

Quality Report



See [Quality Report Help](#) for detailed explanations. Generated with version 1.1.45

Summary

Project:	uav_all_and_canon_terrestrial_every_2nd_correctheights
Processed:	2014-Aug-15 12:35:39
Camera name:	CanonEOS600D_20mm_20.0_5184x3456
Camera name:	NEX-7_16.0_6000x4000
Average Ground Sampling Distance (GSD):	0.46 cm
Image coordinate system:	WGS84
Ground Control Point (GCP) coordinate system:	WGS 84 / UTM zone 32N
Output coordinate system:	WGS 84 / UTM zone 32N
Processing type:	full (scale 0.5) oblique

Quality Check

Images:	median of 15146 keypoints per image	
Dataset:	867 out of 867 images calibrated (100%), 11 images disabled	
Camera optimization quality:	3.09% relative difference between initial and final focal length	
Matching quality:	median of 7380.88 matches per calibrated image	
Georeferencing:	40 GCPs (40 3D), 0.006 m	

Preview

The preview is not generated in oblique mode.

Calibration details

Number of calibrated images:	867 out of 878
Number of geotagged images:	878 out of 878

Geotag Position

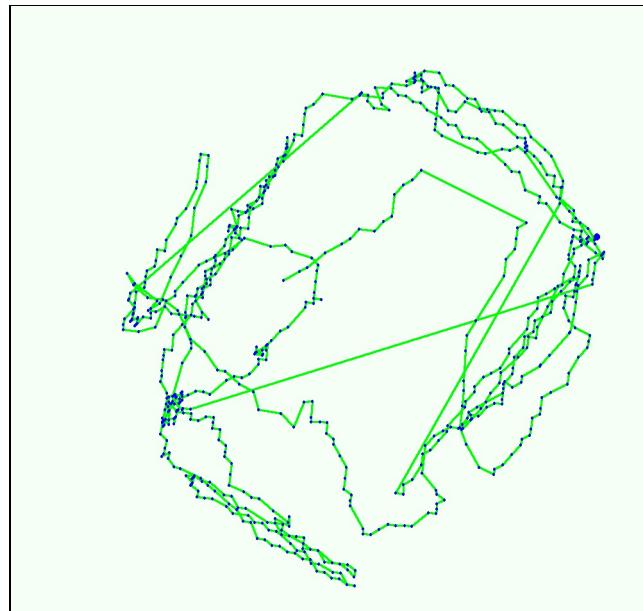
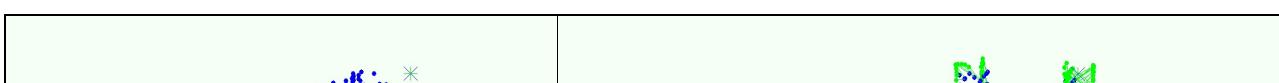


Figure 2: Top view of the geotags. The green line follows the geotags of the images in time starting from the large blue dot.

Optimized Camera Position



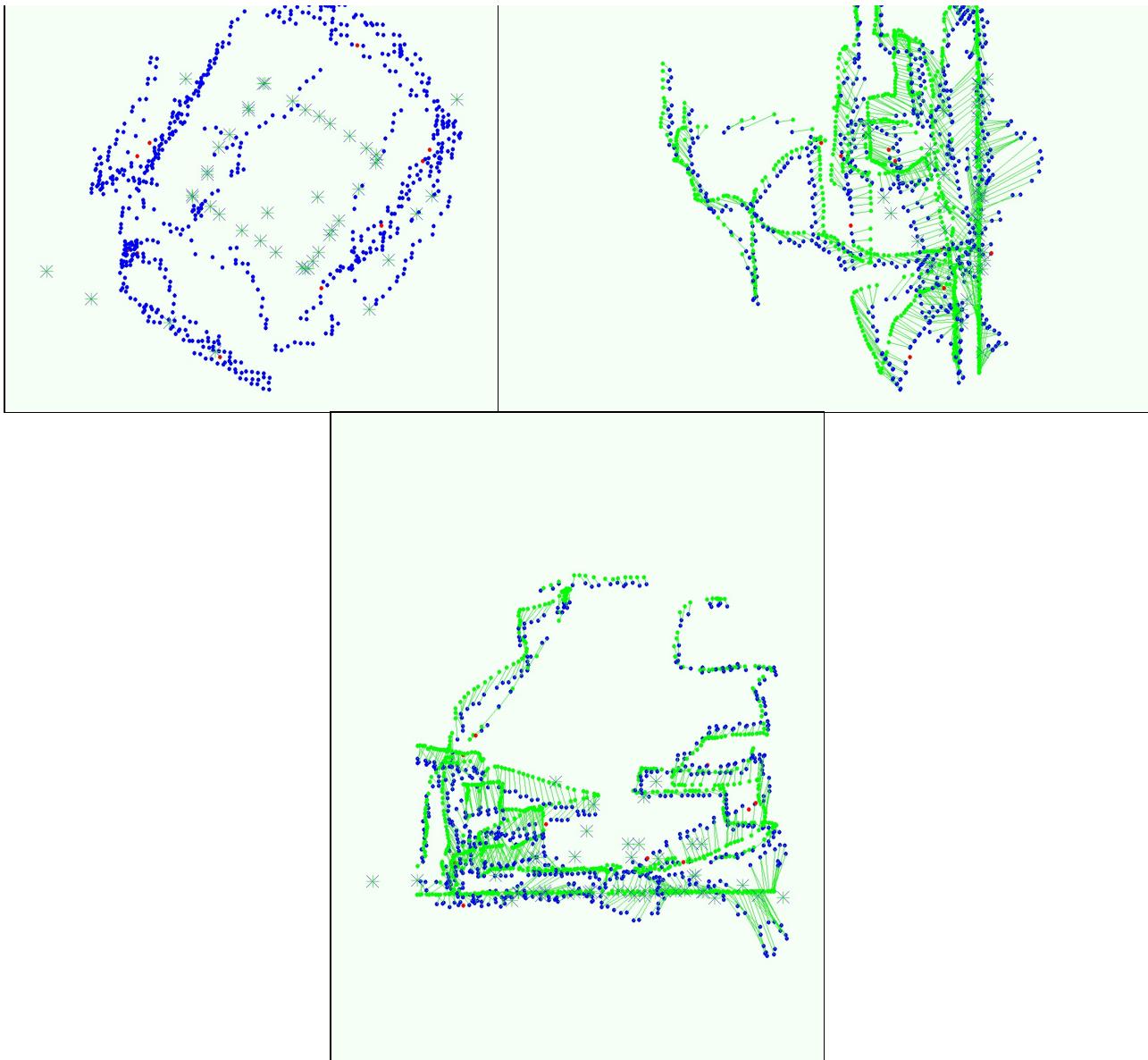


Figure 3: Offset between image geotags (blue dots) and optimized positions (green dots) as well as the offset between the GCPs positions (blue crosses) and their optimized positions (green crosses) in the top-view (XY plane), front-view (XZ plane) and side-view (YZ plane). Red dots indicate disabled or uncalibrated images.

Overlap

The preview is not generated in oblique mode.

Bundle Block Adjustment details

Number of 2D keypoint observations for Bundle Block Adjustment	6821349
Number of 3D points for Bundle Block Adjustment	1419798
Mean reprojection error	0.102265 [pixels]

Internal Camera Parameters CanonEOS600D_20mm_20.0_5184x3456. Sensor dimensions: 23 [mm] x 15.3 [mm]

EXIF ID: CanonEOS600D_20mm_20.0_5184x3456

	Focal length	Principal point x	Principal point y	R1	R2	R3	T1	T2
Initial values	4510.375 [pix] 20.000 [mm]	2592.000 [pix] 11.493 [mm]	1728.000 [pix] 7.662 [mm]	0.000	0.000	0.000	0.000	0.000
Optimized values	4772.059 [pix] 21.160 [mm]	2630.835 [pix] 11.666 [mm]	1743.601 [pix] 7.732 [mm]	-0.099	0.105	-0.037	0.000	0.000

Internal Camera Parameters NEX-7_16.0_6000x4000. Sensor dimensions: 36.000 [mm] x 24.000 [mm]

	Focal length	Principal point x	Principal point y	R1	R2	R3	T1	T2
Initial values	4051.370 [pix] 24.308 [mm]	3000.000 [pix] 18.000 [mm]	2000.000 [pix] 12.000 [mm]	0.000	0.000	0.000	0.000	0.000
Optimized values	4066.861 [pix] 24.401 [mm]	2978.914 [pix] 17.873 [mm]	2030.836 [pix] 12.185 [mm]	-0.062	0.083	0.014	-0.000	-0.001

2D Keypoint Table

	Number of 2D keypoints per image	Number of matched 2D keypoints per image
Median	15146	7381
Min	5014	410
Max	33066	17642
Mean	15669	7868

2D Keypoint Table for camera CanonEOS600D_20mm_20.0_5184x3456

	Number of 2D keypoints per image	Number of matched 2D keypoints per image
Median	12484	6076
Min	5014	1902
Max	23146	11839
Mean	13186	6343

2D Keypoint Table for camera NEX-7_16.0_6000x4000

	Number of 2D keypoints per image	Number of matched 2D keypoints per image
Median	15598	7528
Min	6132	410
Max	33066	17642
Mean	16302	8256

Median / 75% / maximal number of matches between camera models

	CanonEOS600D_20mm_20.0_5184x3456	NEX-7_16.0_6000x4000
CanonEOS600D_20mm_20.0_5184x3456	367 / 1345 / 8600	2 / 18 / 155
NEX-7_16.0_6000x4000		57 / 395 / 11906

3D Points from 2D Keypoint Matches

	Number of 3D points observed
In 2 images	569725
In 3 images	264981
In 4 images	154579
In 5 images	100632
In 6 images	69417
In 7 images	50367
In 8 images	38518
In 9 images	30106
In 10 images	23318
In 11 images	18458
In 12 images	14863
In 13 images	12564
In 14 images	10026
In 15 images	8358
In 16 images	7306
In 17 images	5908
In 18 images	4961
In 19 images	3879
In 20 images	3504
In 21 images	2946
In 22 images	2476
In 23 images	2113

In 24 images	1816
In 25 images	1489
In 26 images	1439
In 27 images	1224
In 28 images	1136
In 29 images	1006
In 30 images	906
In 31 images	806
In 32 images	702
In 33 images	685
In 34 images	559
In 35 images	552
In 36 images	522
In 37 images	482
In 38 images	455
In 39 images	408
In 40 images	437
In 41 images	423
In 42 images	391
In 43 images	421
In 44 images	420
In 45 images	391
In 46 images	356
In 47 images	312
In 48 images	259
In 49 images	265
In 50 images	240
In 51 images	238
In 52 images	236
In 53 images	168
In 54 images	142
In 55 images	143
In 56 images	132
In 57 images	101
In 58 images	135
In 59 images	126
In 60 images	97
In 61 images	84
In 62 images	85
In 63 images	80
In 64 images	68
In 65 images	55
In 66 images	62
In 67 images	63
In 68 images	63
In 69 images	57
In 70 images	56
In 71 images	42
In 72 images	46
In 73 images	34
In 74 images	34
In 75 images	34
In 76 images	29
In 77 images	24
In 78 images	24
In 79 images	27
In 80 images	23
In 81 images	22
In 82 images	28
In 83 images	19

In 84 images	13
In 85 images	11
In 86 images	11
In 87 images	11
In 88 images	4
In 89 images	3
In 90 images	8
In 91 images	4
In 92 images	4
In 93 images	4
In 94 images	2
In 95 images	3
In 96 images	4
In 97 images	5
In 98 images	6
In 99 images	3
In 100 images	3
In 101 images	3
In 102 images	2
In 103 images	1
In 104 images	2
In 108 images	2
In 110 images	1
In 112 images	1
In 116 images	1
In 119 images	1
In 125 images	1

2D Keypoint Graph

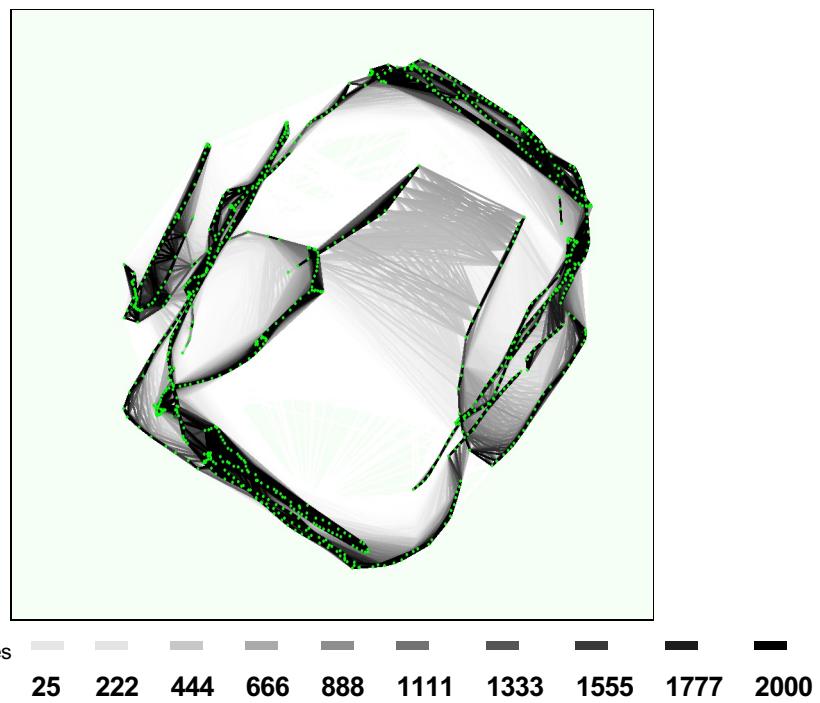


Figure 5: Top view of the geotags with a link between matching images. The darkness of the links indicates the number of matched 2D keypoints between the images. Bright links indicate weak links and require manual tie points or more images.

Most visible 2D keypoints



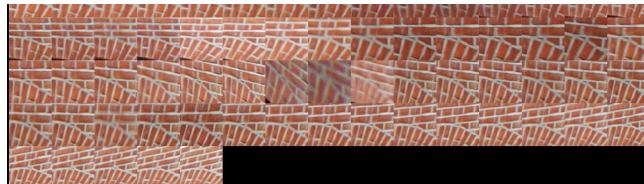


Figure 6: Cropped area of 1 3D point arising from 125 2D keypoints. Each cropped area should represent the same 3D object.

Geolocation and Ground Control Points

GCP name	Tolerance XY/Z [m]	Error X[m]	Error Y[m]	Error Z[m]	Projection error [pixel]	Verified/Marked
3D GCP: 1036	0.020/ 0.020	0.003	-0.004	-0.005	0.325	11 / 11
3D GCP: 1029	0.020/ 0.020	0.001	-0.001	-0.003	0.431	10 / 10
3D GCP: 1030	0.020/ 0.020	0.002	0.002	0.003	0.503	23 / 23
3D GCP: 1032	0.020/ 0.020	0.005	0.001	-0.008	0.352	18 / 18
3D GCP: 1033	0.020/ 0.020	0.002	0.000	-0.003	0.444	25 / 25
3D GCP: 1034	0.020/ 0.020	0.000	-0.003	-0.009	0.449	28 / 28
3D GCP: 1035	0.020/ 0.020	0.006	0.004	-0.008	0.546	19 / 19
3D GCP: 1037	0.020/ 0.020	0.002	-0.004	-0.003	0.397	37 / 37
3D GCP: 1039	0.020/ 0.020	0.004	-0.002	-0.001	0.838	46 / 46
3D GCP: 1040	0.020/ 0.020	0.003	0.001	-0.000	0.448	41 / 41
3D GCP: 1041	0.020/ 0.020	0.004	0.003	0.002	0.473	11 / 11
3D GCP: 1042	0.020/ 0.020	-0.001	0.006	0.003	0.404	23 / 23
3D GCP: 1043	0.020/ 0.020	-0.005	0.008	-0.008	0.500	7 / 7
3D GCP: 1044	0.020/ 0.020	-0.006	0.005	-0.001	0.518	22 / 22
3D GCP: 1045	0.020/ 0.020	-0.001	0.007	-0.001	1.246	22 / 22
3D GCP: 1046	0.020/ 0.020	0.003	0.001	-0.005	0.436	17 / 17
3D GCP: 1047	0.020/ 0.020	-0.003	-0.007	-0.007	0.378	11 / 11
3D GCP: 1048	0.020/ 0.020	-0.004	-0.003	-0.004	0.449	24 / 24
3D GCP: 1049	0.020/ 0.020	-0.003	-0.004	-0.002	0.539	17 / 17
3D GCP: 1050	0.020/ 0.020	0.003	-0.004	-0.001	0.397	22 / 22
3D GCP: 1051	0.020/ 0.020	0.002	-0.002	0.000	0.436	16 / 16
3D GCP: 1054	0.020/ 0.020	-0.000	0.002	0.004	0.490	23 / 23
3D GCP: 1056	0.020/ 0.020	0.002	-0.003	0.001	0.463	9 / 9
3D GCP: 1058	0.020/ 0.020	-0.002	0.004	0.001	0.485	21 / 21
3D GCP: 1060	0.020/ 0.020	0.002	-0.006	0.000	0.395	62 / 62
3D GCP: 1062	0.020/ 0.020	0.000	0.003	0.010	0.309	17 / 17
3D GCP: 1064	0.020/ 0.020	-0.001	-0.004	-0.002	0.478	20 / 20
3D GCP: 1284	0.020/ 0.020	-0.010	-0.008	0.009	0.310	10 / 10
3D GCP: 1304	0.020/ 0.020	-0.009	-0.004	-0.002	0.381	9 / 9
3D GCP: 1317	0.020/ 0.020	0.006	0.001	0.006	0.327	8 / 8
3D GCP: 1318	0.020/ 0.020	0.002	0.005	0.007	0.288	10 / 10
3D GCP: 1370	0.020/ 0.020	-0.020	-0.000	0.025	0.207	16 / 16
3D GCP: 1372	0.020/ 0.020	0.009	-0.024	-0.031	0.174	3 / 3
3D GCP: 1375	0.020/ 0.020	0.002	0.000	-0.007	0.332	15 / 15
3D GCP: 1393	0.020/ 0.020	0.002	-0.002	0.001	0.484	10 / 10
3D GCP: 1394	0.020/ 0.020	0.003	-0.005	0.002	0.415	25 / 25
3D GCP: 1400	0.020/ 0.020	-0.006	0.001	0.008	0.394	9 / 9
User CP: roof1					0.687	36 / 36
User CP: roof2					0.357	13 / 13
User CP: roof3					0.535	14 / 14
User CP: tie1061					0.542	19 / 19
User CP: tie1063					0.488	23 / 23
User CP: mtp158					0.412	10 / 10
3D GCP: 5004	0.020/ 0.020	0.003	-0.015	-0.009	0.171	6 / 6
3D GCP: 5006	0.020/ 0.020	-0.003	0.003	0.010	0.193	10 / 10
3D GCP: 5007	0.020/ 0.020	-0.002	0.017	0.001	0.194	13 / 13
Mean		-0.000112	-0.000789	-0.000711		
Sigma		0.0000007	0.0000004	0.0000150		

Sigma		0.005067	0.006384	0.008158		
RMS error		0.005068	0.006433	0.008189		
GCP name	Tolerance XY/Z [m]	Error X[m]	Error Y[m]	Error Z [m]	Projection error [pixel]	Verified/Marked
3D Check Point: 1038	0.0200/0.0200	0.0040	-0.0001	-0.0014	0.6157	15 / 15
3D Check Point: 1066	0.0200/0.0200	0.0055	-0.0094	0.0014	0.3043	16 / 16
Mean		0.004735	-0.004744	0.000002		
Sigma		0.000729	0.004639	0.001421		
RMS error		0.004791	0.006636	0.001421		

Localisation accuracy per GCP and mean errors in the three coordinate directions. The last column counts the number of images where the GCP has been automatically verified vs. manually marked.

0 out of 2 check points have been labeled as inaccurate (see Figure 7 below).

Absolute Geotag Variance

0 out of 867 geotagged and calibrated images have been labeled as inaccurate.

Mn error [m]	Maxerror [m]	Geotag error X[%]	Geotag error Y[%]	Geotag error Z[%]
-	-15.00	0.00	0.00	0.00
-15.00	-12.00	0.00	0.00	0.00
-12.00	-9.00	0.00	0.00	0.58
-9.00	-6.00	0.35	0.81	1.15
-6.00	-3.00	6.00	28.49	25.14
-3.00	0.00	42.45	54.21	45.79
0.00	3.00	45.91	9.80	15.46
3.00	6.00	4.84	2.42	10.73
6.00	9.00	0.46	1.73	1.15
9.00	12.00	0.00	1.27	0.00
12.00	15.00	0.00	0.92	0.00
15.00	-	0.00	0.35	0.00
Mean		-0.110555	-1.465906	-0.991721
Sigma		1.922252	3.266224	2.966717
RMS error		1.925429	3.580098	3.128085

Min error and Max error represent geotag error intervals between -1.5 and 1.5 times maximum tolerance of all the images. Columns X, Y, Z show the percentage of images with geotag errors within the predefined error intervals. The geotag error is the difference between the image geotags and the optimized camera positions.

Note that the image geotag errors do not correspond to the accuracy on the observed 3D points.

Relative Geotag Variance

Tolerance [%]	Images X[%]	Images Y[%]	Images Z[%]
10.00	23.88	8.88	23.30
20.00	45.21	17.53	42.33
30.00	61.94	30.10	61.25
40.00	72.90	42.56	80.39
50.00	83.04	53.06	91.00
60.00	88.35	64.01	97.12
70.00	92.96	72.66	98.27
80.00	95.96	79.24	99.31
90.00	96.89	85.12	99.42
100.00	97.92	89.16	99.65
110.00	98.50	92.39	100.00
120.00	99.19	94.93	100.00
130.00	99.42	95.96	100.00
140.00	99.77	96.31	100.00
150.00	100.00	96.54	100.00
Mean tolerance	5.000000	5.000000	10.000000
Sigma tolerance	0.000000	0.000000	0.000000

Images X, Y, Z represent the percentage of images with a geotag error in X, Y, Z smaller than the given percentage of their corresponding tolerance.

Ground Control Points





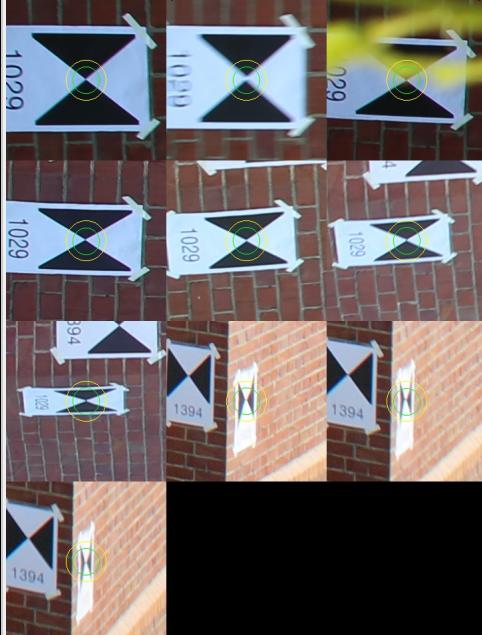
IMG_5582.JPG
IMG_5586.JPG
IMG_5590.JPG
DSC05631.JPG
DSC05632.JPG
DSC05633.JPG
DSC05634.JPG
DSC05635.JPG
DSC05636.JPG
DSC05637.JPG
DSC05638.JPG

GCP 1036 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.



IMG_5436.JPG
IMG_5438.JPG
IMG_5440.JPG
IMG_5442.JPG
IMG_5444.JPG
IMG_5446.JPG

GCP name: 1029 (384441.788,5708789.388,125.053)



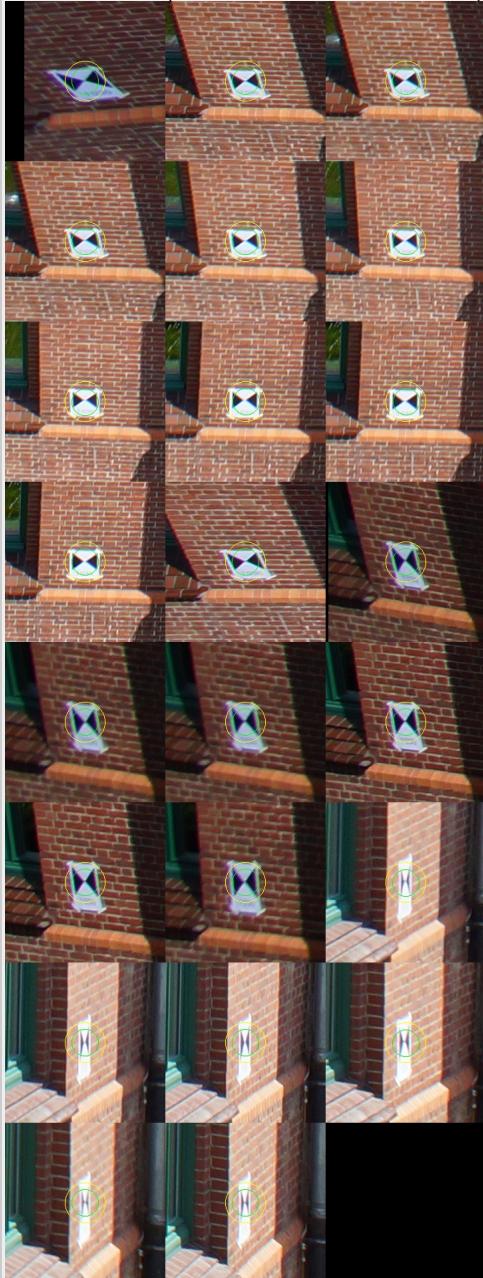
IMG_5678.JPG
IMG_5686.JPG
IMG_5694.JPG
IMG_5698.JPG
IMG_5700.JPG
IMG_5704.JPG
IMG_5708.JPG
DSC06091.JPG
DSC06092.JPG
DSC06094.JPG

GCP 1029 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.



IMG_5462.JPG
IMG_5464.JPG
IMG_5466.JPG
IMG_5468.JPG
IMG_5470.JPG
IMG_5518.JPG

GCP name: 1030 (384439.270,5708785.415,125.030)



DSC05854.JPG
DSC06023.JPG
DSC06026.JPG
DSC06027.JPG
DSC06029.JPG
DSC06030.JPG
DSC06031.JPG
DSC06035.JPG
DSC06036.JPG
DSC06037.JPG
DSC06039.JPG
DSC06057.JPG
DSC06059.JPG
DSC06060.JPG
DSC06065.JPG
DSC06066.JPG
DSC06067.JPG
DSC06087.JPG
DSC06088.JPG
DSC06089.JPG
DSC06091.JPG
DSC06092.JPG
DSC06095.JPG

GCP 1030 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.



IMG_5456.JPG
IMG_5458.JPG
IMG_5462.JPG
IMG_5464.JPG
IMG_5466.JPG
IMG_5468.JPG

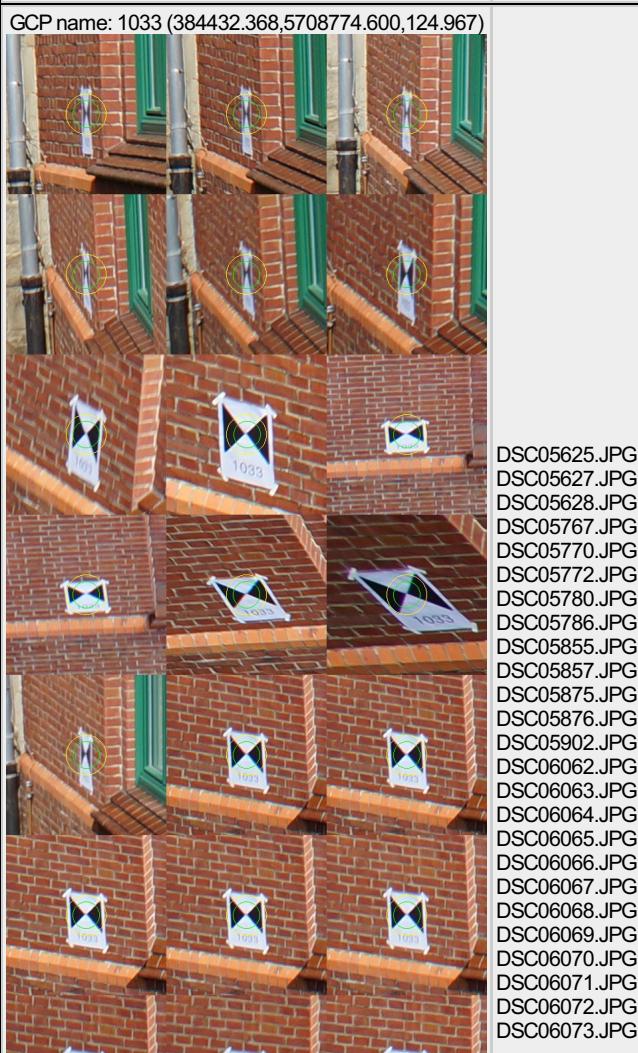
GCP name: 1032 (384434.256,5708778.636,125.255)

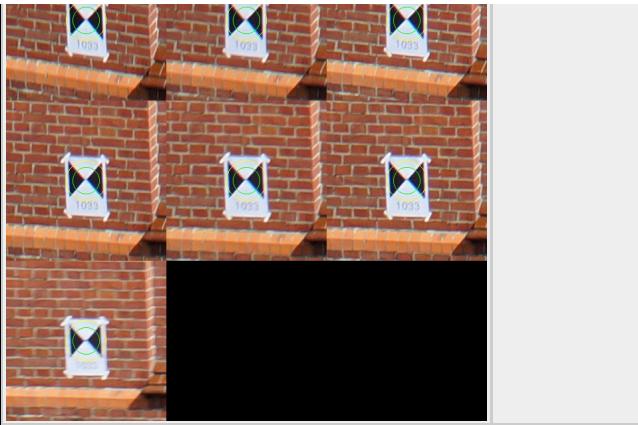


IMG_5642.JPG
IMG_5644.JPG
IMG_5648.JPG



GCP 1032 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.

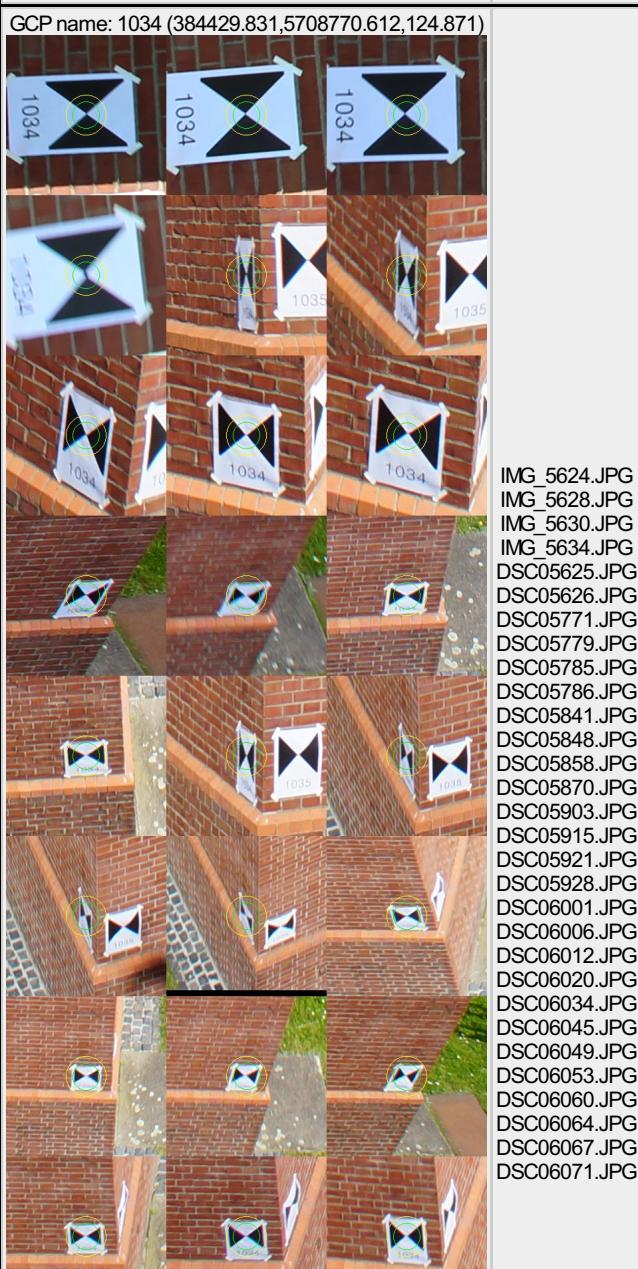




GCP 1033 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.



IMG_5436.JPG
IMG_5438.JPG
IMG_5440.JPG
IMG_5442.JPG
IMG_5444.JPG
IMG_5446.JPG



IMG_5624.JPG
IMG_5628.JPG
IMG_5630.JPG
IMG_5634.JPG
DSC05625.JPG
DSC05626.JPG
DSC05771.JPG
DSC05779.JPG
DSC05785.JPG
DSC05786.JPG
DSC05841.JPG
DSC05848.JPG
DSC05858.JPG
DSC05870.JPG
DSC05903.JPG
DSC05915.JPG
DSC05921.JPG
DSC05928.JPG
DSC06001.JPG
DSC06006.JPG
DSC06012.JPG
DSC06020.JPG
DSC06034.JPG
DSC06045.JPG
DSC06049.JPG
DSC06053.JPG
DSC06060.JPG
DSC06064.JPG
DSC06067.JPG
DSC06071.JPG



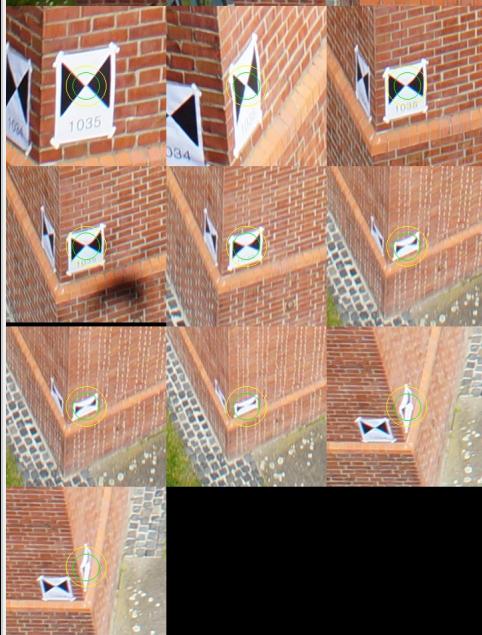
GCP 1034 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.



IMG_5436.JPG
IMG_5438.JPG
IMG_5440.JPG
IMG_5442.JPG
IMG_5444.JPG
IMG_5446.JPG



DSC05625.JPG
DSC05631.JPG
DSC05649.JPG
DSC05701.JPG
DSC05720.JPG
DSC05742.JPG
DSC05745.JPG
DSC05752.JPG
DSC05764.JPG
DSC05772.JPG
DSC05784.JPG
DSC05915.JPG
DSC05921.JPG
DSC05925.JPG
DSC05934.JPG
DSC05935.JPG
DSC05938.JPG
DSC06006.JPG
DSC06008.JPG



GCP 1035 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.



IMG_5436.JPG



IMG_5438.JPG
IMG_5440.JPG
IMG_5442.JPG
IMG_5444.JPG
IMG_5446.JPG

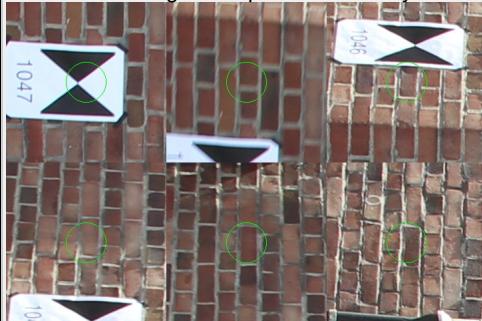


GCP name: 1037 (384438.164,5708764.662,124.838)

IMG_5578.JPG
IMG_5580.JPG
IMG_5582.JPG
DSC05631.JPG
DSC05634.JPG
DSC05635.JPG
DSC05636.JPG
DSC05637.JPG
DSC05638.JPG
DSC05639.JPG
DSC05640.JPG
DSC05641.JPG
DSC05650.JPG
DSC05653.JPG
DSC05654.JPG
DSC05655.JPG
DSC05656.JPG
DSC05657.JPG
DSC05658.JPG
DSC05659.JPG
DSC05660.JPG
DSC05661.JPG
DSC05662.JPG
DSC05663.JPG
DSC05664.JPG
DSC05665.JPG
DSC05688.JPG
DSC05696.JPG
DSC05697.JPG
DSC05698.JPG
DSC05699.JPG
DSC05700.JPG
DSC05702.JPG
DSC05708.JPG
DSC05710.JPG
DSC05715.JPG
DSC05716.JPG



GCP 1037 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.



IMG_5436.JPG
IMG_5438.JPG
IMG_5440.JPG
IMG_5442.JPG
IMG_5444.JPG
IMG_5446.JPG

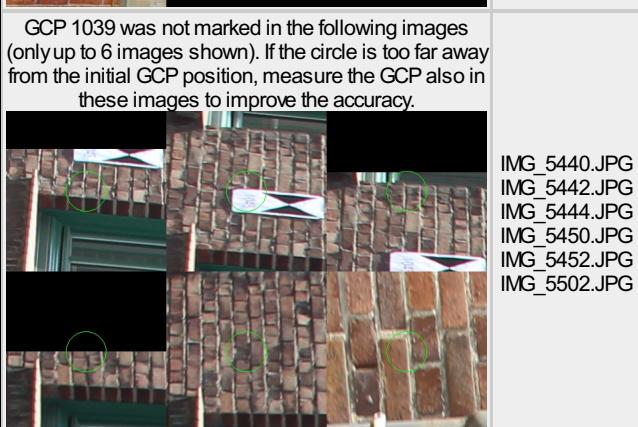
GCP name: 1039 (384443.909,5708761.006,124.904)



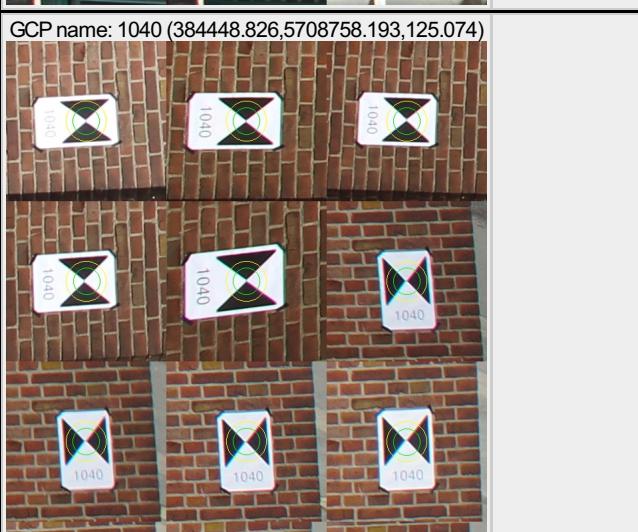
IMG_5558.JPG
IMG_5560.JPG
IMG_5562.JPG
DSC05647.JPG
DSC05649.JPG
DSC05650.JPG
DSC05652.JPG
DSC05653.JPG
DSC05654.JPG
DSC05655.JPG
DSC05656.JPG
DSC05657.JPG
DSC05658.JPG
DSC05659.JPG
DSC05660.JPG
DSC05661.JPG
DSC05662.JPG
DSC05663.JPG
DSC05665.JPG
DSC05666.JPG
DSC05667.JPG
DSC05668.JPG
DSC05669.JPG
DSC05670.JPG
DSC05671.JPG
DSC05672.JPG
DSC05673.JPG
DSC05674.JPG
DSC05675.JPG



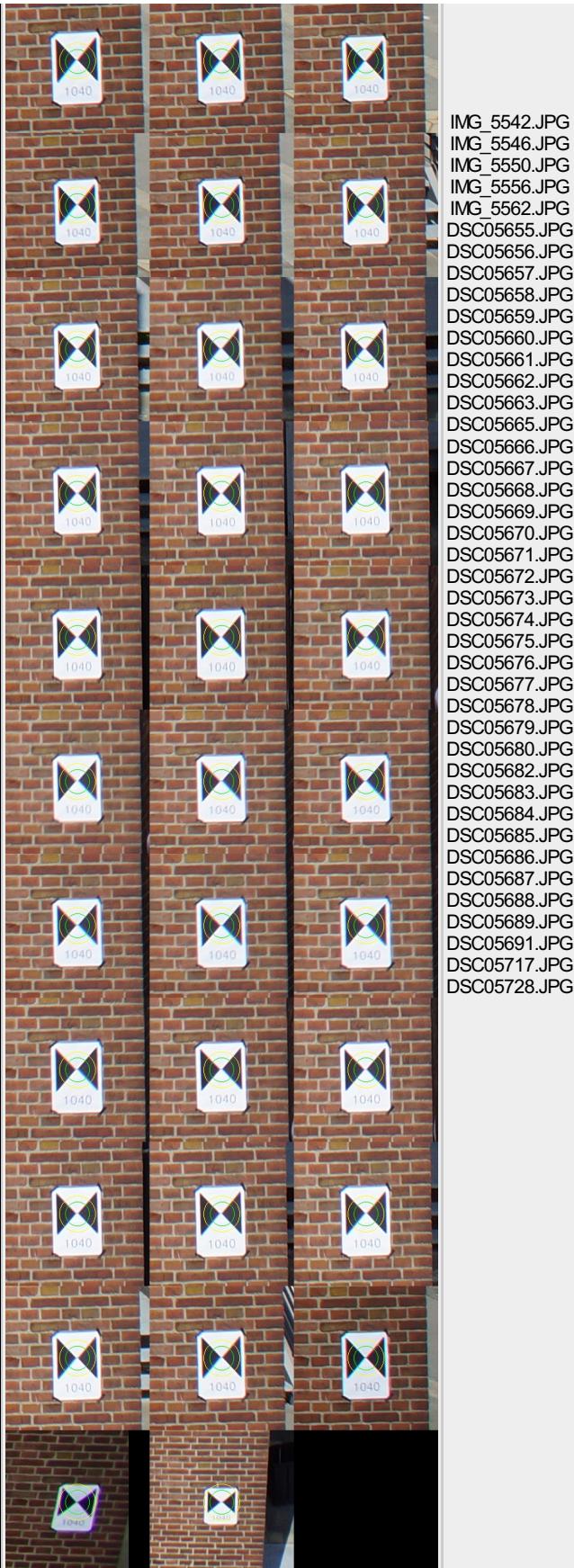
DSC05676.JPG
DSC05677.JPG
DSC05678.JPG
DSC05679.JPG
DSC05680.JPG
DSC05681.JPG
DSC05683.JPG
DSC05691.JPG
DSC05692.JPG
DSC05696.JPG
DSC05697.JPG
DSC05713.JPG
DSC05714.JPG
DSC05715.JPG
DSC05716.JPG
DSC05717.JPG
DSC05718.JPG



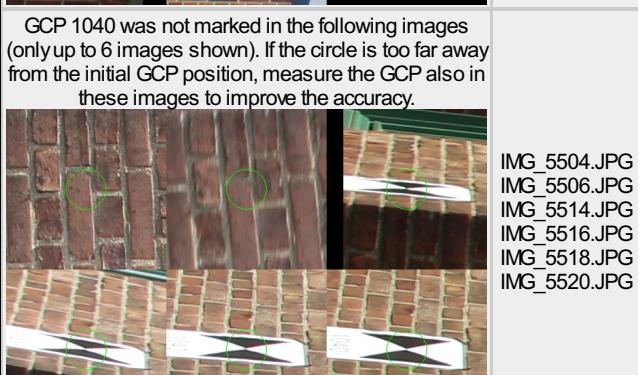
IMG_5440.JPG
IMG_5442.JPG
IMG_5444.JPG
IMG_5450.JPG
IMG_5452.JPG
IMG_5502.JPG



GCP name: 1040 (384448.826,5708758.193,125.074)

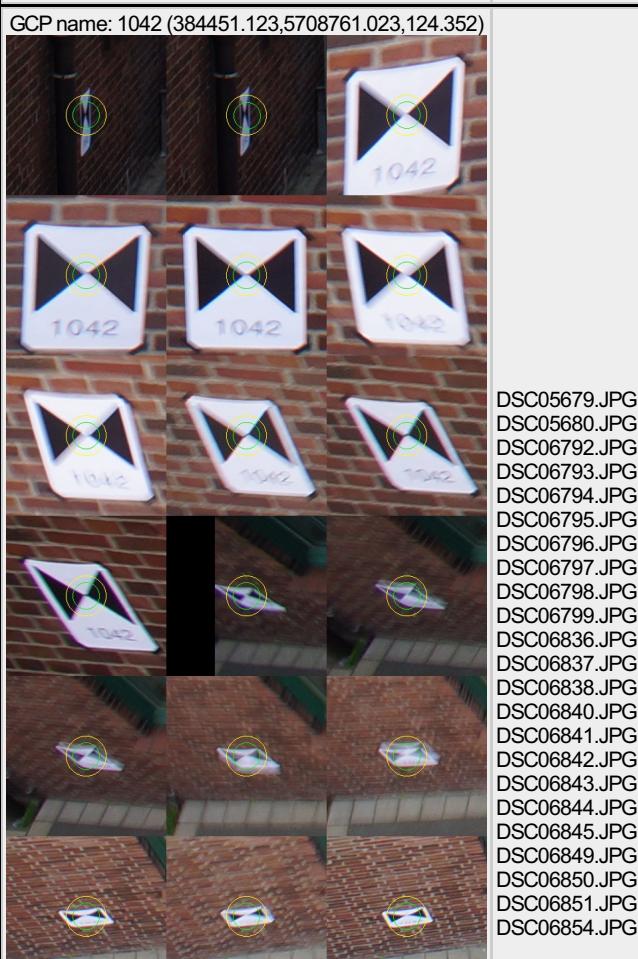
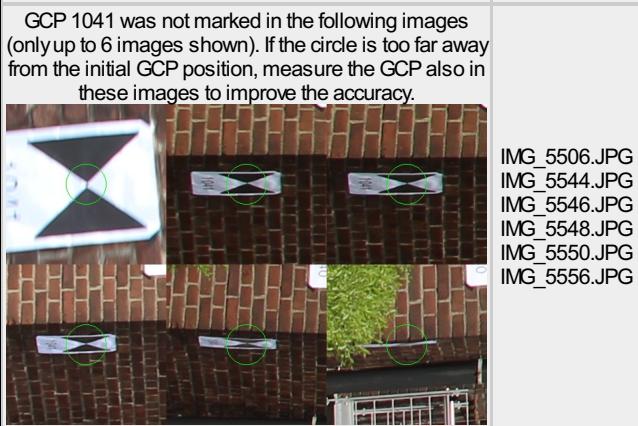
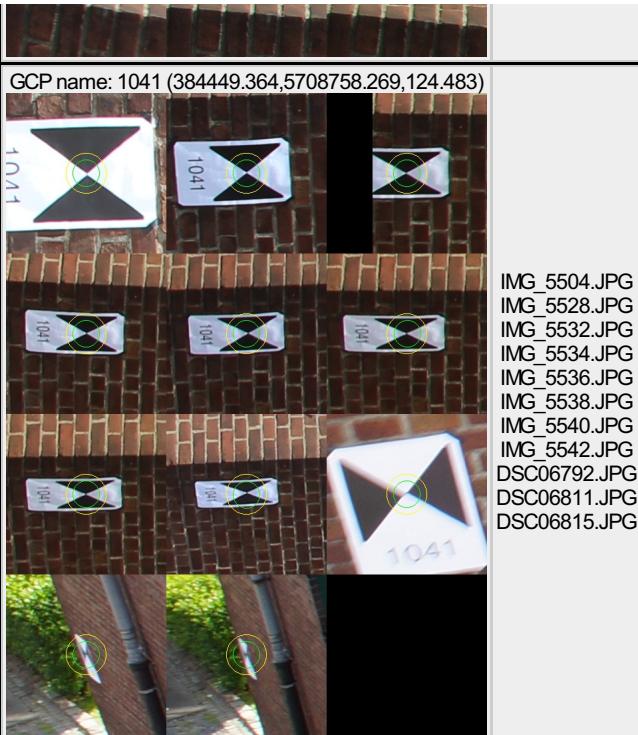


IMG_5542.JPG
IMG_5546.JPG
IMG_5550.JPG
IMG_5556.JPG
IMG_5562.JPG
DSC05655.JPG
DSC05656.JPG
DSC05657.JPG
DSC05658.JPG
DSC05659.JPG
DSC05660.JPG
DSC05661.JPG
DSC05662.JPG
DSC05663.JPG
DSC05665.JPG
DSC05666.JPG
DSC05667.JPG
DSC05668.JPG
DSC05669.JPG
DSC05670.JPG
DSC05671.JPG
DSC05672.JPG
DSC05673.JPG
DSC05674.JPG
DSC05675.JPG
DSC05676.JPG
DSC05677.JPG
DSC05678.JPG
DSC05679.JPG
DSC05680.JPG
DSC05682.JPG
DSC05683.JPG
DSC05684.JPG
DSC05685.JPG
DSC05686.JPG
DSC05687.JPG
DSC05688.JPG
DSC05689.JPG
DSC05691.JPG
DSC05717.JPG
DSC05728.JPG



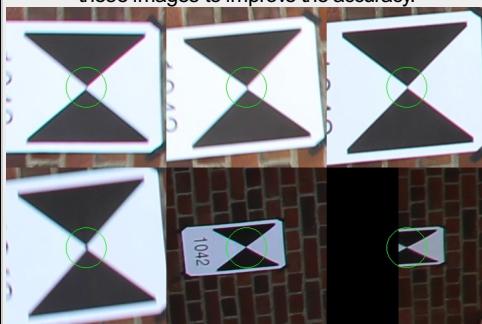
GCP 1040 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.

IMG_5504.JPG
IMG_5506.JPG
IMG_5514.JPG
IMG_5516.JPG
IMG_5518.JPG
IMG_5520.JPG



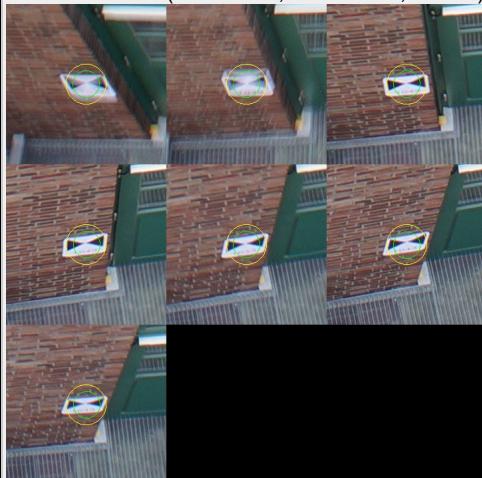


GCP 1042 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.



IMG_5500.JPG
IMG_5502.JPG
IMG_5504.JPG
IMG_5506.JPG
IMG_5528.JPG
IMG_5532.JPG

GCP name: 1043 (384452.985,5708763.932,125.024)



DSC06840.JPG
DSC06841.JPG
DSC06842.JPG
DSC06844.JPG
DSC06845.JPG
DSC06846.JPG
DSC06847.JPG

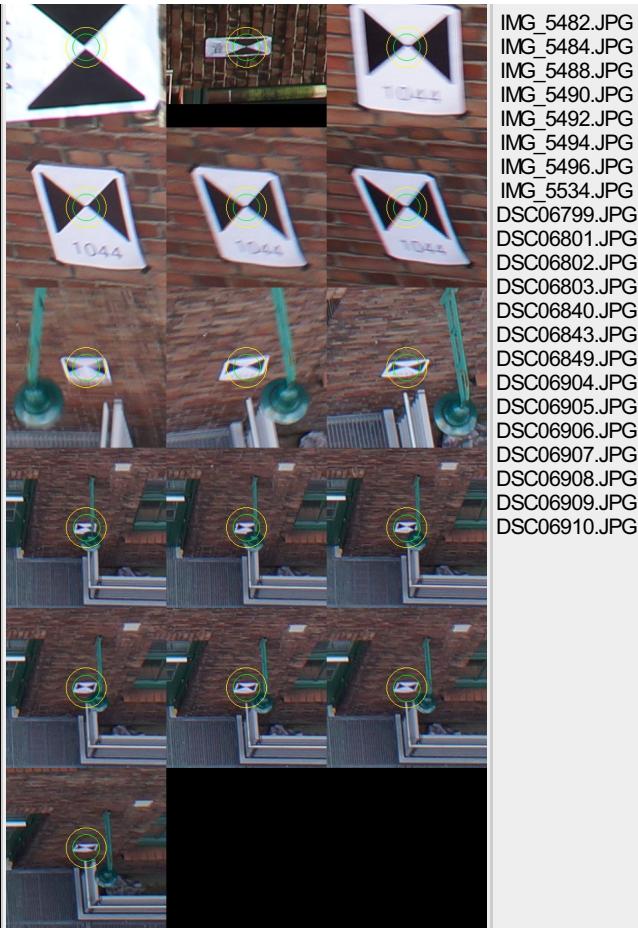
GCP 1043 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.



IMG_5490.JPG
IMG_5492.JPG
IMG_5494.JPG
IMG_5496.JPG
IMG_5498.JPG
IMG_5500.JPG

GCP name: 1044 (384454.507,5708766.316,125.250)





IMG_5482.JPG
IMG_5484.JPG
IMG_5488.JPG
IMG_5490.JPG
IMG_5492.JPG
IMG_5494.JPG
IMG_5496.JPG
IMG_5534.JPG
DSC06799.JPG
DSC06801.JPG
DSC06802.JPG
DSC06803.JPG
DSC06840.JPG
DSC06843.JPG
DSC06849.JPG
DSC06904.JPG
DSC06905.JPG
DSC06906.JPG
DSC06907.JPG
DSC06908.JPG
DSC06909.JPG
DSC06910.JPG

GCP 1044 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.

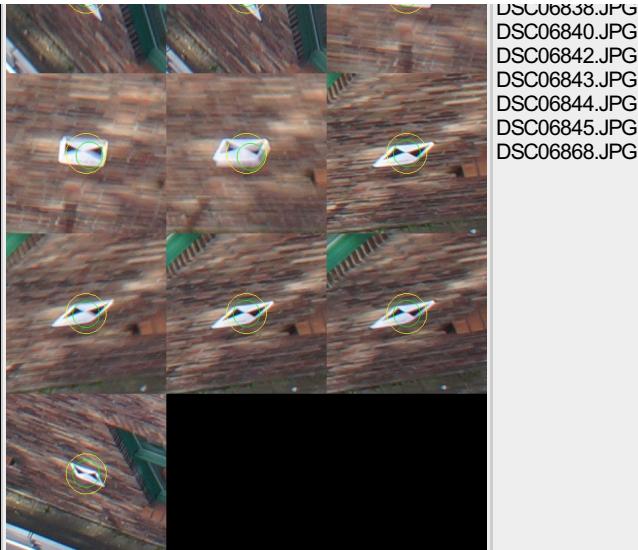


IMG_5538.JPG
IMG_5540.JPG
IMG_5542.JPG
IMG_5544.JPG
IMG_5546.JPG
IMG_5548.JPG

GCP name: 1045 (384457.893,5708771.627,125.275)



IMG_5468.JPG
IMG_5470.JPG
IMG_5472.JPG
IMG_5474.JPG
IMG_5476.JPG
IMG_5480.JPG
DSC06801.JPG
DSC06802.JPG
DSC06803.JPG
DSC06804.JPG
DSC06820.JPG
DSC06823.JPG
DSC06828.JPG
DSC06830.JPG
DSC06837.JPG
DSC06839.JPG



GCP 1045 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.



GCP name: 1046 (384461.068,5708776.612,125.140)



GCP 1046 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.





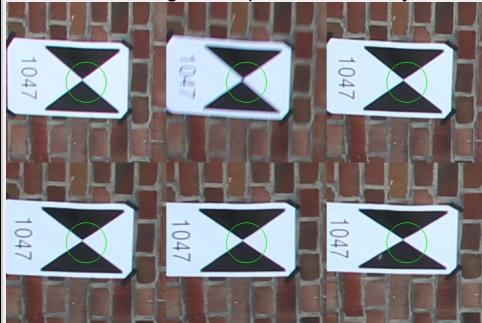
IMG_5436.JPG
IMG_5438.JPG
IMG_5440.JPG
IMG_5442.JPG
IMG_5444.JPG
IMG_5450.JPG

GCP name: 1047 (384460.849,5708777.399,125.072)



DSC06139.JPG
DSC06141.JPG
DSC06146.JPG
DSC06153.JPG
DSC06154.JPG
DSC06157.JPG
DSC06158.JPG
DSC06159.JPG
DSC06191.JPG
DSC06879.JPG
DSC06880.JPG

GCP 1047 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.

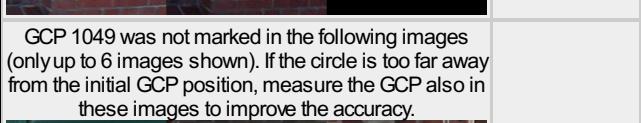
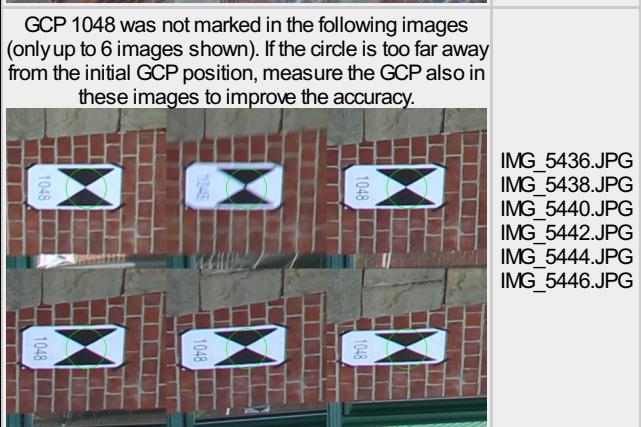


IMG_5436.JPG
IMG_5438.JPG
IMG_5440.JPG
IMG_5442.JPG
IMG_5444.JPG
IMG_5446.JPG

GCP name: 1048 (384456.347,5708780.572,125.250)



IMG_5750.JPG
IMG_5756.JPG
IMG_5760.JPG
IMG_5762.JPG
DSC06101.JPG
DSC06103.JPG
DSC06117.JPG
DSC06118.JPG
DSC06119.JPG
DSC06123.JPG
DSC06125.JPG
DSC06127.JPG
DSC06139.JPG
DSC06140.JPG
DSC06143.JPG

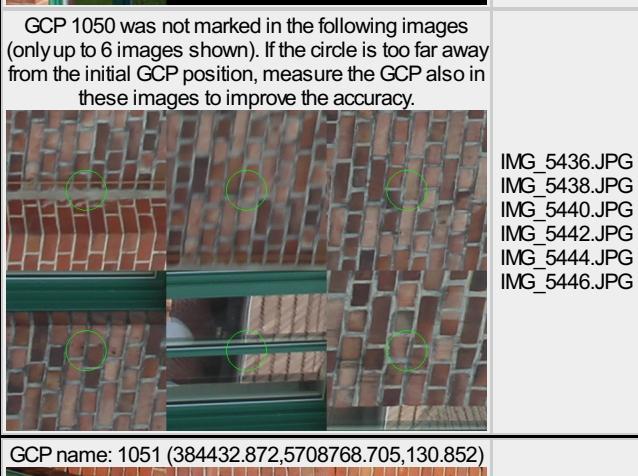




IMG_5436.JPG
IMG_5462.JPG
IMG_5464.JPG
IMG_5466.JPG
IMG_5468.JPG
IMG_5526.JPG



DSC05785.JPG
DSC05840.JPG
DSC05841.JPG
DSC05845.JPG
DSC05848.JPG
DSC05851.JPG
DSC05855.JPG
DSC05857.JPG
DSC05861.JPG
DSC05866.JPG
DSC05871.JPG
DSC05873.JPG
DSC06003.JPG
DSC06006.JPG
DSC06011.JPG
DSC06018.JPG
DSC06031.JPG
DSC06041.JPG
DSC06048.JPG
DSC06052.JPG
DSC06062.JPG
DSC06066.JPG

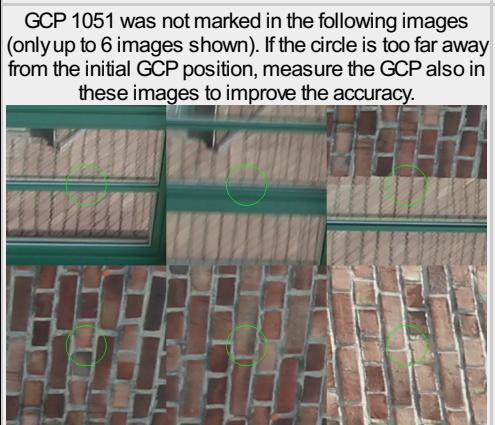


IMG_5436.JPG
IMG_5438.JPG
IMG_5440.JPG
IMG_5442.JPG
IMG_5444.JPG
IMG_5446.JPG

GCP name: 1051 (384432.872,5708768.705,130.852)



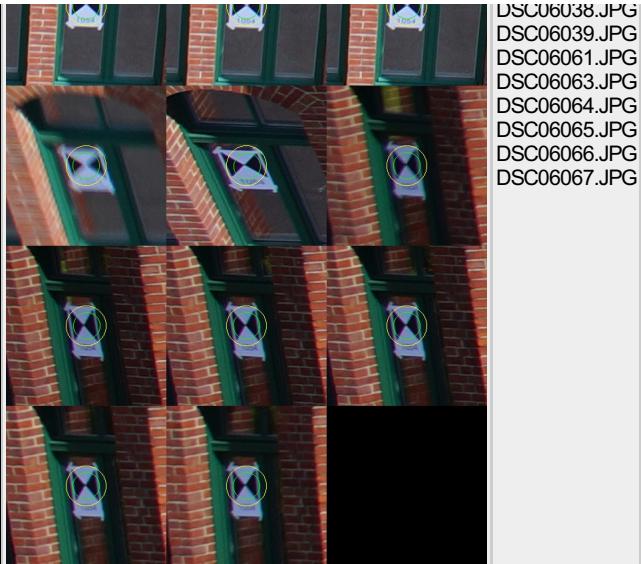
IMG_5588.JPG
IMG_5590.JPG
IMG_5594.JPG
IMG_5596.JPG
IMG_5598.JPG
IMG_5600.JPG
DSC05625.JPG
DSC05627.JPG
DSC05645.JPG
DSC05646.JPG
DSC05647.JPG
DSC05648.JPG
DSC05649.JPG
DSC05650.JPG
DSC05694.JPG
DSC05717.JPG



IMG_5436.JPG
IMG_5438.JPG
IMG_5440.JPG
IMG_5442.JPG
IMG_5444.JPG
IMG_5446.JPG



DSC05789.JPG
DSC05801.JPG
DSC06023.JPG
DSC06026.JPG
DSC06027.JPG
DSC06028.JPG
DSC06029.JPG
DSC06030.JPG
DSC06031.JPG
DSC06032.JPG
DSC06033.JPG
DSC06034.JPG
DSC06035.JPG
DSC06036.JPG
DSC06037.JPG
DSC06038.JPG



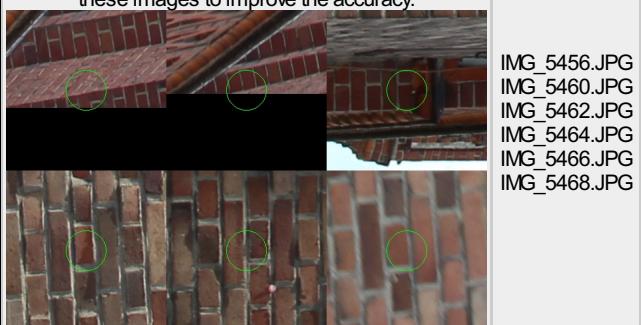
GCP 1054 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.



GCP name: 1056 (384448.935,5708785.008,130.945)



GCP 1056 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.

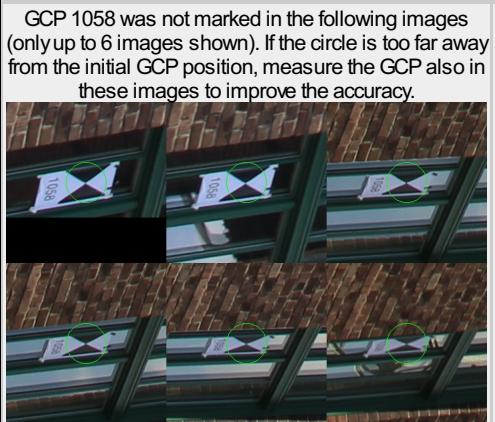


GCP name: 1058 (384453.349,5708764.763,130.653)

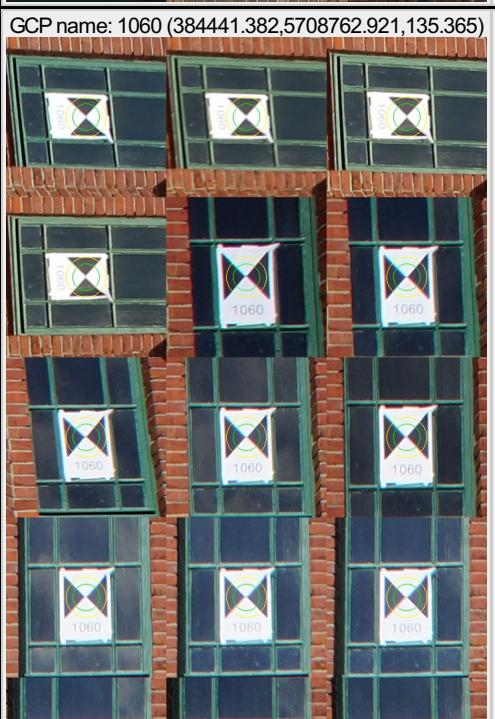




IMG_5486.JPG
IMG_5488.JPG
IMG_5490.JPG
IMG_5492.JPG
IMG_5496.JPG
IMG_5500.JPG
DSC06841.JPG
DSC06842.JPG
DSC06850.JPG
DSC06851.JPG
DSC06853.JPG
DSC06854.JPG
DSC06902.JPG
DSC06903.JPG
DSC06904.JPG
DSC06905.JPG
DSC06906.JPG
DSC06907.JPG
DSC06908.JPG
DSC06909.JPG
DSC06910.JPG



IMG_5524.JPG
IMG_5526.JPG
IMG_5530.JPG
IMG_5532.JPG
IMG_5534.JPG
IMG_5538.JPG



GCP name: 1060 (384441.382,5708762.921,135.365)



IMG_5566.JPG
IMG_5568.JPG
IMG_5570.JPG
IMG_5572.JPG
DSC05642.JPG
DSC05647.JPG
DSC05648.JPG
DSC05649.JPG
DSC05650.JPG
DSC05655.JPG
DSC05656.JPG
DSC05657.JPG
DSC05658.JPG
DSC05659.JPG
DSC05660.JPG
DSC05661.JPG
DSC05662.JPG
DSC05664.JPG
DSC05665.JPG
DSC05666.JPG
DSC05668.JPG
DSC05669.JPG
DSC05670.JPG
DSC05671.JPG
DSC05672.JPG
DSC05673.JPG
DSC05684.JPG
DSC05685.JPG
DSC05686.JPG
DSC05687.JPG
DSC05688.JPG
DSC05689.JPG
DSC05696.JPG
DSC05697.JPG
DSC05698.JPG
DSC05699.JPG
DSC05700.JPG
DSC05701.JPG
DSC05702.JPG
DSC05703.JPG
DSC05704.JPG
DSC05705.JPG
DSC05706.JPG
DSC05707.JPG
DSC05708.JPG
DSC05709.JPG
DSC05710.JPG
DSC05711.JPG
DSC05712.JPG
DSC05713.JPG
DSC05715.JPG
DSC05716.JPG
DSC05719.JPG
DSC05727.JPG
DSC05732.JPG
DSC05738.JPG
DSC05739.JPG
DSC05746.JPG
DSC05747.JPG
DSC05748.JPG
DSC05754.JPG
DSC05759.JPG
DSC05769.JPG



GCP 1060 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.



IMG_5436.JPG
IMG_5438.JPG
IMG_5440.JPG
IMG_5442.JPG
IMG_5444.JPG
IMG_5446.JPG

GCP name: 1062 (384450.172,5708759.477,133.139)



DSC06844.JPG
DSC06845.JPG
DSC06846.JPG
DSC06847.JPG
DSC06848.JPG
DSC06849.JPG
DSC06850.JPG
DSC06851.JPG
DSC06852.JPG
DSC06853.JPG
DSC06854.JPG
DSC06855.JPG
DSC06857.JPG
DSC06896.JPG
DSC06899.JPG
DSC06904.JPG
DSC06905.JPG

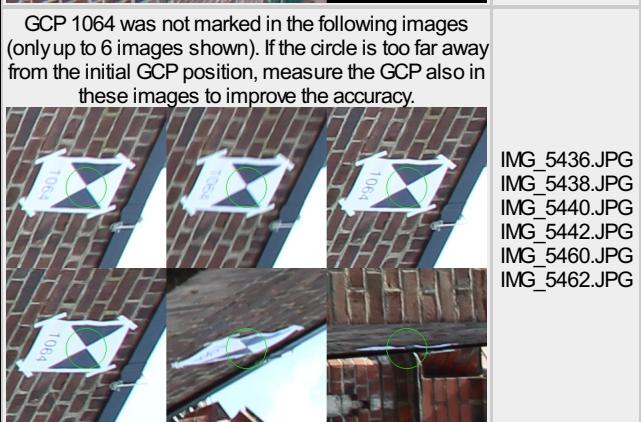
GCP 1062 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.



IMG_5508.JPG
IMG_5510.JPG
IMG_5512.JPG
IMG_5514.JPG
IMG_5516.JPG
IMG_5518.JPG



IMG_5444.JPG
IMG_5446.JPG
IMG_5448.JPG
IMG_5450.JPG
IMG_5452.JPG
IMG_5454.JPG
IMG_5456.JPG
IMG_5458.JPG
DSC06812.JPG
DSC06813.JPG
DSC06814.JPG
DSC06815.JPG
DSC06816.JPG
DSC06817.JPG
DSC06818.JPG
DSC06820.JPG
DSC06821.JPG
DSC06822.JPG
DSC06823.JPG
DSC06824.JPG
DSC06825.JPG
DSC06832.JPG



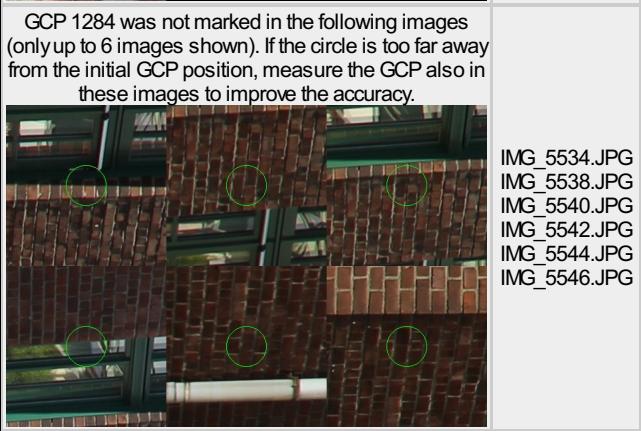
IMG_5436.JPG
IMG_5438.JPG
IMG_5440.JPG
IMG_5442.JPG
IMG_5460.JPG
IMG_5462.JPG



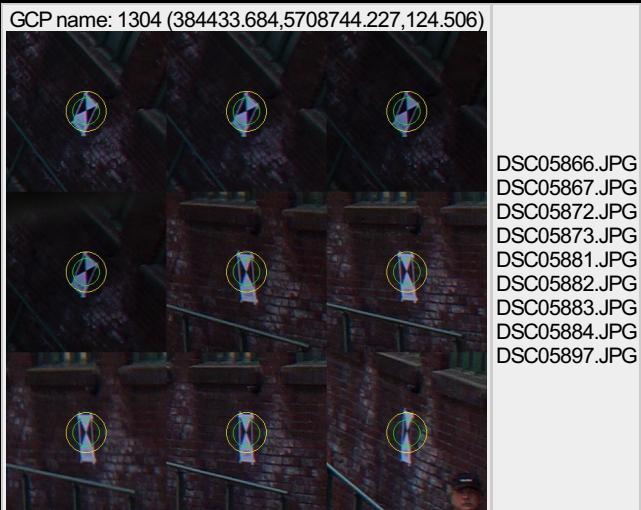
DSC06195.JPG



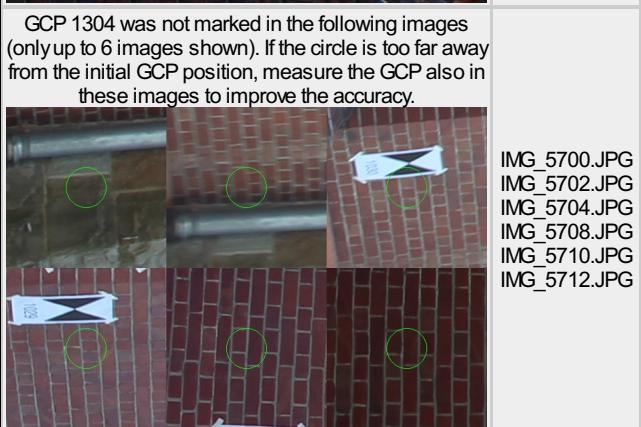
DSC06196.JPG
DSC06886.JPG
DSC06887.JPG
DSC06888.JPG
DSC06889.JPG
DSC06890.JPG
DSC06891.JPG
DSC06923.JPG
DSC06924.JPG



IMG_5534.JPG
IMG_5538.JPG
IMG_5540.JPG
IMG_5542.JPG
IMG_5544.JPG
IMG_5546.JPG



DSC05866.JPG
DSC05867.JPG
DSC05872.JPG
DSC05873.JPG
DSC05881.JPG
DSC05882.JPG
DSC05883.JPG
DSC05884.JPG
DSC05897.JPG



IMG_5700.JPG
IMG_5702.JPG
IMG_5704.JPG
IMG_5708.JPG
IMG_5710.JPG
IMG_5712.JPG



DSC06123.JPG
DSC06124.JPG
DSC06125.JPG
DSC06126.JPG
DSC06127.JPG
DSC06128.JPG



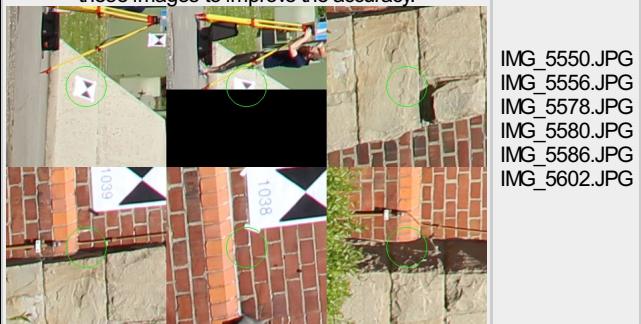
GCP 1317 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.



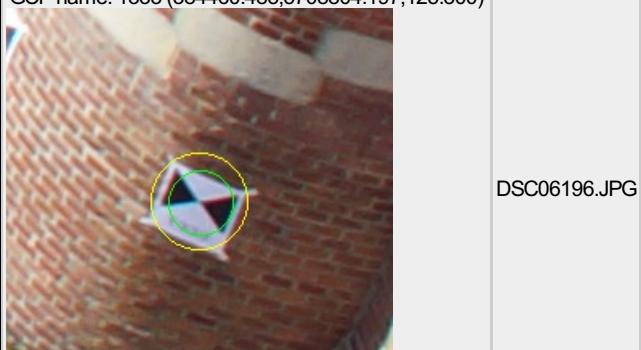
GCP name: 1318 (384474.425,5708786.753,124.181)

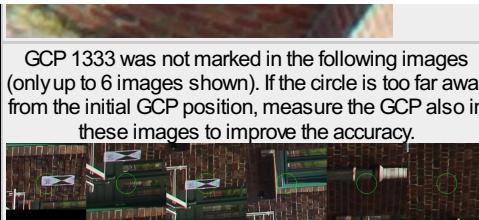


GCP 1318 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.



GCP name: 1333 (384460.485,5708804.197,125.300)





GCP 1333 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.

IMG_5534.JPG
IMG_5538.JPG
IMG_5540.JPG
IMG_5542.JPG
IMG_5544.JPG
IMG_5546.JPG

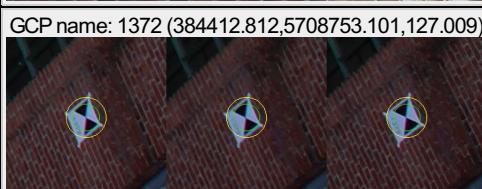


GCP 1370 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.

DSC06165.JPG
DSC06166.JPG
DSC06167.JPG
DSC06168.JPG
DSC06169.JPG
DSC06785.JPG
DSC06786.JPG
DSC06793.JPG
DSC06905.JPG
DSC06908.JPG
DSC06909.JPG
DSC06911.JPG
DSC06912.JPG
DSC06913.JPG
DSC06914.JPG
DSC06915.JPG



IMG_5436.JPG
IMG_5438.JPG
IMG_5440.JPG
IMG_5442.JPG
IMG_5444.JPG
IMG_5446.JPG



DSC06006.JPG
DSC06007.JPG
DSC06008.JPG

GCP 1372 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.

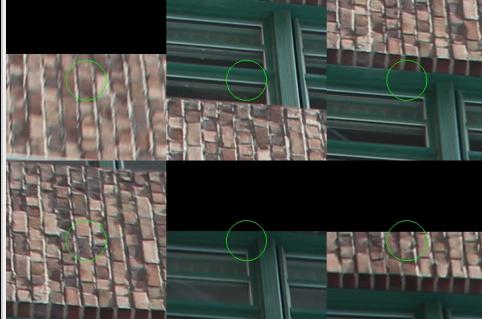
IMG_5436.JPG
IMG_5438.JPG
IMG_5440.JPG
IMG_5442.JPG
IMG_5444.JPG
IMG_5446.JPG



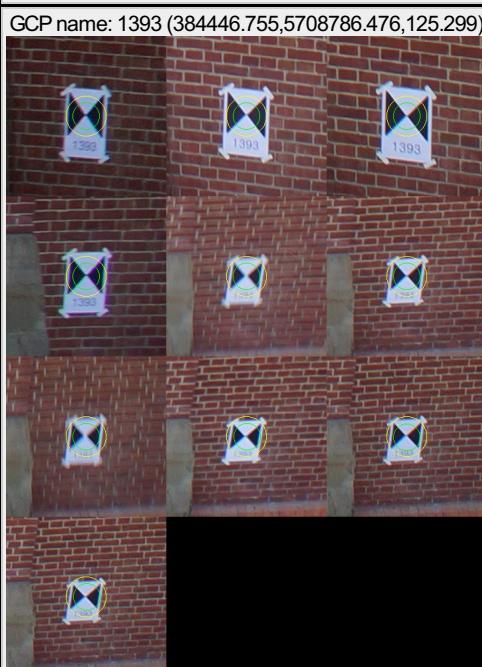


DSC05864.JPG
DSC05881.JPG
DSC05882.JPG
DSC05883.JPG
DSC05884.JPG
DSC05897.JPG
DSC06012.JPG
DSC06048.JPG
DSC06049.JPG
DSC06050.JPG
DSC06051.JPG
DSC06052.JPG
DSC06053.JPG
DSC06054.JPG
DSC06055.JPG

GCP 1375 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.



IMG_5438.JPG
IMG_5440.JPG
IMG_5442.JPG
IMG_5444.JPG
IMG_5448.JPG
IMG_5450.JPG



DSC06087.JPG
DSC06101.JPG
DSC06103.JPG
DSC06117.JPG
DSC06139.JPG
DSC06140.JPG
DSC06143.JPG
DSC06144.JPG
DSC06145.JPG
DSC06146.JPG

GCP 1393 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.



IMG_5462.JPG
IMG_5464.JPG
IMG_5466.JPG
IMG_5468.JPG
IMG_5470.JPG



IMG_5522.JPG



GCP 1394 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.

IMG_5462.JPG
IMG_5464.JPG
IMG_5466.JPG
IMG_5468.JPG
IMG_5470.JPG
IMG_5518.JPG

GCP name: 1400 (384459.650,5708751.401,127.931)



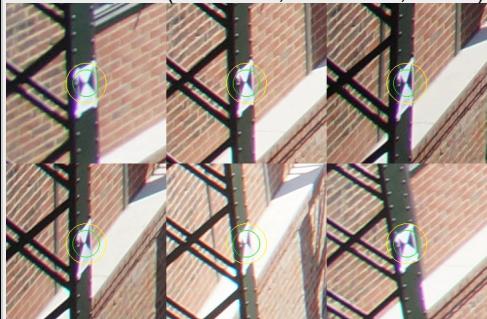
DSC05673.JPG
DSC05674.JPG
DSC05675.JPG
DSC05676.JPG
DSC05677.JPG
DSC05678.JPG
DSC05679.JPG
DSC05680.JPG
DSC05728.JPG

GCP 1400 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.



IMG_5598.JPG
IMG_5622.JPG
IMG_5628.JPG
IMG_5630.JPG
IMG_5632.JPG
IMG_5634.JPG

GCP name: 5004 (384467.629,5708767.486,126.171)



DSC06119.JPG
DSC06120.JPG
DSC06121.JPG
DSC06122.JPG
DSC06123.JPG
DSC06132.JPG

GCP 5004 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.



IMG_5606.JPG
IMG_5608.JPG
IMG_5612.JPG
IMG_5616.JPG
IMG_5618.JPG
IMG_5620.JPG

GCP name: 5006 (384462.885,5708759.673,124.028)



DSC05674.JPG
DSC05675.JPG
DSC05676.JPG
DSC05677.JPG
DSC05678.JPG
DSC05679.JPG
DSC05680.JPG
DSC05681.JPG
DSC05682.JPG
DSC05683.JPG



GCP 5006 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.



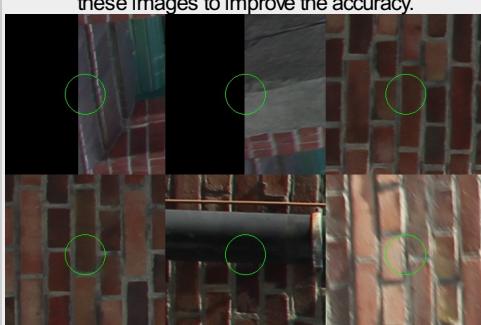
IMG_5622.JPG
IMG_5624.JPG
IMG_5626.JPG
IMG_5628.JPG
IMG_5630.JPG
IMG_5634.JPG

GCP name: 5007 (384428.761,5708790.221,123.640)



DSC05625.JPG
DSC05627.JPG
DSC05628.JPG
DSC05631.JPG
DSC05634.JPG
DSC05635.JPG
DSC05767.JPG
DSC05768.JPG
DSC05899.JPG
DSC05900.JPG
DSC05901.JPG
DSC05902.JPG
DSC05903.JPG

GCP 5007 was not marked in the following images (only up to 6 images shown). If the circle is too far away from the initial GCP position, measure the GCP also in these images to improve the accuracy.



IMG_5456.JPG
IMG_5458.JPG
IMG_5462.JPG
IMG_5464.JPG
IMG_5466.JPG
IMG_5468.JPG

Figure 7: Images in which GCPs have been marked (yellow circle) and in which their computed 3D points have been projected (green circle). A green circle outside of the yellow circle indicates either an accuracy issue or a GCP issue.