling, tiled floor	Escalator hall Photo-242-243,252 Generally good condition
175	Escalator hall, rendered walls and ceiling, tiled floor	Escalator hall Photo-244-243 3No small cracks to render over left escalator
176	Rendered Wall	1st arch to south bound tunnel Photo-245-246 Horizontal crack in render over length of arch
176	Rendered Wall	2nd arch to south bound tunnel Photo-249-246 2No vertical cracks in render, 1 at each end of arch
176	Rendered Wall	2nd arch to south bound tunnel Photo-251 3No vertical cracks in render at north end of arch
177	Room lined with boarding	Room 2/081 Photo-778-787 no defects visible

PHOTOGRAPHIC REFERENCE SHEET

Photo-15, 70/1 @ 11 o'clock
Water seepage about lifting hole and plate joints

PHOTOGRAPHIC REFERENCE SHEET

Photo-78, 60/16 @ 11 o'clock
Areas of discolouration about lifting holes

PHOTOGRAPHIC REFERENCE SHEET

Photo-128, 40/2 @ 8 o'clock
Encrustation at lifting hole of steel plate

PHOTOGRAPHIC REFERENCE SHEET

Photo-196, 20/4 @ 5 o'clock
Encrustation at lifting hole of steel plate

PHOTOGRAPHIC REFERENCE SHEET

Photo-236, South end head wall @ 2-5 o'clock
wet brickwork, with organic growth visible

PHOTOGRAPHIC REFERENCE SHEET

Photo-238, South end head wall @ 11 o'clock
cracks in render of head wall

PHOTOGRAPHIC REFERENCE SHEET

Photo-246, 1st arch to south bound tunnel
Horizontal crack in render over length of arch

APPENDIX H FACTUAL GEO-ENVIRONMENTAL REPORT BY CONCEPT

SITE INVESTIGATION REPORT

100 Avenue Road
Swiss Cottage
London
NW3 3HFL

ISSUE 00

SITE INVESTIGATION REPORT

100 Avenue Road
Swiss Cottage
London
NW3 3HFL

Prepared for: Essential Living Ltd

Concept: 16/2832 - FR 00 07/07/2016

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DOCUMENT ISSUE REGISTER			
Project Name:	100 Avenue Road, Swiss Cottage		
Project Number:	16/2832		
Document Reference:	16/2832 - FR 00	**Current Issue**	Issue 00
Document Type:	Site Investigation Report		

Development	Name	Signature	Date
Prepared by:	O Savvidou		07/07/2016
Checked by:	Ana Davila		07/07/2016
Approved by:	M Dedic		07/07/2016

Issued to:	Aecom

Date	Issue	Amendment Details/ Reason for issue	Issued to
07/07/16	Issue 00		Aecom

Notes:

CONTENTS

1. PROJECT PARTICULARS

Site Location:	100 Avenue Road, Swiss Cottage, London, NW3 3HF
Client:	Essential Living Ltd
Investigation Supervisor:	Aecom
Fieldwork:	04/05/2016 – 11/05/2016
Laboratory Work:	18/05/2016 – 06/07/2016

2. PURPOSE AND SCOPE OF WORKS

The purpose of the investigation was to understand the ground and groundwater conditions at the site and to determine the nature and extent of any ground and groundwater contamination.

The site is currently occupied by an existing six-storey office building with part semi-basement and part basement car park. The building is to be demolished as part of the proposed development and construct a residential-led mixed use development with a single basement level.

The scope of the works comprised the following:

- 4 No. Cable Percussion Boreholes to a maximum depth of 47.00m;
- Logging;
- Instrumentation Monitoring;
- Geotechnical and Chemical Laboratory Testing.

Table 1 – Exploratory Hole List

Hole ID	Hole Type	Depth (m)
BH101	CP	47.00
BH102	CP	47.00
BH105	CP	30.00
BH106	CP	30.00

Key
CP – Cable Percussion Borehole

3. DESCRIPTION OF WORKS

The works were carried out in accordance with the URS Infrastructure & Environment Ltd. Specification for Ground investigation “100 Avenue Road, Swiss Cottage” document first issue, dated 23/05/2014.

The site is directly adjacent to Swiss Cottage underground station and bounded, by a pedestrianized space between Avenue Road and Eton Avenue to the north,

by Avenue Road to the west, by Swiss Cottage Library and Swiss Cottage Leisure Centre to the south and by the Swiss Cottage Open Space and the Hampstead Theatre to the east.

The approximate centre of the site is located at National Grid Reference: 526700E, 184315N. The ground elevation is varied between +53.20mOD and +54.20mOD.

The locations of all exploratory holes are shown in the Exploratory Hole Location Plan presented in Section 7 of this report.

4. INVESTIGATION METHODS

4.1 Diamond Coring / Inspection Pits

All boreholes were carried out within the basement of the property. The concrete slab at all borehole locations was diamond cored (Ø300mm) followed by hand excavated inspection pits to a maximum depth of 1.20m prior to boring commencing.

4.2 Cable Percussion Drilling

4 No. Cable Percussion Boreholes (BH101-BH102, BH105-BH106) were drilled to a maximum depth of 47.00m using cable percussion rigs (Dando 100) with 200mm and 150mm diameter casing as appropriate.

4.2.1 Sampling and Testing during Cable Percussion Drilling

Bulk samples were taken at regular intervals in the Made Ground. Undisturbed Thin Walled samples (UT) were taken in accordance with EC7 using a down-hole sliding hammer in cohesive material at regular intervals or as instructed by the Investigation Supervisor.

Standard Penetration Tests (SPT) were carried out at specified intervals or as otherwise instructed by the Investigation Supervisor. The resulting SPT “N” blowcount values are presented in the relevant borehole records.

Small, disturbed samples were retrieved from the cutting shoe of the UT100 sampler, the SPT split spoon sampler and at intervals specified by the Investigation Supervisor.

Environmental samples (tubs, jars and vials) were taken for chemical analysis in the Made Ground, at each change of strata and where visual or olfactory evidence of contamination was noted or as instructed by the Investigation Supervisor. All samples taken for chemical analysis were screened for volatiles using a Phocheck Tiger photoionization detector.

The cable percussion borehole logs are presented in Section 8 of this report.

4.3 Standpipe Installations

Monitoring wells with flush stopcock covers were installed in the boreholes as follows:

Table 2 – Monitoring Installation Details

Hole ID	Base of Borehole (m bgl)	Diameter of Installation (mm)	Type of Installation	Base (m bgl)	Top RZ (m bgl)	Bottom RZ (m bgl)
BH101	47.00	50	SPG/GW	1.50	0.50	1.50
			VWP	12.00		
			VWP	22.00		
			VWP	32.00		
			VWP	42.00		
BH102	47.00		VWP	7.00		
			VWP	17.00		
			VWP	27.00		
			VWP	37.00		
			VWP	47.00		

KEY

SPG/GW – Gas & Groundwater Standpipe
VWP –Vibrating Wire Piezometer
RZ – Response Zone

The boreholes were backfilled with bentonite pellets with gas/groundwater response zones backfilled with a 10mm pea shingle filter with a geosoc surround.

Where vibrating wires installed the boreholes were backfilled with cement / bentonite grout mix at 3.5:1:1 ratio (water:cement:bentonite).

All installations were finished with concrete and a lockable stopcock covers flush with the ground.

The boreholes with no installations were backfilled with cement/bentonite grout and reinstated using the extracted concrete.

4.4 Instrumentation Monitoring

Monitoring was carried out by Concept subsequent to completion of the fieldworks.

Ground water in the standpipes was monitored using an In-Situ Rugged interphase dipmeter and the gas concentrations were recorded using a Gas data GFM436 gas monitor. The accuracy of the instrument is summarised in Section 9 where the gas monitoring reports and groundwater results are presented.

The vibrating wires were monitored using a Geosense G200 Vibrating Wire Readout unit and the results are presented in the same section.

4.5 Logging / Laboratory Testing

Logging of all soil samples was carried out in accordance with BS 5930:2015.

Geotechnical testing is performed at Concept Site Investigations laboratory in accordance with BS1377:1990 unless otherwise stated in the report. Concept is accredited by UKAS for tests where the UKAS logo is appended to the individual test report or summary. Approved signatories for laboratory testing are as follows:

- AB – Alan Bates (Quality Manager)
- DB – Darren Beever (Laboratory Manager)

Where subcontracted analysis has been carried out, the details of the laboratory (and accreditation where applicable) are shown in the individual test report or summary.

The results are presented in tabular format in Section 10 of this report.

All chemical testing was specified and scheduled by Aecom and carried out by i2 Analytical Ltd in accordance with the requirements of UKAS ISO17025 and MCERTS. The results are presented in tabular format in Section 11 of this report.

4.6 Setting Out

The locations of all exploratory holes were agreed with the Investigation Supervisor and set out prior to commencement of the site works.

Following completion of the ground works the locations and elevations of the boreholes were established by utilising precise levelling techniques.

The co-ordinates and levels of the as-built locations of the boreholes are shown in the Exploratory Hole Location Plan presented in Section 7 of this report.

5. GEOLOGICAL GROUND PROFILE

The geological strata encountered during the investigation are summarised in the table below. The Top and Bottom of the strata noted in the table indicates the highest and lowest boundaries encountered in all exploratory holes.

Table 3 - Geological Ground Profile

STRATUM	TOP (mbbl)	BASE (mbbl)	DESCRIPTION
MADE GROUND	0.00	1.00	Concrete over soft, light brown occasionally mottled light bluish grey micaceous silty CLAY with occasional pockets of orangish yellow fine to medium sand rare fine to coarse flint, brick and concrete fragments and occasional selenite crystals *(encountered in BH102)*
WEATHERED LONDON CLAY	0.42	8.00	Soft to firm, extremely closely fissured light brown occasionally mottled light bluish grey micaceous CLAY with occasional selenite crystals
LONDON CLAY FORMATION	6.60	Extent not proven	Stiff to very stiff, extremely closely fissured greyish brown slightly micaceous CLAY with rare pockets of dark grey silt, bioturbation, selenite crystals, shell fragments, pyrite nodules and dark grey staining

REFERENCES

British Standards Institution, (2015) Code of practice for ground investigations, British Standard BS5930: 2015, BSI, London

British Standards Institution, (2011) Investigation of potentially contaminated sites, British Standard BS10175: 2011, BSI, London.

UK Specification for Ground Investigation, (2011) Site Investigation Steering Group, Thomas Telford, London

British Geological Survey (1996) London and the Thames Valley 4th Edition, London HMSO.

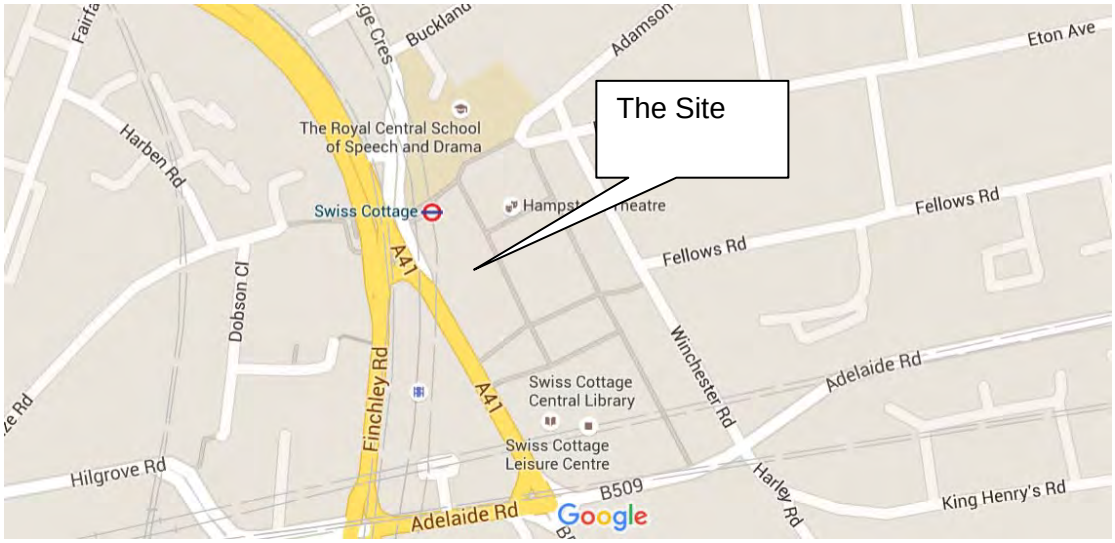
British Standards Institution BS EN ISO 22475-1, (2006) Geotechnical Investigation and Testing – Sampling Methods and Groundwater Measurements – Part 1: Technical Principles for Execution

British Standards Institution BS EN 1 997:1 (2004) EuroCode 7 - Geotechnical Design. Part 1 – General Rules.

British Standards Institution BS EN 1 997:2 (2007) EuroCode 7 - Geotechnical Design. Part 2 - Ground Investigation and Testing.

King C. (1981) The stratigraphy of the London Basin and associated deposits. Tertiary Research Special Paper, Vol. 6, Backhuys, Rotterdam, p158.

6. SITE LOCATION PLAN



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7. EXPLORATORY HOLE LOCATION PLAN

NOTES

1. This drawing should not be scaled.

BH	EASTING (m)	NORTHING (m)	LEVEL (mOD)	DEPTH (m)
BH101	526710.40	184331.10	54.16	50.00
BH102	526715.00	184305.10	53.21	50.00
BH105	526703.50	184308.30	53.28	30.00
BH106	526697.10	184321.40	53.97	30.00

KEY

BH- Cable Percusion Borehole

No	Revision	Drawn	Checked	Passed	Date

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Client:	Essential Living Ltd
Project:	100 Avenue Road Swiss Cottage
Title:	Exploratory Hole Location Plan Basement Level
Dwg. No:	162832/00
Status:	Issue
Scale:	NTS

Drawn	Checked	Passed	Date
RD	OS	MD	May 2016

8. CABLE PERCUSSION BOREHOLE LOGS

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Borehole No

BH101

Project

100 Avenue Road, Swiss Cottage

Job No	Date Started	Ground Level (mOD)	Co-Ordinates	Final Depth
16/2832	16/05/16	54.15	E 526710.4 N 184331.1	47.00m
	Date Completed 17/05/16			

Client

Essential Living Ltd

BOREHOLE SUMMARY

Top (m)	Base (m)	Type	Date Started	Date Ended	Crew	Logged By	Core Barrel (mm)	Core Bit	Plant Used/ Method	SPT Hammer Reference
0.00	0.42	DC	16/05/2016	16/05/2016	LR	FC/RB			Diamond Coring	
0.42	1.20	IP	16/05/2016	16/05/2016	DL	FC/RB			Hand Excavated	
1.20	47.00	CP	16/05/2016	17/05/2016	LR	FC/RB			Dando 100	SW68

WATER STRIKES

Strike at (m)	Rise to (m)	Time to Rise (min)	Casing Depth (m)	Sealed (m)

WATER ADDED

From (m)	To (m)

CHISELLING/SLOW PROGRESS

From (m)	To (m)	Duration (hr)	Remarks
7.10	7.25	00:30:00	Claystone
14.50	14.65	00:30:00	Claystone

HOLE

Depth (m)	Diameter (mm)
0.00	200
20.00	200
47.00	150

CASING

Depth (m)	Diameter (mm)
0.00	200
3.00	200
20.10	150

ROTARY CORE RECOVERY

From (m)	To (m)	Blows	Recovery (%)

ROTARY FLUSH DETAIL

From (m)	To (m)	Flush Type	Flush Return (%)	Flush Colour

INSTALLATION DETAILS

Type	Diameter (mm)	Depth of Installation (m)	Top of Response Zone (m)	Bottom of Response Zone (m)	Date of Installation
SPG/GW	50	1.50	0.50	1.50	20/05/2016
VWP		12.00			18/05/2016
VWP		22.00			18/05/2016
VWP		32.00			18/05/2016
VWP		42.00			18/05/2016

BACKFILL DETAILS

Top (m)	Bottom (m)	Material	Backfill Date
0.00	0.30	Concrete / Flush Cover	20/05/2016
0.30	0.50	Bentonite Pellets	20/05/2016
0.50	1.50	Pea Shingle	20/05/2016
1.50	2.00	Bentonite Pellets	20/05/2016
2.00	12.00	Cement / Bentonite Grout	18/05/2016
12.00	22.00	Cement / Bentonite Grout	18/05/2016
22.00	32.00	Cement / Bentonite Grout	18/05/2016
32.00	42.00	Cement / Bentonite Grout	18/05/2016
42.00	47.00	Cement / Bentonite Grout	18/05/2016

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Borehole No

BH101

Project

100 Avenue Road, Swiss Cottage

Job No	Date Started	Ground Level (mOD)	Co-Ordinates	Final Depth
16/2832	16/05/16	54.15	E 526710.4 N 184331.1	47.00m
	Date Completed 17/05/16			

Client

Essential Living Ltd

PROGRESS

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks
16/05/16	0.00		Dry	
16/05/16	1.20		Dry	
16/05/16	21.50	20.10	Dry	
17/05/16	21.50	20.10	Dry	
17/05/16	41.00	20.10	Dry	
18/05/16	41.00	20.10	Dry	
18/05/16	47.00	20.10	Dry	

SPT DETAILS

Type	Depth (m)	N Value	Blow Count / 75mm	Casing Depth (m)	Water Depth (m)
S	3.00	N13	2, 3 / 3, 3, 3, 4	3.00	Dry
S	6.00	N19	2, 3 / 4, 4, 5, 6	3.00	Dry
S	9.00	N31	5, 7 / 8, 8, 8, 7	3.00	Dry
S	12.00	N35	5, 7 / 8, 8, 9, 10	3.00	Dry
S	15.00	N38	5, 7 / 8, 9, 10, 11	3.00	Dry
S	18.00	N39	5, 7 / 8, 10, 10, 11	3.00	Dry
S	21.00	N41	6, 8 / 9, 10, 10, 12	20.10	Dry
S	24.00	N41	5, 8 / 8, 9, 11, 13	20.10	Dry
S	27.00	N45	5, 8 / 9, 10, 13, 13	20.10	Dry
S	30.00	N46	6, 8 / 9, 10, 13, 14	20.10	Dry
S	33.00	N49	6, 7 / 10, 12, 13, 14	20.10	Dry
S	36.00	N50/0.245	8, 10 / 12, 14, 17, 7	20.10	Dry
S	39.00	N50/0.275	8, 9 / 11, 13, 14, 12	20.10	Dry
S	42.00	N50/0.295	8, 9 / 10, 12, 14, 14	20.10	Dry
S	45.00	N50/0.265	8, 10 / 12, 14, 15, 9	20.10	Dry

GENERAL REMARKS

1. Borehole carried out from basement level.
2. Ø300mm diamond coring carried out between GL and 0.42m depth.

KEY

SAMPLES

ES - Environmental Sample (Tub, Vial, Jar)
U - 100mm Diameter Undisturbed Sample
UT - 100mm Diameter Thin Wall Undisturbed Sample
U38 - 38mm Diameter Undisturbed Sample
D - Disturbed Sample, B-Bulk Sample, BLK-Block Sample
C - Core Sample, W-Water Sample, R-Root Sample

INSTALLATION DETAILS

SPIE - Standpipe Piezometer
SPGW - Groundwater Monitor Standpipe
SPG/GW - Gas / Groundwater Monitor Standpipe
VWP - Vibrating Wire Piezometer
INC - Inclinometer

HOLE TYPES

IP -Inspection Pit, TP-Trial Pit
CP -Cable Percussion, RC-Rotary Coring, R/S-Rotary/Sonic
WS -Window Sampling, WSL-Windowless Sampling
DC -Dynamic Coring

TESTS S/C-SPT / CPT, V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe VOC-Volatile Organic Compounds

Note: All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key

Issue No: 02	Checked By: OS	Approved By: AN	Log Print Date & Time: 06/07/2016 15:56

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Borehole No

BH101

Project

100 Avenue Road, Swiss Cottage

Job No	Date Started	Ground Level (mOD)	Co-Ordinates	Final Depth
16/2832	16/05/16	54.15	E 526710.4 N 184331.1	47.00m
	Date Completed 17/05/16			

Client	Method/ Plant Used	Sheet
Essential Living Ltd	Cable Percussion	1 of 6

PROGRESS			STRATA				SAMPLES & TESTS				
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result	Field Records	Instrument/ Backfill
16/05/16		Dry			(0.42)	CONCRETE.					
			53.73		0.42						
						Soft to firm, extremely closely fissured light brown mottled light bluish grey slightly micaceous silty CLAY with rare pockets of orangish brown fine sand (<30mm) and occasional selenite crystals (<8mm). Fissures are subhorizontal and subvertical, planar, smooth, unpolished. (THAMES GROUP : WEATHERED LONDON CLAY FORMATION)	0.50			... VOC 0.6ppm	
							0.50	ES01			
							0.50	B02			
							1.00			... VOC 2.00ppm	
16/05/16		Dry					1.00	ES03			
							1.00	B04			
						... becoming firm below 1.00m	1.50-1.95	UT05	30 blows	100% Recovery	
							2.00	D06			
						... becoming light brown and micaceous below 2.00m					
							2.50	D07			
							3.00		N13	2, 3 / 3, 3, 3, 4	
							3.00	D08			
							4.00	D09			
					(7.58)	... with occasional pockets of orangish brown fine to medium sand (<30mm) below 4.00m					
							4.50-4.95	UT10	44 blows	100% Recovery	
							5.00	D11			
							5.50-6.00	B12			
						... with frequent pockets of orangish brown fine to medium sand (<40mm), orangish brown discolouration along fissures and rare black flecks between 5.50m and 7.00m					
							6.00		N19	2, 3 / 4, 4, 5, 6	
							6.00	D13			
							7.00-7.50	B14			
						... becoming stiff, brown mottled yellowish brown with occasional pockets of yellowish brown silt (<30mm) below 7.00m					
						... with a band of medium strong to strong grey claystone recovered as: fine to coarse gravel and cobbles between 7.10m and 7.25m	7.50-7.95	UT15	70 blows	100% Recovery	
			46.15		8.00		8.00	D16			

Issue No: 02	Checked By: OS	Approved By: AN	Log Print Date & Time: 06/07/2016 15:56

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Borehole No

BH101

Project

100 Avenue Road, Swiss Cottage

Job No	Date Started	Ground Level (mOD)	Co-Ordinates	Final Depth
16/2832	16/05/16	54.15	E 526710.4 N 184331.1	47.00m
	Date Completed 17/05/16			

Client	Method/ Plant Used	Sheet
Essential Living Ltd	Cable Percussion	2 of 6

PROGRESS			STRATA				SAMPLES & TESTS				
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result	Field Records	Instrument/ Backfill
						Stiff, extremely closely fissured greyish brown slightly micaceous CLAY with rare pockets of dark grey silt (<10mm) and occasional bioturbation. Fissures are subhorizontal and subvertical (30°- 50°), planar, smooth, unpolished. (THAMES GROUP : LONDON CLAY FORMATION - C)	8.50	D17			
						... with rare pyrite nodules (<20 x 35mm) below 8.50m	9.00		N31	5, 7 / 8, 8, 8, 7	
						... with selenite crystals at 8.50m	9.00	D18			
							10.00-10.50	B19			
						... with 1No off-white medium gravel sized shell fragment at 10.00m					
						... with a parting of dark grey silty fine sand at 10.00m	10.50-10.95	UT20	70 blows	100% Recovery	
							11.00	D21			
							11.50	D22			
						... with slightly glauconitic sand and occasional dark green flecks between 11.50m and 13.00m					
						... becoming silty below 11.50m	12.00		N35	5, 7 / 8, 8, 9, 10	
							12.00	D23			
							13.00	D24			
						... with occasional pockets of dark grey silt (<20mm) between 13.00m and 17.50m					
							13.50-13.90	UT25	80 blows	90% Recovery	
							13.95	D26			
							14.50	D27			
						... with a band of weak grey claystone recovered as: fine to coarse gravel between 14.50m and 14.60m					
							15.00		N38	5, 7 / 8, 9, 10, 11	
							15.00	D28			
					(15.50)						
							16.00-16.50	B29			

Issue No: 02	Checked By: OS	Approved By: AN	Log Print Date & Time: 06/07/2016 15:56

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Borehole No

BH101

Project

100 Avenue Road, Swiss Cottage

Job No	Date Started	Ground Level (mOD)	Co-Ordinates	Final Depth
16/2832	16/05/16	54.15	E 526710.4 N 184331.1	47.00m
	Date Completed 17/05/16			

Client	Method/ Plant Used	Sheet
Essential Living Ltd	Cable Percussion	3 of 6

PROGRESS			STRATA				SAMPLES & TESTS				
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result	Field Records	Instrument/ Backfill
						... with rare off-white and light brown tubular shell fragments (Dentalium) (<10mm) and off-white coarse sand sized and fine gravel sized bivalve and gastropod shell fragments between 16.00m and 20.50m ... with 1No pyrite nodule (40 x 30mm) at 16.00m	16.50-16.95	UT30	80 blows	100% Recovery	
							17.00	D31			
							17.50	D32			
						... becoming very stiff below 17.50m					
							18.00		N39	5, 7 / 8, 10, 10, 11	
							18.00	D33			
							19.00	B34			
							19.50-19.85	UT35	80 blows	80% Recovery	
						... with a pyritised wood fragment (25x10m) at 19.50m					
							19.90	D36			
							20.50	D37			
						... becoming silty with occasional white specks below 20.50m					
							21.00		N41	6, 8 / 9, 10, 10, 12	
							21.00	D38			
16/05/16	20.10	Dry									
17/05/16	20.10	Dry									
							22.00	D39			
							22.50-22.90	UT40	80 blows	90% Recovery	
							22.95	D41			
						... with 1No pyrite nodule (25mm) at 22.95m					
			30.65		23.50		23.50	D42			
						Very stiff, extremely closely fissured greyish brown slightly micaceous silty CLAY with rare pockets of dark grey silt (<10mm), occasional bioturbation and occasional white	24.00		N41	5, 8 / 8, 9, 11, 13	

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Project

100 Avenue Road, Swiss Cottage

Job No	Date Started	Ground Level (mOD)	Co-Ordinates	Final Depth
16/2832	16/05/16	54.15	E 526710.4 N 184331.1	47.00m
	Date Completed 17/05/16			

Client	Method/ Plant Used	Sheet
Essential Living Ltd	Cable Percussion	4 of 6

PROGRESS			STRATA				SAMPLES & TESTS				
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result	Field Records	Instrument/ Backfill
						silt flecks. Fissures are subhorizontal and subvertical (30º- 50º), planar, smooth, unpolished. (THAMES GROUP : LONDON CLAY FORMATION - B) ... with a parting of dark grey silt at 24.00m	24.00	D43			
							25.00-25.50	B44			
							25.50-25.90	UT45	80 blows	90% Recovery	
						... with 1No claystone fragment (15 x 10mm) and dark grey staining at 25.95m	25.95	D46			
							26.50	D47			
							27.00		N45	5, 8 / 9, 10, 13, 13	
							27.00	D48			
						... with 1No pyrite nodule (10mm) at 28.00m ... with rare pockets of dark grey silt (<20mm) below 28.00m	28.00	D49			
							28.50-28.90	UT50	80 blows	90% Recovery	
							28.95	D51			
							29.50	D52			
							30.00		N46	6, 8 / 9, 10, 13, 14	
							30.00	D53			
						... with 1No off-white fine gravel sized shell fragment at 31.00m	31.00-31.50	B54			
							31.50-31.90	UT55	80 blows	90% Recovery	
							31.95	D56			

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Borehole No

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Project

100 Avenue Road, Swiss Cottage

Job No	Date Started	Ground Level (mOD)	Co-Ordinates	Final Depth
16/2832	16/05/16	54.15	E 526710.4 N 184331.1	47.00m
	Date Completed 17/05/16			

Client	Method/ Plant Used	Sheet
Essential Living Ltd	Cable Percussion	5 of 6

PROGRESS			STRATA				SAMPLES & TESTS				
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result	Field Records	Instrument/ Backfill
						... with occasional pockets of dark grey and light brown silt (<20mm) below 31.95m					
							32.50	D57			
							33.00		N49	6, 7 / 10, 12, 13, 14	
							33.00	D58			
							34.00	D59			
							34.50-34.90	UT60	80 blows	90% Recovery	
							34.95	D61			
						... with occasional partings of dark grey silt (<30mm) below 34.95m					
					(23.50)						
							35.50-36.00	B62			
						... with 1No very weak grey claystone fragment (15mm) at 35.50m					
							36.00		N50/ 0.245	8, 10 / 12, 14, 17, 7	
							36.00	D63			
							37.00	D64			
							37.50-37.85	UT65	80 blows	80% Recovery	
							37.90	D66			
							38.50	D67			
							39.00		N50/ 0.275	8, 9 / 11, 13, 14, 12	
							39.00	D68			
							40.00-40.50	B69			

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Borehole No

BH101

Project

100 Avenue Road, Swiss Cottage

Job No	Date Started	Ground Level (mOD)	Co-Ordinates	Final Depth
16/2832	16/05/16	54.15	E 526710.4 N 184331.1	47.00m
	Date Completed 17/05/16			

Client	Method/ Plant Used	Sheet
Essential Living Ltd	Cable Percussion	6 of 6

PROGRESS			STRATA				SAMPLES & TESTS				
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result	Field Records	Instrument/ Backfill
						... becoming slightly micaceous with rare pockets of dark grey silt (<15mm), frequent white flecks and rare pyrite nodules (<20mm) between 40.00m and 40.50m	40.50-40.85	UT70	80 blows	80% Recovery	
							40.90	D71			
17/05/16	20.10	Dry									
18/05/16	20.10	Dry					41.50	D72			
							42.00		N50/ 0.295	8, 9 / 10, 12, 14, 14	
							42.00	D73			
							43.00	D74			
							43.50-43.85	UT75	100 blows	80% Recovery	
							43.90	D76			
							44.50-45.00	B77			
							45.00		N50/ 0.265	8, 10 / 12, 14, 15, 9	
							45.00	D78			
							46.00	D79			
						... with 1No pyritised wood fragment (8mm) at 46.00m					
							46.50-46.95	U80	100 blows	100% Recovery	
18/05/16	20.10	Dry	7.15		47.00	... becoming silty and micaceous with rare pockets of dark grey silt (<20mm) at 47.00m	47.00	D81			
						End of Borehole					

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Borehole No

BH102

Project

100 Avenue Road, Swiss Cottage

Job No	Date Started	Ground Level (mOD)	Co-Ordinates	Final Depth
16/2832	11/05/16	53.21	E 526715.0 N 184305.1	47.00m
	Date Completed 13/05/16			

Client

Essential Living Ltd

BOREHOLE SUMMARY

Top (m)	Base (m)	Type	Date Started	Date Ended	Crew	Logged By	Core Barrel (mm)	Core Bit	Plant Used/ Method	SPT Hammer Reference
0.00	0.50	DC	11/05/2016	11/05/2016	LR	FC/RB			Diamond Coring	
0.50	1.20	IP	11/05/2016	11/05/2016	LR	FC/RB			Hand Excavated	
1.20	47.00	CP	11/05/2016	13/05/2016	LR	FC/RB			Dando 100	SW68

WATER STRIKES

Strike at (m)	Rise to (m)	Time to Rise (min)	Casing Depth (m)	Sealed (m)

WATER ADDED

From (m)	To (m)

CHISELLING/SLOW PROGRESS

From (m)	To (m)	Duration (hr)	Remarks
17.40	17.60	00:30:00	Claystone

HOLE

Depth (m)	Diameter (mm)
0.00	200
20.00	200
47.00	150

CASING

Depth (m)	Diameter (mm)
0.00	200
3.00	200
20.10	150

ROTARY CORE RECOVERY

From (m)	To (m)	Blows	Recovery (%)

ROTARY FLUSH DETAIL

From (m)	To (m)	Flush Type	Flush Return (%)	Flush Colour

INSTALLATION DETAILS

Type	Diameter (mm)	Depth of Installation (m)	Top of Response Zone (m)	Bottom of Response Zone (m)	Date of Installation
VWP		7.00			13/05/2016
VWP		17.00			13/05/2016
VWP		27.00			13/05/2016
VWP		37.00			13/05/2016
VWP		47.00			13/05/2016

BACKFILL DETAILS

Top (m)	Bottom (m)	Material	Backfill Date
0.00	0.20	Concrete / Flush Cover	13/05/2016
0.20	2.00	Bentonite Pellets	
2.00	7.00	Cement / Bentonite Grout	
7.00	17.00	Cement / Bentonite Grout	
17.00	27.00	Cement / Bentonite Grout	
27.00	37.00	Cement / Bentonite Grout	
37.00	47.00	Cement / Bentonite Grout	