

LAND SURVEY AND CADASTRAL MEASUREMENT MADE FOR AN PLOT PLAN COMPLEX

Madalina Marian*

*University of Pitesti, Targu din Vale street, No. 1, Pitesti, Romania

E-mail: madalina.marian@yahoo.com

Abstract

According to Law no. 7/1996 of Cadastre and Real Estate Publicity, plan plot is a strip ground graphical representation containing strip ground limits and details of all the buildings that define stable land and cadastral division strip ground is technical administrative unit defined by fixed details, identifiable field that does not change over time, such as roads, water, dams, etc. This paper presents how to make a plot plan strip ground covering a 4 forest Ups (production unit) and 108UAs (limits of forestry), land use is forest, pasture and village road. High surface is located extraurban limits Arefu in Arges County and has 28185443mp, that's equivalent to 2818,54ha. Forest cadastre specific limits are drawn in the work arrangement of forests and are represented by plot limit and the subparcels limit. This paper aims to presenting the main components of a modern surveying device used in our country, to carry out surveying works for forest cadastre. To use GPS technology (Global Position System) in combination with the total station.

Keywords: surveying, GPS technology, plot plan.

1. INTRODUCTION

Technical component of forest cadastre is to determine the position, configuration and size of land areas by destination, category of use and ownership, also the construction parameters, based only on measurements.

Obtaining the necessary documentation made Cadastre and Land Registration Office (OCPI) for plan plot, assigning them cadastral numbers and land registration (Cadastral register).

2. MATERIAL AND METHOD

The book is based on papers presented as follows: positions 1, 2 and 3 are based Forest and Village road and a official report giving possession; positions 4 to 16 are based pastures official report implementing another possession, position 17 forest is based on a third official report, 18 forest position is based on another protocol, and positions 19 to 30 are based on a private property title.

The work was carried out:

South total station NTS -350 with the following technical performance: precision angular measurements 5", 1 mgon, 2500m distance measurements reflector - 3mm +2 ppm, typical measurement times 1s (figure 1).



Figure 1. South Electronic Total Station NTS-350

Total station Spectra Precision Focus 4 with the following technical performances: Wavelength: 870nm, pulse rate <5ns, laser emission power tool out of <6.4 W and the method of repetitive firing of the laser pulse (figure 2).



Figure 2. Spectra Precision Electronic Total Station Focus 4

GPS - Trimble Recon GPS Pathfinder XB, technology SBAS (EGNOS) (figure 3).



Figure 3. GPS Trimble Recon XB

GPS - Trimble Juno SB, technology SBAS (EGNOS) (figure 4).



Figure 4. GPS Trimble Juno SB

Also were used Sokkia GPS, Stratus model with 12 channels, signal L1 C / A code, accurately 5m-1m, 5mm, cold start 2min., 45s hot start, resume 3s internal antenna (figure 5).



Figure 5. Sokkia GPS

With total stations South NTS-350 and Spectra Precision Focus 4 were conducted several traverses supported at both ends. For these traverses were offshoot points on the perimeter corps of ownership (sense of directions were read in both positions of the telescope being done then the average of readings).

Densification of points was Trimble Recon GPS XB sites and Juno SB.

To determine the GPS points were used from Sokkia Stratus receivers. Coordinate system: stereographic 1970, linking the system was based on GEO fixed point Arges and the points determined by GPS measurements, points that are preserved in good condition.

Geodetic points used to produce documentation are well preserved, results falling into the tolerances of regulation.

Representation scale: 1:5000. Format for print work: A₀ derived.

3. RESULTS AND DISCUSSIONS

Working principle - measurements with GPS receivers are different from the classical, because their outcome is represented by Cartesian coordinates (X, Y, Z) or geographical coordinates - altitude, latitude and longitude.

Determination of an unknown point based on the location of a point, by relative positioning process is achieved by standing on both points with a GPS and observations are performed simultaneously.

In the work of cadastre, at the crossing of sinuous routes of forest, roads, railways and other details is used kinematic method.

The method is characterized by measurements with two receivers, one applied in a fixed station and the other in motion. Moving receiver is stationary at some points previously established. Based on these measurements are drawn up very fast and precise topographic and cadastral plans.

Based on measurements made with the GPS coordinates were calculated absolute points of detail-1970 stereo coordinate system and was done quickly and accurately plan and demarcation of the location, scale 1:5000 (Figure 6).

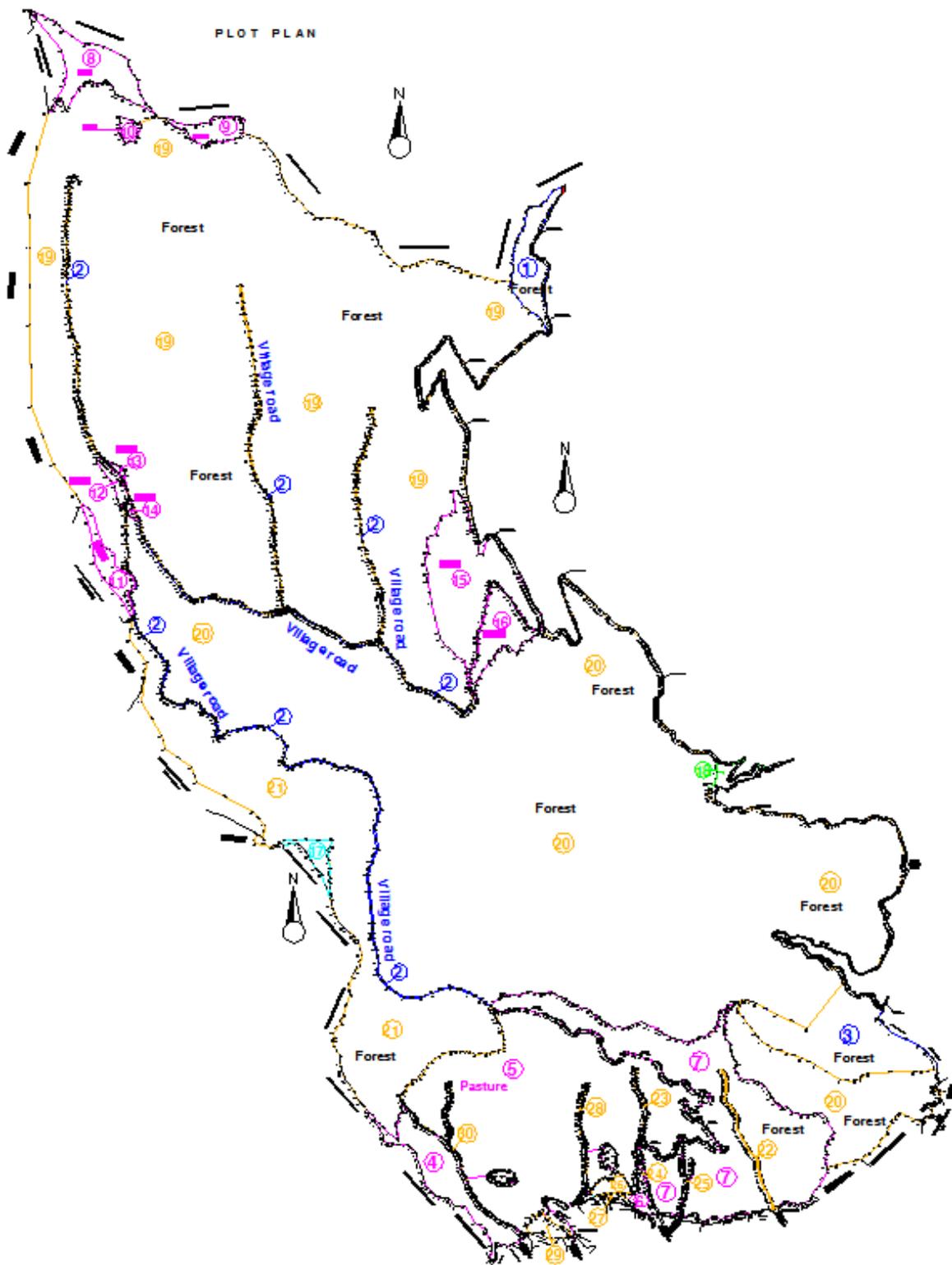


Figure 6. Plan plot of location and delimitation of the area

For opinions plot is drawn and a table (table 1).

Table 1. Table plot

TABLE PLOT												
No. str ip ground	No. C rt	No. Cada stral	No. Cada stral regist	No. top.	Surface plot of the official (mp)	Land-use category	Total official area (mp)	Total area measured (mp)	Owner	Title deed	Mentions	
Fragment table												
5	1	#	#	#	163428	PD	7186200	163428	#	Official report nr. #	UPII , UA: 37C,D,E;38A;42B;43A.	
	2	#	#	#	147108	DR		147108	#	Official report nr. #	UPVI, UA: 220D, 221D%, 223D, 224D.	
	3	#	#	#	510814	PD		510814	#	Official report nr. #	UPVI, UA: 125A,N; 126A,B,C; 127	
	4	#	#	#	252148	P	5600000	252148	#	Official report nr. #	Pasture	
	5	#	#	#	2039899	P		2039899	#	Official report nr. #	Pasture	
	6	#	#	#	34529	P		34529	#	Official report nr. #	Pasture	
	7	#	#	#	1367908	P		1367908	#	Official report nr. #	Pasture	
	8	#	#	#	209782	P		209782	#	Official report nr. #	Pasture	
	9	#	#	#	68926	P		68926	#	Official report nr. #	Pasture	
	10	#	#	#	21547	P		21547	#	Official report nr. #	Pasture	
	11	#	#	#	82524	P		82524	#	Official report nr. #	Pasture	
	12	#	#	#	27106	P		27106	#	Official report nr. #	Pasture	
	13	#	#	#	7106	P		7106	#	Official report nr. #	Pasture	
	14	#	#	#	6414	P		6414	#	Official report nr. #	Pasture	
	15	#	#	#	500298	P		500298	#	Official report nr. #	Pasture	
	16	#	#	#	154698	P		154698	#	Official report nr. #	Pasture	
	17	#	#	#	48033	PD		1405000	48033	#	Official report nr. #	UP III , UA: 91C%; 92B%,C%
	18	#	#	#	43151	PD		166800	43151	#	Official report nr. #	UP II , UA 181A,B%
	19	#	#	#	9981766	PD		28055000	9981766	#	Private property title nr. #	UPI , UA: 48A,B,C,D,E; 49A,B,V; 50; 51; 52; 53; 54; 55A,B,C,V; 56A,B; 57A,B,C; 58A,B,C,D,E,V; 59A,B,V; 60A,B,C,D,E; 61A,A,C1,C4,C5; 62; 63; 64; 65A,B,V; 66A,B,V1,V2; 67; 68; 69A,B; 70; 71; 72; 73A,B,C,V; 74A,B,C,D,E; 75A,B; 76A,B; 77A,B,C,V; 78A,B,C,D,V; 79; 80; 83; 84; 85B,C; 86; 87A,C,V; 88A; 91.
	20	#	#	#	10416496	PD	10416496		#	Private property title nr. #	UPII , UA: 181E,B%; 1A,B,C; 2A,B,C,D; 3A,N; 4A,B; 5A,B; 6A,B,C; 7A,B,C,D; 8A,B,C; UPI Arefu, UA: 21; 24A,B,C,D,E,F,F; 25B,C; 27B; 28; 29; 30; 31; 32; 33; 34A,B%; 35A,B%; 36B%; 37A,B%; 38A,B; 39A%; 41A%,C,D; 40A; 42%; 43%; 44A%; 47A%; 81A,B; 82A,B,C; 95; 96A,B; 97A,B,C,D,A,C; 98A,B; 99A,B,V; 100A,B,V; 101; 102; 103; 104; 105.	
	21	#	#	#	1977301	PD	1977301		#	Private property title nr. #	UPI , UA: 10; 12A,B; 13A,B; 14A,B,C,D; 34B%; 35B%; 36A,B%; 37B%,D; 39A%,B; 40B; 41A%,B,V; 42%; 43%; 44A%; 45A%; 46A%,B; 47A%,B.	
	22	#	#	#	8647	PD	28055000	8647	#	Private property title nr. #	UPI , UA: 20B,C%,R.	
	23	#	#	#	5870	PD		5870	#	Private property title nr. #	UPI , UA: 18E%.	
	24	#	#	#	6661	PD		6661	#	Private property title nr. #	UPI , UA: 18C%,E%,R1.	
	25	#	#	#	4922	PD		4922	#	Private property title nr. #	UPI , UA: 18C%,D,R2.	
	26	#	#	#	28527	PD		28527	#	Private property title nr. #	UPI , UA: 17A%,B%	
	27	#	#	#	7768	PD		7768	#	Private property title nr. #	UPI , UA: 17A%,B%	
	28	#	#	#	8676	PD		8676	#	Private property title nr. #	UPI , UA: 15%	
	29	#	#	#	36240	PD		36240	#	Private property title nr. #	UPI , UA: 15%	
	30	#	#	#	17150	PD		17150	#	Private property title nr. #	UPI , UA: 11A%,B,R.	
	Total Surface						28185443					

4. CONCLUSIONS

1. Using GPS measurements are determined the points absolute coordinates in WGS-84 system, which are transformed in Stereo – 1970 coordinates.
2. Using GPS equipment can draw up topographical and cadastral plans, which comply strictly all the methodological norms imposed.
3. GPS equipment has revolutionized the science of land measurement, creating the possibility of determining the position of all points on Earth in a single system.
4. The studied property surface is located on the territory of Arefu commune and has the following neighbors: N – Forest Department Vidraru, Village road and Private owners; E – Private owners, SC Hidroelectrica SA, Arges County, Town Arefu, National Road 7C, Lake Vidraru, Village road,

Communal road, and other private owners; S – Village road, Private owners, Community , Forest department Vidraru, Access road, Town Arefu, other private owners; V– Community, Forest department Suici, Communal road, Private owners.

5. Checking measurements both qualitatively and from terms of area obtained by overlapping the orthophotomaps, found that its limits have been precisely determined, it fully corresponds to reality.

6. Following this calculation, it was found that the surface of acts is equal to that of the measurements.

7. Finally after checking and compensate the measured data and the absolute coordinates was drawn up the location and delimitation plan, precise and very suggestive, at 1:5000 scale, representing true situation on the ground.

5. REFERENCES

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