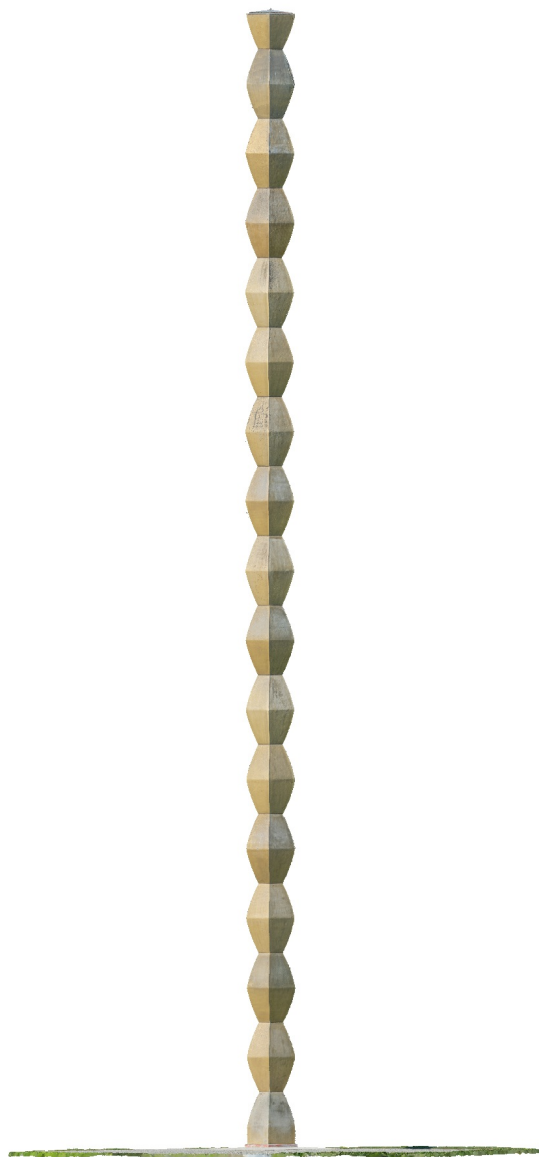


Coloana Infinită - 2018 octombrie

Reconstrucție integrală prin fotogrammetrie

10 March 2020



Survey Data

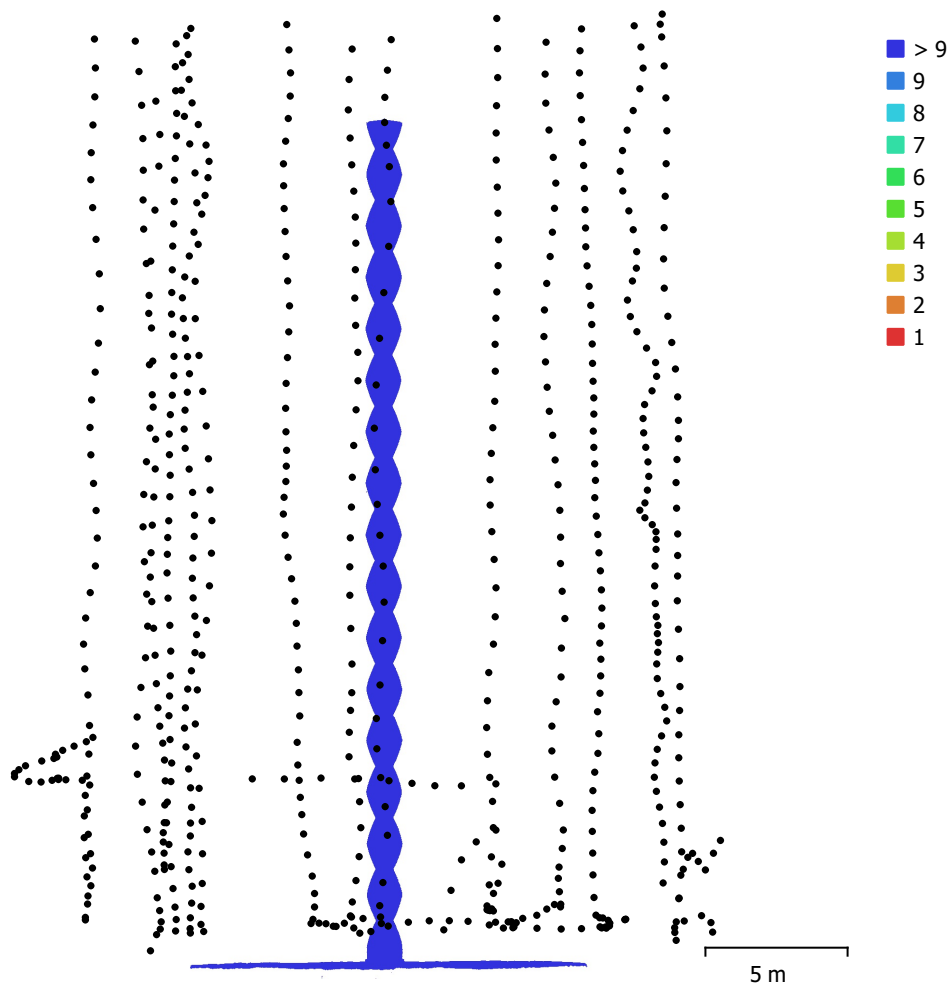


Fig. 1. Camera locations and image overlap.

Number of images:	647	Camera stations:	647
Flying altitude:	14.4 m	Tie points:	803,734
Ground resolution:	1.33 mm/pix	Projections:	2,239,352
Coverage area:	32.7 m ²	Reprojection error:	0.341 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
NIKON D810 (35mm)	7344 x 4901	35 mm	4.88 x 4.88 μ m	No

Table 1. Cameras.

Camera Calibration



0.684746 pix

Fig. 2. Image residuals for NIKON D810 (35mm).

NIKON D810 (35mm)

647 images

Type	Resolution	Focal Length	Pixel Size
Frame	7344 x 4901	35 mm	4.88 x 4.88 μm

F:	7391.21		
Cx:	-18.0436	B1:	0
Cy:	-16.6114	B2:	0
K1:	-0.0867329	P1:	0.000869326
K2:	0.107776	P2:	0.000311823
K3:	-0.0151071	P3:	0
K4:	0	P4:	0

Ground Control Points

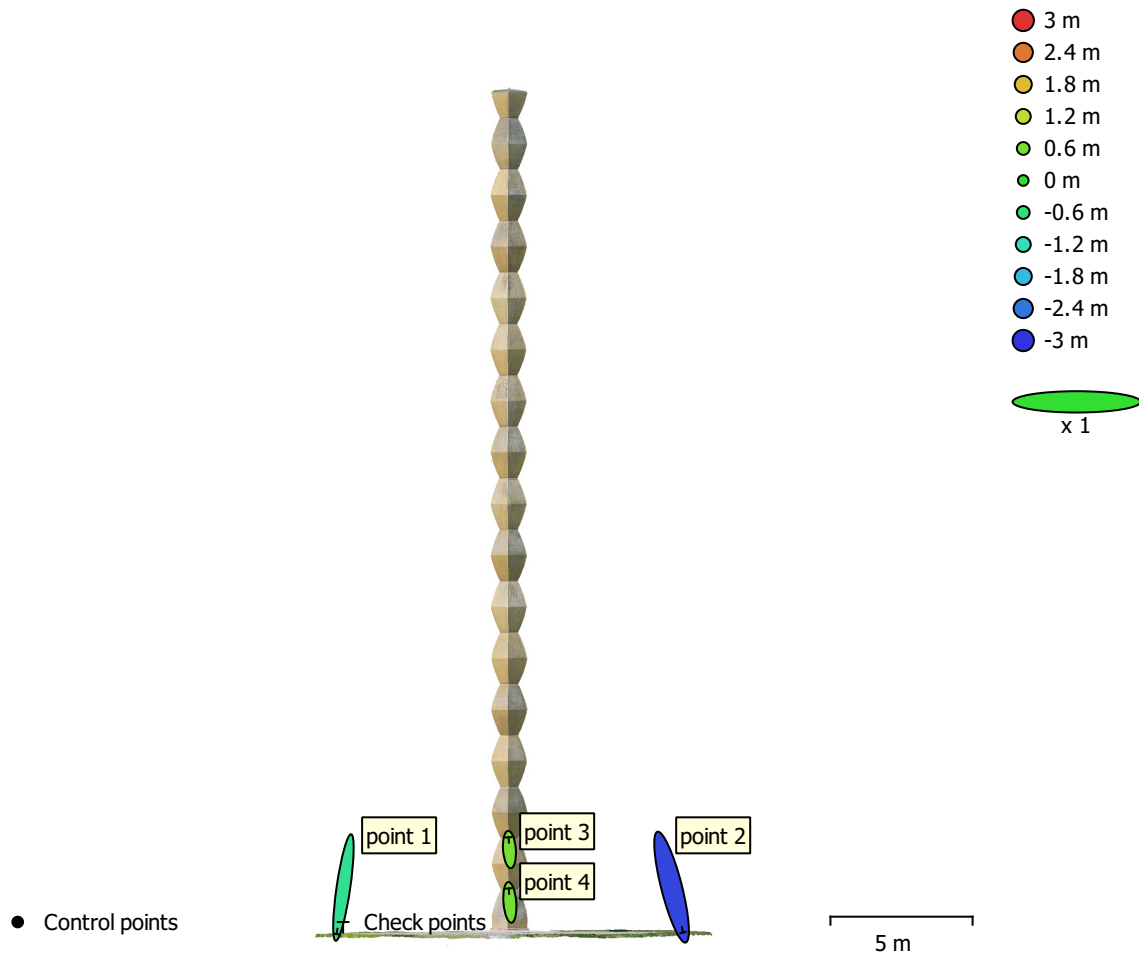


Fig. 3. GCP locations and error estimates.

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 (m)	Y error (m)	Z error (m)	XY error (m)	Total (m)
4	0.47333	2.37757	1.53413	2.42422	2.86887

Table 2. Check points RMSE.

Label	X error (m)	Y error (m)	Z error (m)	Total (m)	Image (pix)
point 1	-0.474691	-3.27486	-0.829754	3.41153	0.000 (69)
point 2	0.81305	-3.19012	-2.83066	4.34172	0.000 (60)
point 3	-0.062679	0.863922	0.599078	1.05318	0.000 (116)
point 4	-0.0765023	0.981483	0.595147	1.15037	0.000 (81)
Total	0.47333	2.37757	1.53413	2.86887	0.000

Table 3. Check points.

Scale Bars

Label	Distance (m)	Error (m)
point 3_point 4	1.8	-2.22045e-16
Total		2.22045e-16

Table 4. Control scale bars.

Digital Elevation Model

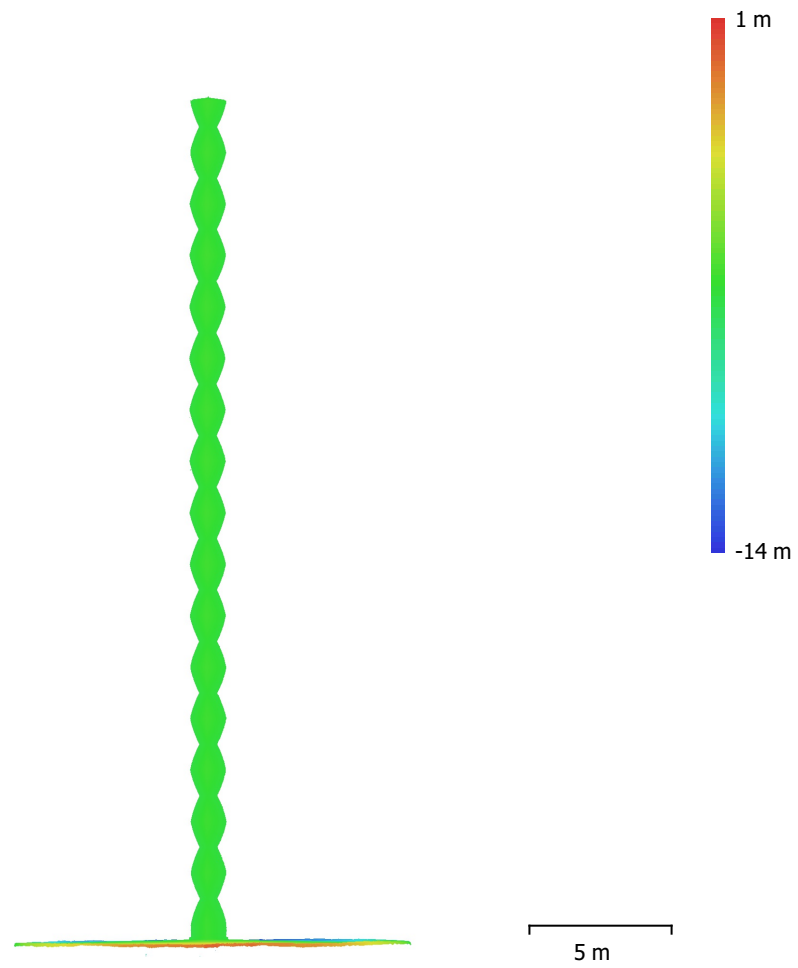


Fig. 4. Reconstructed digital elevation model.

Resolution: 2.65 mm/pix
Point density: 14.2 points/cm²

Processing Parameters

General

Cameras	647
Aligned cameras	647
Markers	4
Scale bars	1
Coordinate system	Local Coordinates (m)
Rotation angles	Yaw, Pitch, Roll

Point Cloud

Points	803,734 of 891,617
RMS reprojection error	0.135035 (0.341022 pix)
Max reprojection error	0.40631 (19.5765 pix)
Mean key point size	1.96225 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	3.03853

Alignment parameters

Accuracy	Highest
Generic preselection	Yes
Key point limit	40,000
Tie point limit	10,000
Filter points by mask	Yes
Mask tie points	No
Adaptive camera model fitting	No
Matching time	33 minutes 39 seconds
Alignment time	7 minutes 41 seconds

Model

Faces	2,000,000
Vertices	1,002,588
Vertex colors	3 bands, uint8
Texture	8,096 x 8,096, 4 bands, uint8

Depth maps generation parameters

Quality	High
Filtering mode	Moderate

Reconstruction parameters

Surface type	Arbitrary
Source data	Dense cloud
Interpolation	Enabled
Processing time	25 minutes 17 seconds

Texturing parameters

Mapping mode	Generic
Blending mode	Mosaic
Texture size	8,096
Enable hole filling	Yes
Enable ghosting filter	Yes
UV mapping time	1 minutes 7 seconds
Blending time	25 minutes 33 seconds

System

Software name	Agisoft Metashape Professional
Software version	1.6.1 build 10009
OS	Windows 64 bit

General

RAM

127.89 GB

CPU

Intel(R) Xeon(R) CPU E5-2630 v3 @ 2.40GHz

GPU(s)

GeForce GTX TITAN X