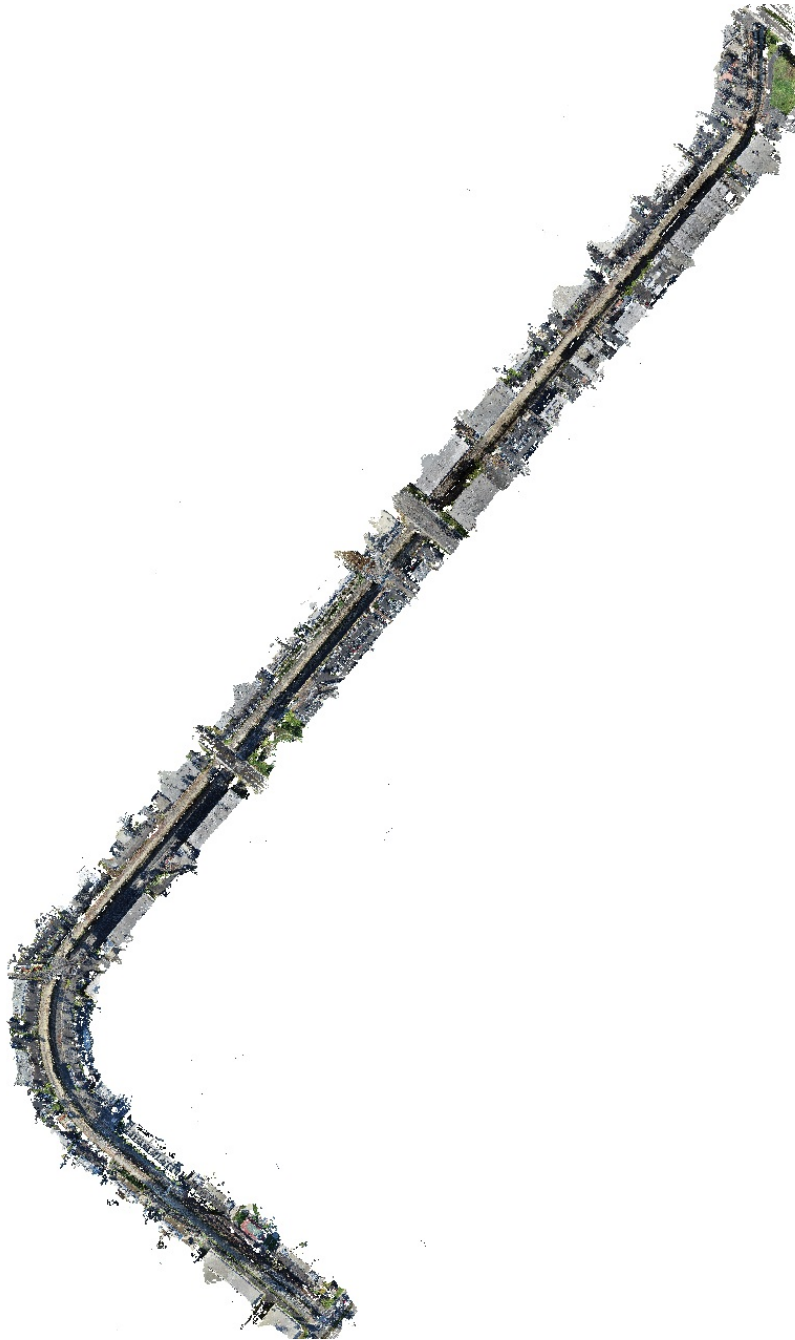


Agisoft Metashape

Processing Report

04 October 2021



Survey Data



Fig. 1. Camera locations and image overlap.

Number of images:	1,567	Camera stations:	1,561
Flying altitude:	123 ft	Tie points:	1,620,012
Ground resolution:	0.0334 ft/pix	Projections:	5,566,522
Coverage area:	2.39e+05 yd²	Reprojection error:	0.953 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
FC6310 (8.8mm)	5472 x 3648	8.8 mm	2.41 x 2.41 µm	No
FC6510 (8.8mm)	5472 x 3648	8.8 mm	2.41 x 2.41 µm	Yes

Table 1. Cameras.

Camera Calibration

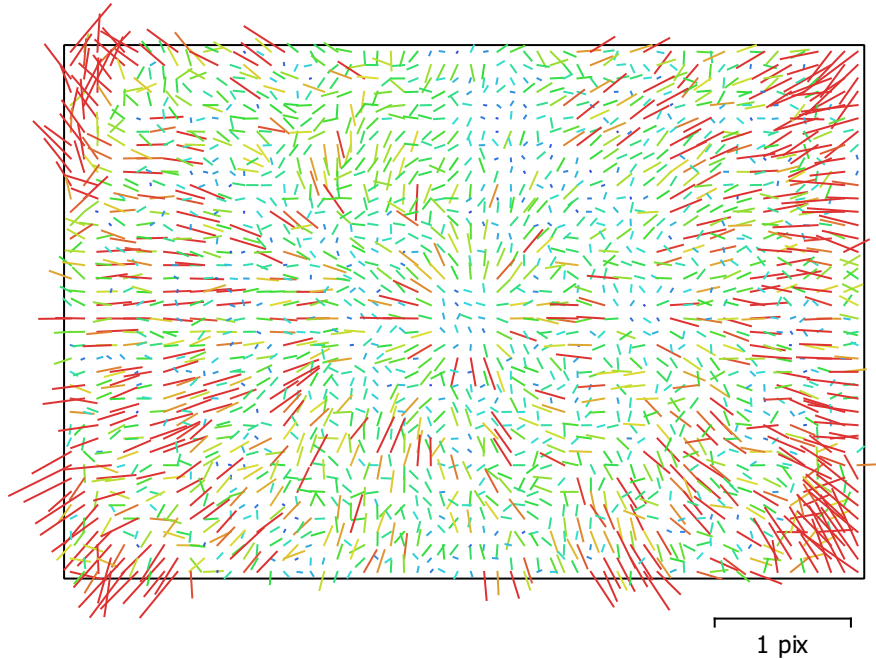


Fig. 2. Image residuals for FC6310 (8.8mm).

FC6310 (8.8mm)

598 images

Type
Frame

Resolution
5472 x 3648

Focal Length
8.8 mm

Pixel Size
2.41 x 2.41 μm

	Value	Error	F	Cx	Cy	B1	B2	K1	K2	K3	K4	P1	P2
F	3651.32	0.027	1.00	0.03	-0.53	0.16	0.01	-0.37	0.34	-0.30	0.27	0.01	-0.03
Cx	17.7899	0.019		1.00	-0.02	0.08	0.48	-0.01	0.01	-0.01	0.01	0.80	0.01
Cy	9.08827	0.021			1.00	-0.53	0.04	0.01	-0.01	0.01	-0.01	-0.01	0.47
B1	0.907148	0.0052				1.00	0.01	0.02	-0.03	0.02	-0.02	0.08	0.12
B2	-0.0955956	0.0047					1.00	-0.00	0.00	-0.01	0.01	0.04	0.06
K1	0.00474302	4.6e-05						1.00	-0.97	0.93	-0.88	-0.00	0.01
K2	-0.0441556	0.00023							1.00	-0.99	0.96	0.00	-0.02
K3	0.0845916	0.00045								1.00	-0.99	-0.01	0.02
K4	-0.0529863	0.0003									1.00	0.01	-0.02
P1	0.00277568	1.6e-06										1.00	0.01
P2	-0.000348878	1.3e-06											1.00

Table 2. Calibration coefficients and correlation matrix.

Camera Calibration

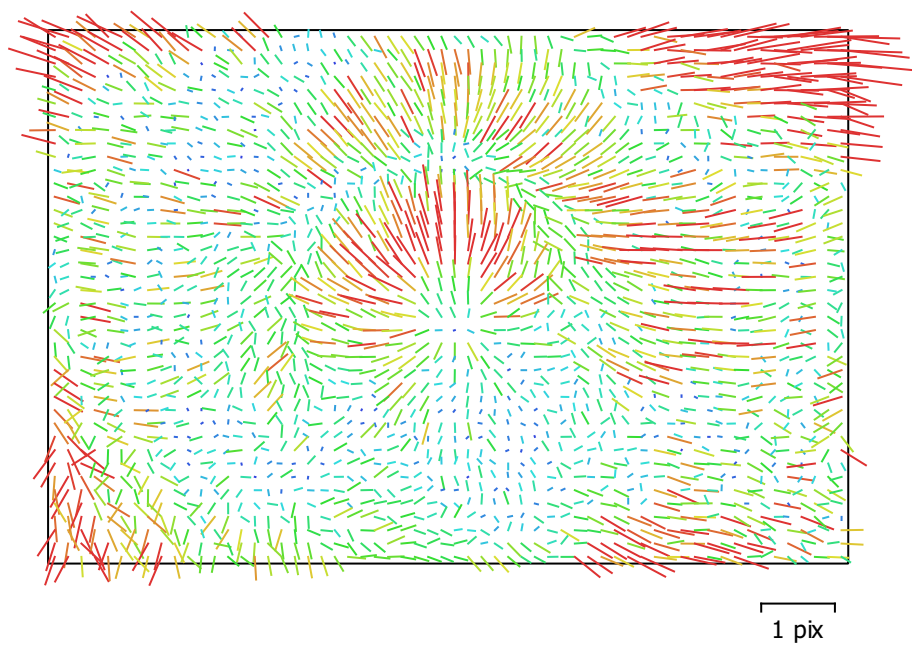


Fig. 3. Image residuals for FC6510 (8.8mm).

FC6510 (8.8mm)

969 images, precalibrated

Type	Resolution	Focal Length	Pixel Size
Frame	5472 x 3648	8.8 mm	2.41 x 2.41 μm
F:	3699.37		
Cx:	16.2646	B1:	0
Cy:	-2.97572	B2:	0
K1:	0.0025491	P1:	0.00195216
K2:	0.00621435	P2:	0.000499669
K3:	-0.00196486	P3:	0
K4:	0	P4:	0

Camera Locations

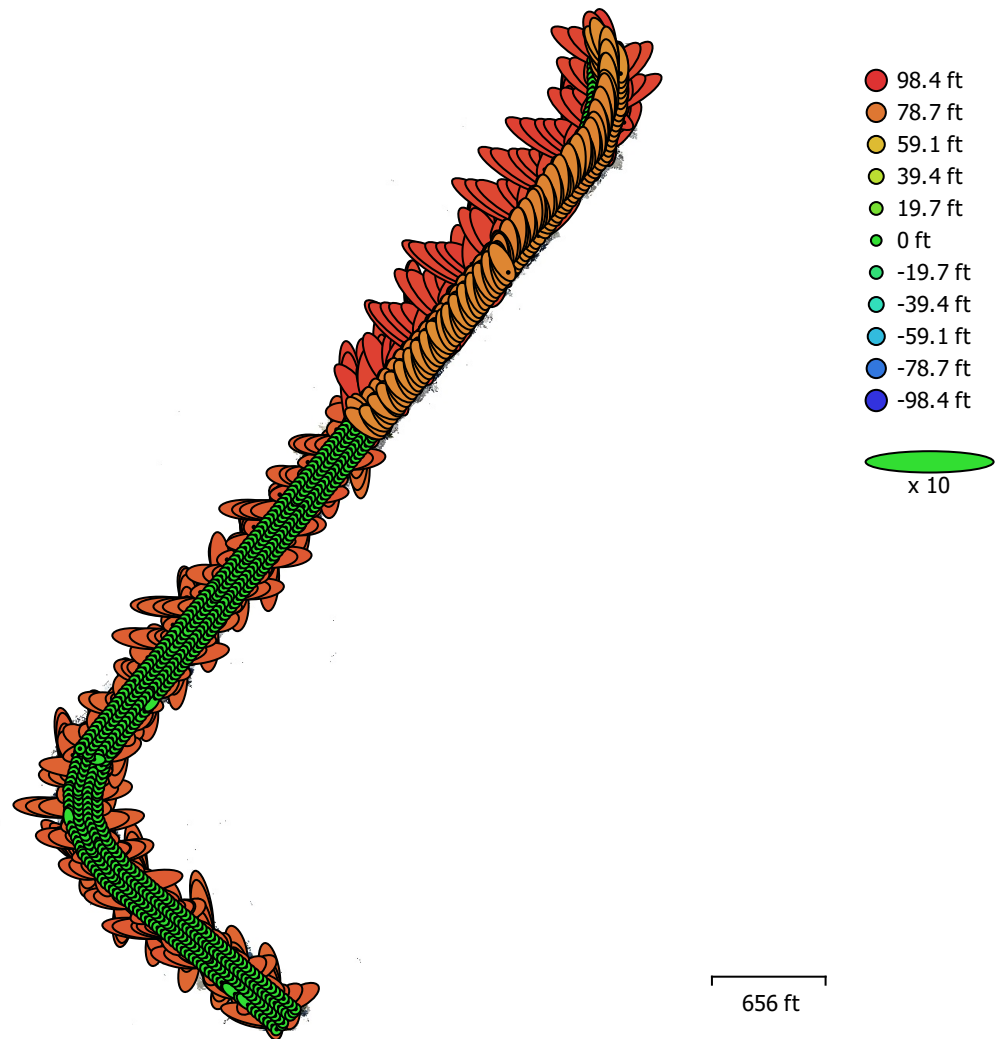


Fig. 4. Camera locations and error estimates.

Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.

Estimated camera locations are marked with a black dot.

X error (ft)	Y error (ft)	Z error (ft)	XY error (ft)	Total error (ft)
7.26771	10.6531	59.9914	12.896	61.3619

Table 3. Average camera location error.

X - Longitude, Y - Latitude, Z - Altitude.

Ground Control Points

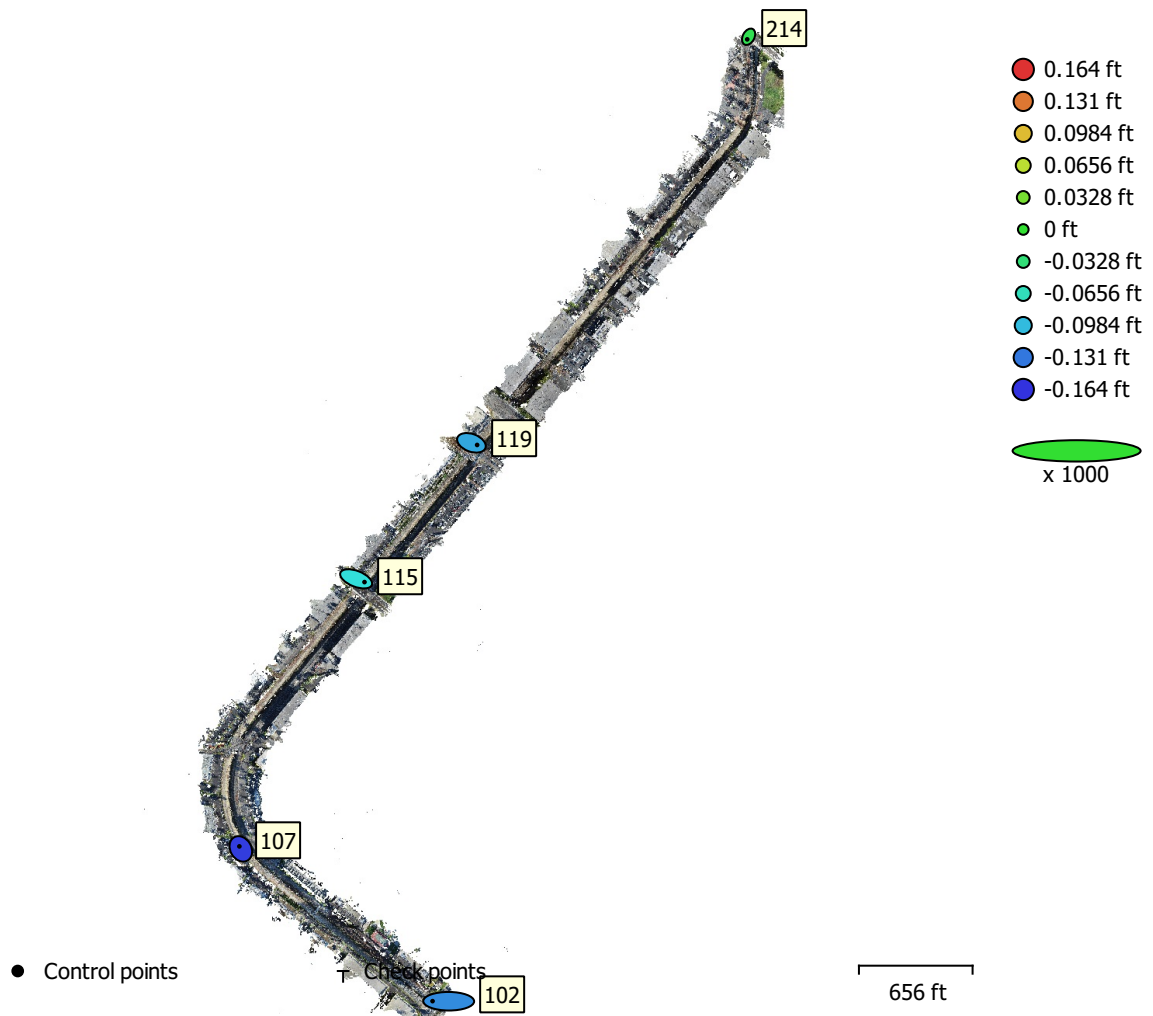


Fig. 5. GCP locations and error estimates.

Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.

Estimated GCP locations are marked with a dot or crossing.

Count	X error (ft)	Y error (ft)	Z error (ft)	XY error (ft)	Total (ft)
5	0.0989542	0.0274045	0.107889	0.102679	0.148939

Table 4. Control points RMSE.

X - Longitude, Y - Latitude, Z - Altitude.

Label	X error (ft)	Y error (ft)	Z error (ft)	Total (ft)	Image (pix)
214	-0.0161883	-0.0299595	-0.0149747	0.0372005	0.598 (6)
119	0.065771	-0.0245716	-0.108058	0.128865	1.000 (9)
115	0.0964918	-0.0375314	-0.0797985	0.130718	1.294 (8)
107	-0.0168825	0.0290522	-0.15876	0.162276	1.583 (8)
102	-0.186484	0.00103379	-0.121354	0.222495	1.723 (8)
Total	0.0989542	0.0274045	0.107889	0.148939	1.324

Table 5. Control points.
X - Longitude, Y - Latitude, Z - Altitude.

Digital Elevation Model

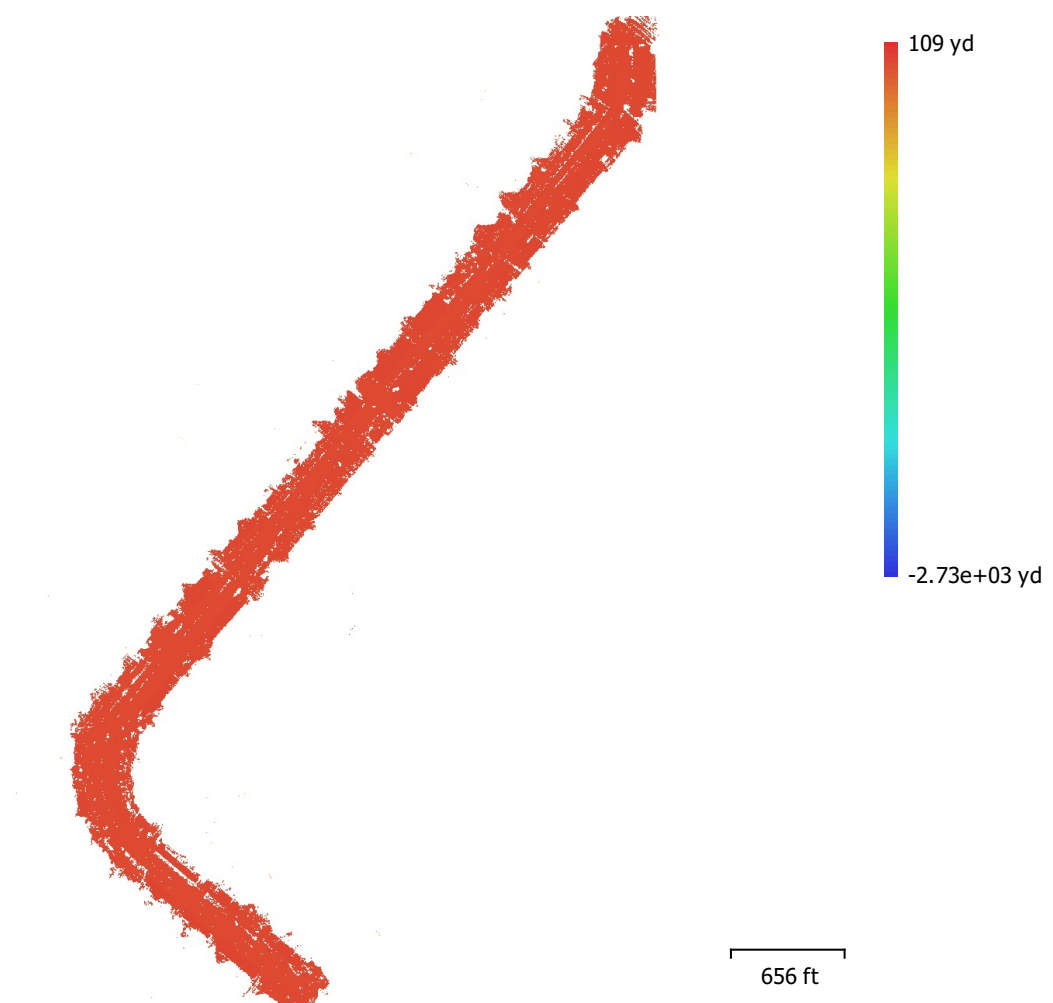


Fig. 6. Reconstructed digital elevation model.

Resolution:	unknown
Point density:	unknown

Processing Parameters

General

Cameras	1567
Aligned cameras	1561
Markers	6
Coordinate system	WGS 84 (EPSG::4326)
Rotation angles	Yaw, Pitch, Roll

Point Cloud

Points	1,620,012 of 1,801,240
RMS reprojection error	0.19869 (0.953349 pix)
Max reprojection error	0.610221 (49.1626 pix)
Mean key point size	4.32551 pix
Point colors	3 bands, uint8
Key points	5.03 GB
Average tie point multiplicity	3.60902

Alignment parameters

Accuracy	High
Generic preselection	Yes
Reference preselection	Source
Key point limit	40,000
Tie point limit	4,000
Exclude stationary tie points	Yes
Guided image matching	No
Adaptive camera model fitting	Yes
Matching time	30 minutes 22 seconds
Matching memory usage	1.06 GB
Alignment time	7 minutes 5 seconds
Alignment memory usage	815.77 MB
Software version	1.7.2.12070
File size	166.46 MB

System

Software name	Agisoft Metashape Professional
Software version	1.7.2 build 12070
OS	Windows 64 bit
RAM	127.88 GB
CPU	AMD Ryzen Threadripper 2990WX 32-Core Processor
GPU(s)	Quadro RTX 5000