

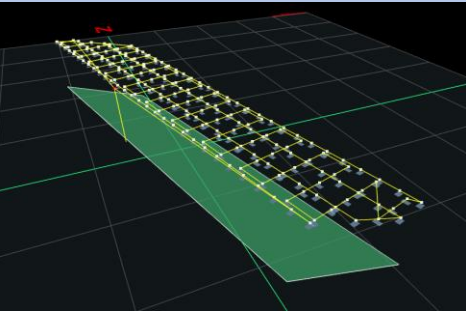


FLIGHT LOGBOOK No 1

PERSONA JURÍDICA O APELLIDO Y NOMBRE DEL EXPLOTADOR		UNIVERSIDAD SANTO TOMÁS DE BUENAVISTA		IDENTIFICACIÓN (C.C.O.NIT)		NÚMERO DE REGISTRO BASE DE DATOS DE LA AEROCIVIL		200		CLASIFICACIÓN DEL PILOTO OPERADOR		LOCALIZACIÓN, DIRECCIÓN O LUGAR DE LOS VUELOS											
APELLIDO Y NOMBRE DEL OPERADOR O PILOTO DE VUELO LICENCIADO		JOHN FREDY GÓMEZ DAJA		IDENTIFICACIÓN (C.C.O.NIT)		NÚMERO DE REGISTRO BASE DE DATOS DE LA AEROCIVIL		733.133		PILOTO TIPO B (ESPECÍFICO)		AVENIDA SALIDA DE TUNA A BUENAVISTA #13-112 CONJUNTO CERRADO "EL PORTAL DEL BOSQUE"											
TENERARIO												AERONAVES UTILIZADA D RPAS				OPERADORES RPAS							
AÑO	2024	NÚMERO DE RUTA	TIPO DE RUTA	HORA DE SALIDA RPAS Y HORA DE LLEGADA	PUNTO DE INICIO		PUNTO RETURNO		COORDENADAS MAGNA SIRGAS O GAUSS KRÜSER		EXTENSIÓN DE ÁREA DE LA MISIÓN O POLÍGONO LARGO POR ANCHO EN LA RUTA RECTANGULAR O LONGITUD RUTA RADIAL	ALTURA DEL VUELO (M)	TIEMPO ESTIMADO DE VUELO (MIN)	FINALIDAD DEL VUELO	MARCA / MODELO	MATERIALES	POTENCIA / VELOCIDAD	TIPO DE FUSELAGE Y SUSTENTACIÓN	NOMBRE PILOTO	NOMBRE OBSERVADOR	NOMBRE EXPLOTADOR	NÚMERO DE DESPLIEGUES	NÚMERO DE ATERIZAJES
DÍA	9				LATITUD	LONGITUD	LATITUD	LONGITUD	NORTE	ESTE													
METEOROLOGÍA DEL AERODROMO OFICIAL												CONDICIÓN DEL CIELO											
AERODROMO OFICIAL		Aeropuerto El Dorado		VELOCIDAD DEL VIENTO (MPH Y KT)		3 MPH, 3KT		VISIBILIDAD (MILLAS)		Mín 04 - 7 Millas		HUMEDAD RELATIVA		50%		ALTIMETRO DE PRESIÓN		5029 fPa		PARCELAMIENTO NUBLADO			
TEMPERATURA		17°C (62°F)		PUNTO DE ROCÍO		8°C (46°F)		BASE DE LOS DATOS METEOROLÓGICOS (METAR O WINDY)		METAR		CÓDIGO DE COMUNICACIONES OB		5803 1014002 1300301 9999 517025 17/08 030203 N0300									
METEOROLOGÍA PREDICTIVA EN EL ÁREA DE INICIO DEL VUELO RPAS EN TIEMPO REAL												METAR											
OTROS DATOS METEOROLÓGICOS EN EL PUNTO DE INICIO DEL VUELO		VELOCIDAD DEL VIENTO RELATIVA 3KT, PUNTO DE ROCÍO 8 °C, HUMEDAD RELATIVA 50% TEMPERATURA 17°C		VELOCIDAD DEL VIENTO RELATIVA		3 KT		PUNTO DE ROCÍO		8°C		HUMEDAD RELATIVA		50%		TEMPERATURA		17 °C					
ALTITUD DEL VUELO (MSNM)		2350 + 50 = 2400 MSNM		ALTURA DE VUELO (M)		50		SATELITE DE DATOS Y GPS		9 SATELITE SATELITE GIONASS													
ORIENTACIÓN DE LA CÁMARA		ANGULO DE ROTACIÓN CÁMARA Y PORCENTAJE DE TRASLAPO DE MUESTRAS FOTOGRAFICAS		NADIR (MANECILLAS DEL RELOJ)		90°		VELOCIDAD DEL RPAS		12 m/s		OBSERVACIONES		LA MUESTRA METEOROLÓGICA DEL AERODROMO OFICIAL FUE TOMADA EL 16/09/2024 A LAS 08:00									
		HORIZONTE (MANECILLAS DEL RELOJ)		ZENIT (CONTRARIO A LAS MANECILLAS DEL RELOJ)		90°		RUTA - PUNTOS DE INICIO DEL VUELO, RETURNO Y PUNTOS DE CONTROL		RUTA RPAS PROGRAMADA													
																							
PUNTO DE CONTROL 1												PUNTO DE CONTROL 2											
DATO [X] ESTE		DATO [Y] NORTE		DATO [X] ELEVACION		DATO [X] ESTE		DATO [Y] NORTE		DATO [X] ELEVACION													
1079755.886		1106285.532		2756.59		1079741.938		1106331.602		2759.51													



Important: Click on the different icons for:



Help to analyze the results in the Quality Report



Additional information about the sections



Click [here](#) for additional tips to analyze the Quality Report

Summary



Project	PBconPC30_2
Processed	2024-09-17 19:59:34
Camera Model Name(s)	FC3411_8.4_5472x3648 (RGB)
Average Ground Sampling Distance (GSD)	1.46 cm / 0.57 in
Area Covered	0.035 km ² / 3.5104 ha / 0.01 sq. mi. / 8.6790 acres
Time for Initial Processing (without report)	27m:39s

Quality Check



Images	median of 27121 keypoints per image	
Dataset	238 out of 245 images calibrated (97%), all images enabled	
Camera Optimization	3.01% relative difference between initial and optimized internal camera parameters	
Matching	median of 9879.9 matches per calibrated image	
Georeferencing	yes, no 3D GCP	

Preview

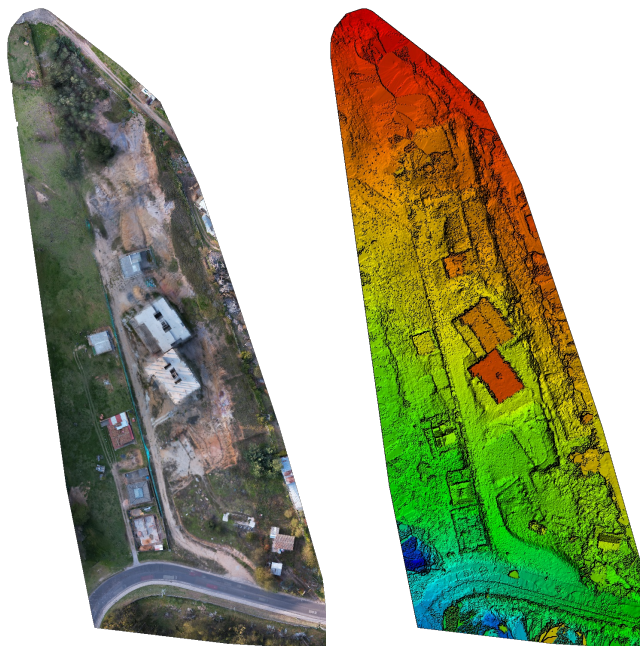


Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.

Calibration Details



Number of Calibrated Images	238 out of 245
Number of Geolocated Images	245 out of 245

? Initial Image Positions

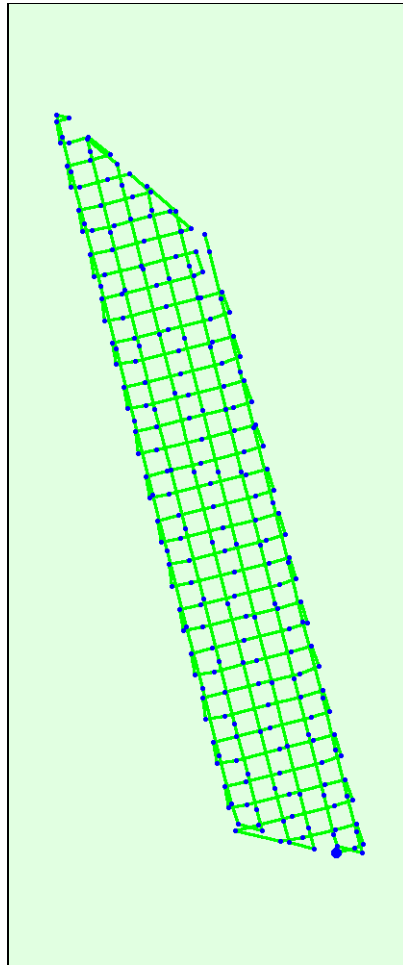
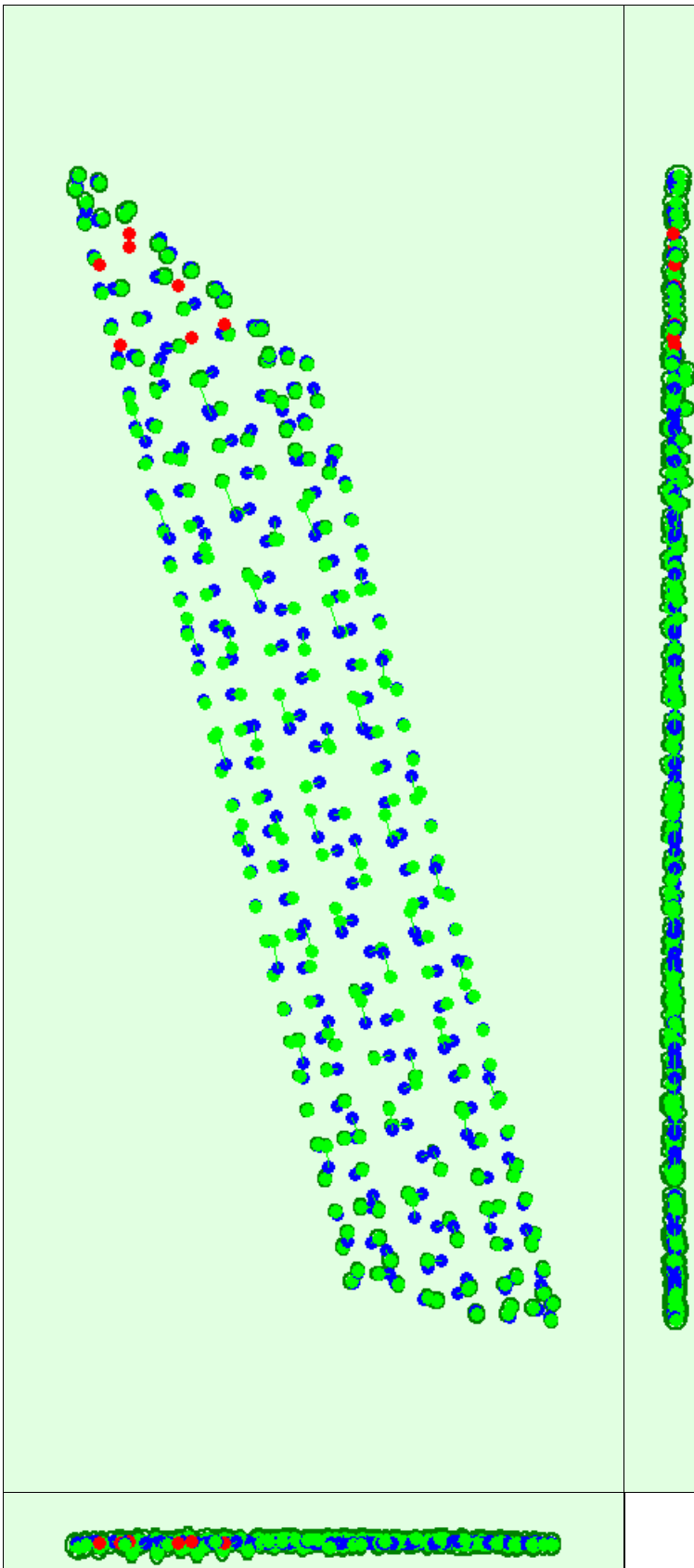


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

? Computed Image/GCPs/Manual Tie Points Positions





Uncertainty ellipses 10x magnified

Figure 3: Offset between initial (blue dots) and computed (green dots) image positions as well as the offset between the GCPs initial positions (blue crosses) and their computed 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. Dark green ellipses indicate the absolute position uncertainty of the bundle block adjustment result.

🔍 Absolute camera position and orientation uncertainties



	X[m]	Y[m]	Z[m]	Omega [degree]	Phi [degree]	Kappa [degree]
Mean	0.152	0.159	0.255	0.069	0.073	0.060
Sigma	0.028	0.034	0.020	0.003	0.001	0.000

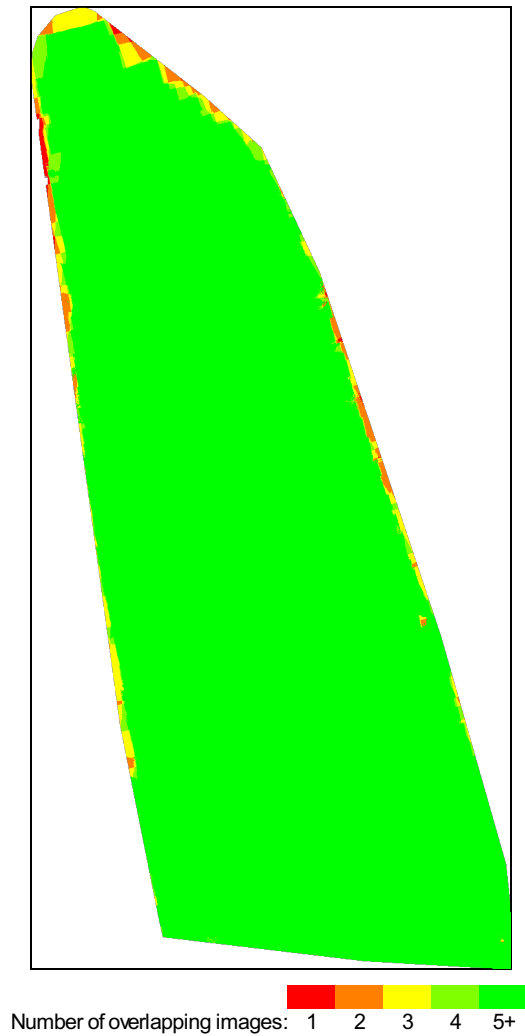


Figure 4: Number of overlapping images computed for each pixel of the orthomosaic. Red and yellow areas indicate low overlap for which poor results may be generated. Green areas indicate an overlap of over 5 images for every pixel. Good quality results will be generated as long as the number of keypoint matches is also sufficient for these areas (see Figure 5 for keypoint matches).

Bundle Block Adjustment Details

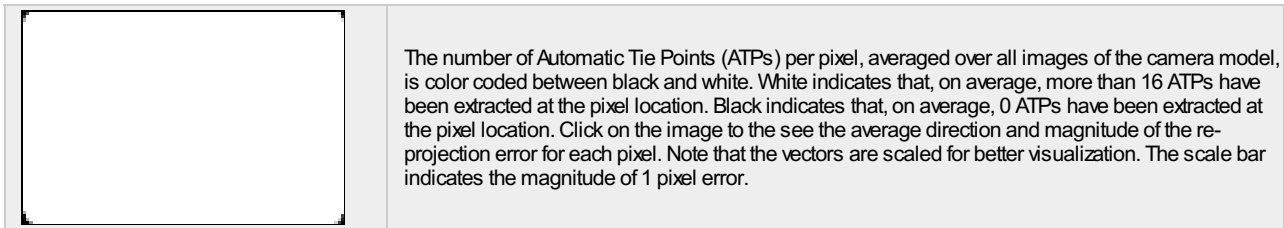
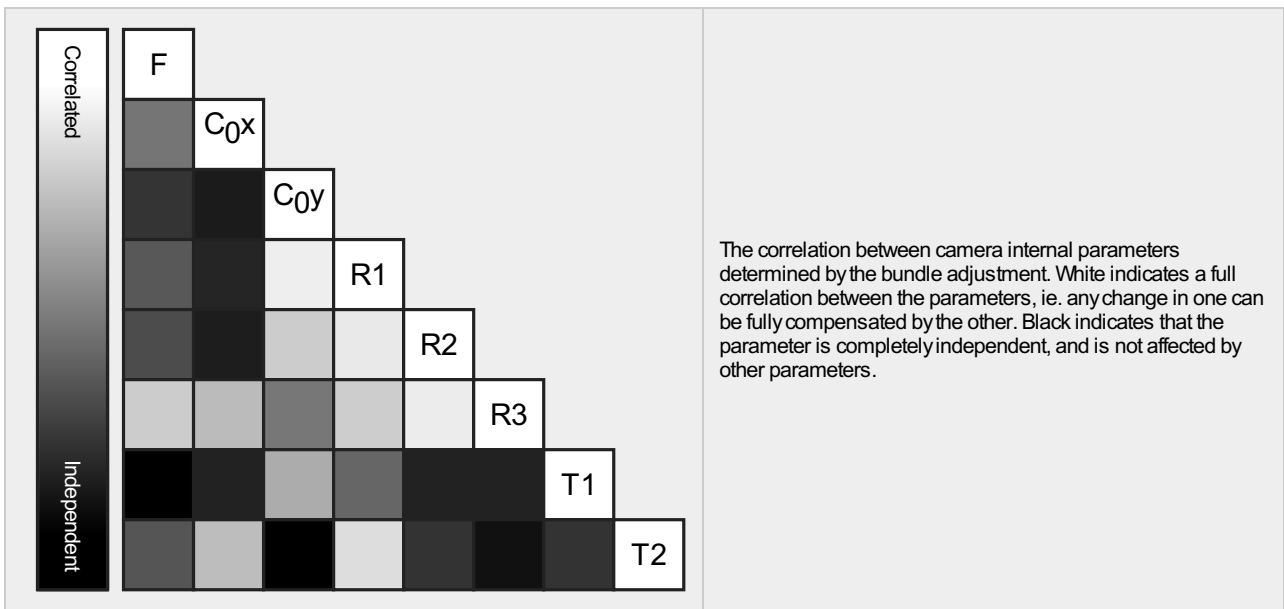
Number of 2D Keypoint Observations for Bundle Block Adjustment	2945834
Number of 3D Points for Bundle Block Adjustment	1024373
Mean Reprojection Error [pixels]	0.263

? Internal Camera Parameters

FC3411_8.4_5472x3648 (RGB). Sensor Dimensions: 13.332 [mm] x 8.888 [mm]

EXIF ID: FC3411_8.4_5472x3648

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	3439.540 [pixel] 8.380 [mm]	2736.000 [pixel] 6.666 [mm]	1824.000 [pixel] 4.444 [mm]	0.000	0.000	0.000	0.000	0.000
Optimized Values	3543.375 [pixel] 8.633 [mm]	2748.343 [pixel] 6.696 [mm]	1811.307 [pixel] 4.413 [mm]	-0.077	0.066	0.008	-0.000	0.000
Uncertainties (Sigma)	1.990 [pixel] 0.005 [mm]	0.134 [pixel] 0.000 [mm]	0.090 [pixel] 0.000 [mm]	0.000	0.001	0.000	0.000	0.000



2D Keypoints Table

	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	27121	9880
Mn	19703	151
Max	82159	35840
Mean	40838	12377

3D Points from 2D Keypoint Matches

	Number of 3D Points Observed
In 2 Images	689254
In 3 Images	165312
In 4 Images	66652
In 5 Images	35384
In 6 Images	21210
In 7 Images	13544
In 8 Images	8805
In 9 Images	5840
In 10 Images	3850
In 11 Images	2649
In 12 Images	2000
In 13 Images	1541
In 14 Images	1219
In 15 Images	995
In 16 Images	868
In 17 Images	726
In 18 Images	585
In 19 Images	524
In 20 Images	487
In 21 Images	383
In 22 Images	338
In 23 Images	255

In 24 Images	247
In 25 Images	212
In 26 Images	177
In 27 Images	163
In 28 Images	127
In 29 Images	106
In 30 Images	89
In 31 Images	81
In 32 Images	71
In 33 Images	78
In 34 Images	51
In 35 Images	59
In 36 Images	55
In 37 Images	58
In 38 Images	54
In 39 Images	46
In 40 Images	30
In 41 Images	41
In 42 Images	31
In 43 Images	20
In 44 Images	25
In 45 Images	20
In 46 Images	16
In 47 Images	20
In 48 Images	9
In 49 Images	13
In 50 Images	10
In 51 Images	5
In 52 Images	3
In 53 Images	6
In 54 Images	6
In 55 Images	3
In 56 Images	6
In 57 Images	6
In 58 Images	2
In 59 Images	1
In 61 Images	2
In 62 Images	1
In 64 Images	1
In 65 Images	1

 **2D Keypoint Matches**



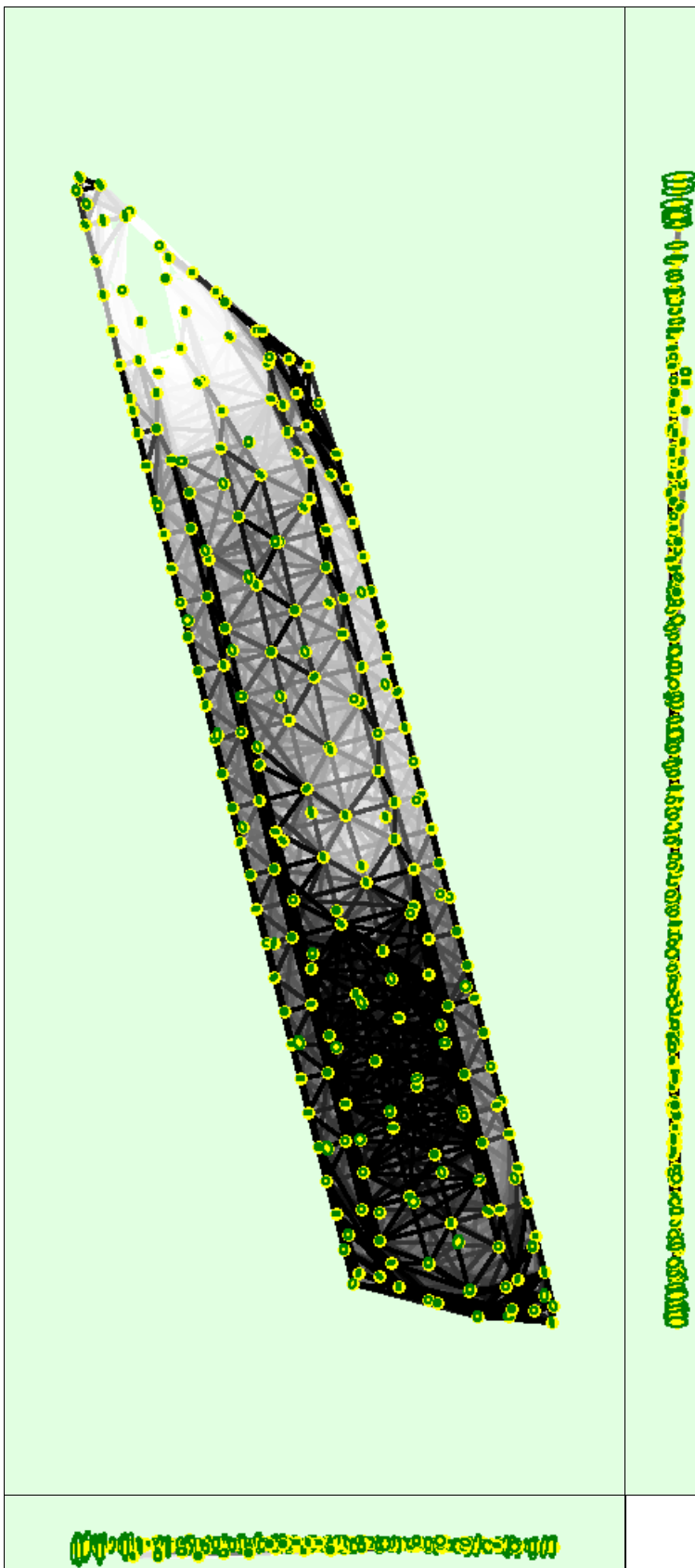


Figure 5: Computed image positions with links between matched images. The darkness of the links indicates the number of matched 2D keypoints between the images. Bright links indicate weak links and require manual tie points or more images. Dark green ellipses indicate the relative camera position uncertainty of the bundle block adjustment result.

? Relative camera position and orientation uncertainties



X[m]	Y[m]	Z[m]	Omega [degree]	Phi [degree]	Kappa [degree]
------	------	------	----------------	--------------	----------------

Mean	0.008	0.009	0.014	0.020	0.011	0.005
Sigma	0.002	0.002	0.008	0.008	0.004	0.002

Geolocation Details

? Absolute Geolocation Variance

Min Error [m]	Max Error [m]	Geolocation Error X [%]	Geolocation Error Y [%]	Geolocation 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	1.68	0.00
-9.00	-6.00	0.00	6.30	0.00
-6.00	-3.00	5.46	2.52	0.00
-3.00	0.00	53.36	31.09	59.24
0.00	3.00	33.19	46.22	39.50
3.00	6.00	7.98	7.56	1.26
6.00	9.00	0.00	4.62	0.00
9.00	12.00	0.00	0.00	0.00
12.00	15.00	0.00	0.00	0.00
15.00	-	0.00	0.00	0.00
Mean [m]		-0.007905	-0.008879	-0.017604
Sigma [m]		1.891869	3.141435	0.683916
RMS Error [m]		1.891885	3.141447	0.684142

Min Error and Max Error represent geolocation error intervals between -1.5 and 1.5 times the maximum accuracy of all the images. Columns X, Y, Z show the percentage of images with geolocation errors within the predefined error intervals. The geolocation error is the difference between the initial and computed image positions. Note that the image geolocation errors do not correspond to the accuracy of the observed 3D points.

? Relative Geolocation Variance

Relative Geolocation Error	Images X [%]	Images Y [%]	Images Z [%]
[-1.00, 1.00]	100.00	84.03	100.00
[-2.00, 2.00]	100.00	100.00	100.00
[-3.00, 3.00]	100.00	100.00	100.00
Mean of Geolocation Accuracy [m]	5.000000	5.000000	10.000000
Sigma of Geolocation Accuracy [m]	0.000000	0.000000	0.000000

Images X, Y, Z represent the percentage of images with a relative geolocation error in X, Y, Z.

Geolocation Orientational Variance	RMS [degree]
Omega	1.452
Phi	0.568
Kappa	4.996

Geolocation RMS error of the orientation angles given by the difference between the initial and computed image orientation angles.

Initial Processing Details

System Information

Hardware	CPU: 13th Gen Intel(R) Core(TM) i9-13900HK RAM: 64GB GPU: Intel(R) Iris(R) Xe Graphics (Driver: 31.0.101.5537), NVIDIA GeForce RTX 3050 Laptop GPU (Driver: 31.0.15.4617)
Operating System	Windows 10 Pro, 64-bit

Coordinate Systems

Image Coordinate System	WGS 84 (EGM96 Geoid)
Output Coordinate System	MAGNA-SIRGAS / Colombia Bogota zone (EGM96 Geoid)

Processing Options

Detected Template	No Template Available
Keypoints Image Scale	Full, Image Scale: 1
Advanced: Matching Image Pairs	Aerial Grid or Corridor
Advanced: Matching Strategy	Use Geometrically Verified Matching: no
Advanced: Keypoint Extraction	Targeted Number of Keypoints: Automatic
Advanced: Calibration	Calibration Method: Standard Internal Parameters Optimization: All External Parameters Optimization: All Rematch: Auto, yes

Point Cloud Densification details

Processing Options

Image Scale	multiscale, 1/2 (Half image size, Default)
Point Density	Optimal
Minimum Number of Matches	3
3D Textured Mesh Generation	yes
3D Textured Mesh Settings:	Resolution: Medium Resolution (default) Color Balancing: no
LOD	Generated: no
Advanced: 3D Textured Mesh Settings	Sample Density Divider: 1
Advanced: Image Groups	group1
Advanced: Use Processing Area	yes
Advanced: Use Annotations	yes
Time for Point Cloud Densification	01h:18m:25s
Time for Point Cloud Classification	05m:43s
Time for 3D Textured Mesh Generation	15m:50s

Results

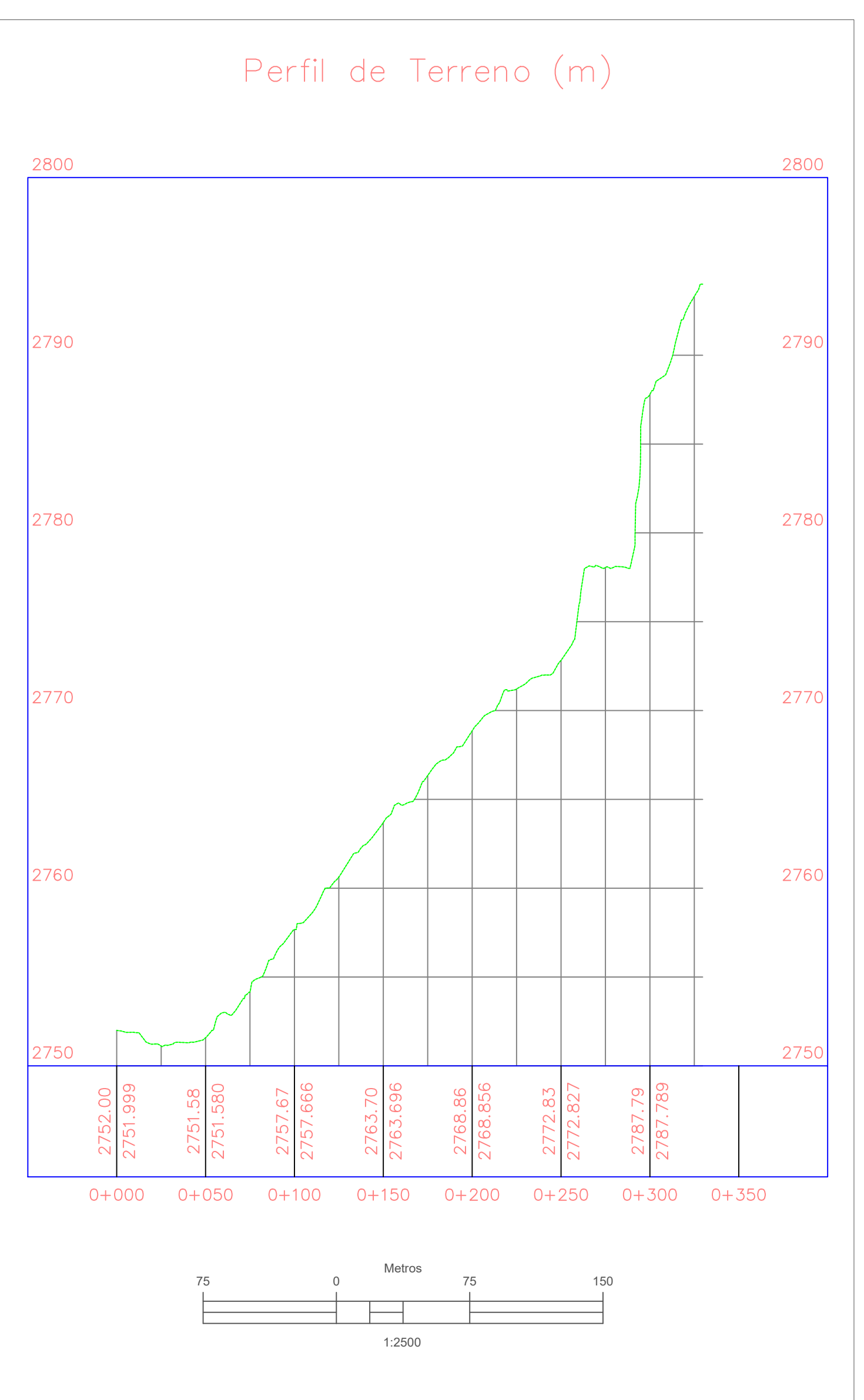
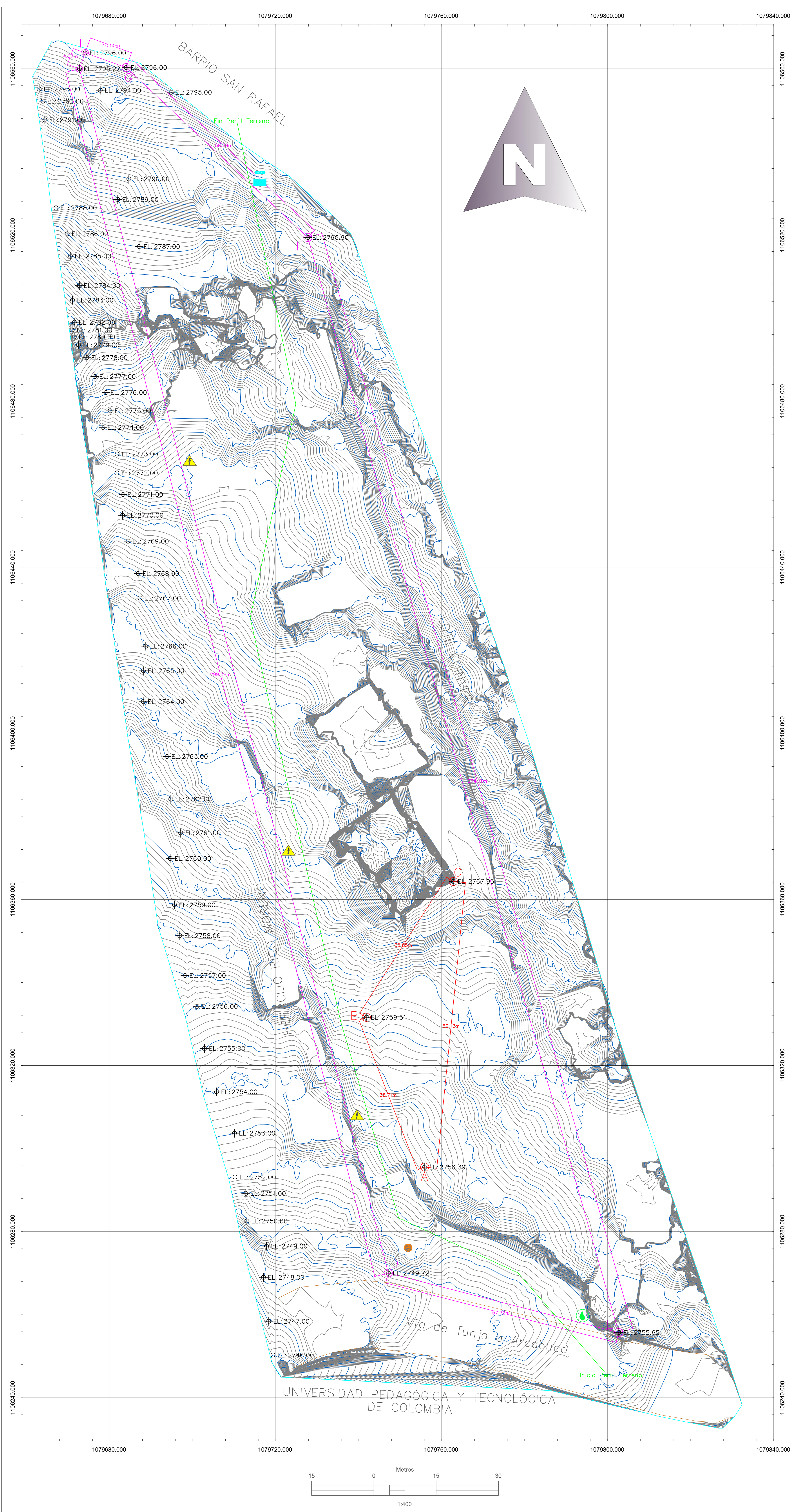
Number of Generated Tiles	1
Number of 3D Densified Points	24351464
Average Density (per m ³)	1038.9

DSM, Orthomosaic and Index Details

Processing Options

DSM and Orthomosaic Resolution	1 x GSD (1.46 [cm/pixel])
DSM Filters	Noise Filtering: yes Surface Smoothing: yes, Type: Sharp

Raster DSM	Generated: yes Method: Inverse Distance Weighting Merge Tiles: yes
Orthomosaic	Generated: yes Merge Tiles: yes GeoTIFF Without Transparency: no Google Maps Tiles and KML: yes
Grid DSM	Generated: yes, Spacing [cm]: 100
Raster DTM	Generated: yes Merge Tiles: yes
DTMResolution	5 x GSD (1.46 [cm/pixel])
Contour Lines Generation	Generated: yes Contour Base [m]: 0 Elevation Interval [m]: 10 Resolution [cm]: 100 Minimum Line Size [vertices]: 20
Time for DSM Generation	18m:39s
Time for Orthomosaic Generation	37m:41s
Time for DTM Generation	11m:33s
Time for Contour Lines Generation	02s
Time for Reflectance Map Generation	00s
Time for Index Map Generation	00s



VÉRTICE	Este (m)	Norte (m)	Elevación (m)
D	1079747,227	1106270,013	2749,72
E	1079802,731	1106255,700	2755,65
F	1079727,839	1106519,380	2790,90
G	1079684,090	1106560,281	2796,00
H	1079674,206	1106563,823	2796,00
I	1079672,816	1106559,998	2795,22

MATRÍCULA INMOBILIARIA: 070-181195			
CÓDIGO CATASTRAL: 010202580042000			
Área Lote: 12.659 m ²			
ORIGEN	VÉRTICES	COLINDANTE	LONGITUD
NORTE	H - I	Barrio San Rafael	4,07 m
NORTE	G - H	Barrio San Rafael	10,50 m
NORTE	F - G	Barrio San Rafael	59,89 m
ORIENTE	E - F	Lote COINVER	274,11 m
SUR	D - E	U.P.T.C.	57,32 m
OCCIDENTE	I - D	Heraclio Rico Moreno	299,38 m

RED SERVICIO	Este (m)	Norte (m)
ALCANTARILLADO	1079751,988	1106276,106
LUZ ETAPA 1	1079737,975	1106306,931
LUZ ETAPA 2	1079721,526	1106370,353
LUZ ETAPA 3	1079697,451	1106464,171
AGUA	1079716,308	1106533,290
GAS	1079794,016	1106259,778

P.C.	Este (m)	Norte (m)	Elevación (m)
A	1079755,986	1106295,532	2756,39
B	1079741,938	1106331,602	2759,51
C	1079762,890	1106364,316	2767,95

ORIGEN COORDENADAS PLANAS	BOGOTÁ
LATITUD	04°35'46,32150" N
LONGITUD	74°04'39,02850" W
NORTE	1'000,000 m
ESTE	1'000,000 m
Factor de Escala	1,0
Franja	Central
Sistema de Referencia Destino	MAGNA SIRGAS
Topografía resultante coordenadas	GAUSS KRUEGER
Curvas nivel principales	Cada 1,0 m
Curvas nivel secundarias	Cada 0,2 m



DEPARTAMENTO DE BOYACÁ
MUNICIPIO DE TUNJA

PROYECTO:
EL PORTAL DEL BOSQUE
Conjunto Cerrado
Avenida salida de Tunja a Bucaramanga # 13-112

LEVANTÓ:
JOHN FREDDY GÓMEZ DAZA
C.C. # 7183.183 de Tunja (Boyacá)

CONVENCIONES:

CONTIENE:
PERFIL TRANSVERSAL TOPOGRAFÍA PREDIO EL PORTAL DEL BOSQUE CONJUNTO CERRADO

FECHA: 09 / 2024
TAMAÑO PAPEL: 700 x 1000
ESCALA: Topo:1:400 Perfil:1:2500
PLANO: TOPOGRAFÍA - 1

