

THE USE OF GEODESIC EQUIPMENT AND SPECIALIZED SOFTWARE FOR THE PREPARATION OF TECHNICAL DOCUMENTATION FOR THE SYSTEMATIC REGISTRATION OF A CADASTRAL SECTOR IN U.A.T. STUDINA, OLT COUNTY

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Abstract

The work presents the method of drawing up the technical documentation for the systematic registration of a cadastral sector, this being considered a fast and precise method of determining the surfaces and their registration in the Land Register. The cadastral sector is part of the territorial administrative unit Studina, Olt County. To carry out the work, GNSS technology was used using the ALTUS APS-3 GPS receiver, the elevation being carried out in the Stereographic 1970 projection system. Based on the measurements made on the ground and the documents provided by the town hall, it was checked whether the surface is equal to the surface in the property documents of the respective land. After checking the surface, using the specialized software Mapsys 10 and AutoCad, the cadastral plan was drawn up, with the reporting of the 91 buildings that are part of the cadastral sector.

Key words: systematic registration, cadastral sector, GPS receiver

INTRODUCTION

The commune of Studina is located in Olt county, being composed of the villages of Studina and Studinita. The total area of the commune is 37.62 km². The systematic registration of a cadastral sector involves the measurement of all buildings, with or without constructions, the identification of all owners or other holders of rights over them and their registration in the Land Register. The cadastral sector no. 9 whose delimitation was carried out by O.C.P.I. Olt according to Order no. 979/2016 regarding the approval of the technical specifications for carrying out systematic cadastral works on cadastral sectors in order to register the buildings in the land register. The total area of the sector is 31.28 ha, consisting of 94 buildings.

MATERIALS AND METHODS

To carry out the work, kinematic measurements were carried out through

GNSS technology using the ROMPOS service. The equipment used consisted of an ALTUS APS-3 receiver. The ALTUS APS-3 is a high-precision GNSS receiver with state-of-the-art integrated wireless. It is an all-in-one solution, without cable, simple and easy to use (figure 1).



Figure 1. ALTUS APS-3, front view

The raw GNSS data will be saved on the SD card and the SIM card allows GSM modem service. With the help of the receiver, the characteristic points of the fields that make up cadastral sector no. 9, as well as all the details of the land, were determined. The work was carried out in the "Stereographic 1970" Projection System.

The transformation of coordinates from ETRS89 to STEREO 1970 was performed using the transformation software Transdat 4.01. The detail points were reported in the MapSys 10 program. The calculation of the surfaces was done by the analytical method using the coordinates of the points on the outline of the building.

RESULTS AND DISCUSSIONS

According to order 979/2016, the main stages of the systematic registration work are the following:

- a) Organizing and conducting the public information campaign, at national and local level, which aims to inform citizens about the start of the systematic registration works and about their benefits, rights and obligations during the systematic registration process.
- b) Realization of the works preceding the cadastre: identification of territorial administrative unit (U.A.T.) limits, establishment of cadastral sectors, analysis and integration of information taken from Cadastre and Real Estate Advertising Office (O.C.P.I.), town hall or other institutions and public authorities, or from other sources;
- c) Carrying out specialized works: carrying out interviews on the ground with the aim of identifying the locations and boundaries of the buildings, carrying out cadastral measurements, identifying the legal owners of the buildings and collecting legal documents;
- d) Updating the information collected from the field with those from the sporadic registration and drawing up the cadastral technical documents;
- e) Reception of technical cadastral documents by the reception committee designated for this purpose;
- f) Carrying out the information campaign regarding the display of the technical documents of the cadastre;
- g) Publication and display, under the law, of technical cadastral documents;
- h) Registration and settlement of requests for rectification of published cadastral technical documents;

i) Updating the technical documents of the cadastre, following the resolution of requests for rectification and as a result of the integration of sporadic works registered during the publication period;

j) Closing the systematic cadastre works, in order to be entered in the land register, opening new land registers and closing the old cadastre and land register records, by order of the general director of National Agency for Cadastre and Real Estate Advertising (ANCPI), published in the Official Monitor, Part I;

k) Communication, in accordance with the Law, of the extract from the land register for information and the extract from the new cadastral plan;

l) Archiving of the documents that form the basis of the registration of real estate in the integrated cadastre and land register system;

m) Issuance by the notary public, under the law, of the certificate for the registration of the possessors as owners in the land register.

Before starting the advertising campaign at the local level, an analysis of the situation was carried out at the U.A.T. Studina level in order to establish the local peculiarities from the point of view of information needs. Information materials were printed according to order no. 979 of 08/05/2016. The printing was carried out by a specialized printing house and all requirements regarding paper format and dimensions, type and size of fonts used, etc. were respected.

The posters were displayed in visible public places and often frequented by citizens. Leaflets were also distributed at the permanent information points - Studina Town Hall Headquarters, for all the citizens of the commune who came to ask for information. The advertising and information locations used were: Police, City Hall, School.

Between January 17 and February 18, a permanent center operated where citizens could request explanations, bring property and identity documents and complete the interview form. The documents obtained from the owners, from the City Hall and/or

the extracts from the land register obtained from OCPI were attached to the interview sheets. In the case of buildings the public property of the state and administrative-territorial units, in the absence of ownership documents, the proof of rights was made with extracts from the centralized inventory of the respective goods, certified for compliance. The interview sheets, the documents related to the buildings and owners taken over were scanned into a multipage pdf file with a resolution of 200 dpi. Each building has a file called ID.pdf associated with it, where ID represents the identifier of the building assigned in the sectoral cadastre work - unique at the Studina UAT level. The permanent center was organized within the Studina City Hall, between 08:00-14:00. Before starting the work, it was necessary to procure the following from OCPI Olt:

- the GNSS measurements used for the outline of fields and roads that are part of the cadastral sector no. 9;

- user and password for the ETERRA3 application;
- orthophoto plane;
- cgxml files with the coordinates of parcels with cadastral numbers from the sporadic registration.

With the aid of the ALTUS APS-3 receiver, kinematic measurements were performed using the ROMPOS service. The characteristic points of the fields that make up the sector have been determined, as well as all the details in the field.

After performing the field measurements, the data from the receiver is downloaded to the computer in the form of a txt file that contains the number of the measured point, the coordinates x, y, and z, as well as the code of the measured point (property corner=a, channel=cn, pillar =stp etc), code established by the contractor (table no. 1). The txt file is imported into the Mapsys 10 program, the layer in which the points are to be inserted is filled in, the points are entered and their reporting is carried out in the plan (figure 2).

Table no. 1. Data measured in the field

Point no.	X	Y	Z	CODE
1.000	273209.252	455914.800	70.235	cn
2.000	273202.263	455910.431	70.232	cn
3.000	273156.966	455882.850	69.819	cn
4.000	273153.535	455886.322	69.762	md
5.000	273152.113	455889.061	69.480	a
6.000	273184.812	455910.377	69.270	a
7.000	273202.317	455923.218	69.428	a
8.000	273207.049	455938.920	69.180	a
9.000	273211.141	455940.905	69.252	a
10.000	273221.385	455941.566	69.743	
11.000	273223.725	455933.176	69.844	pod
12.000	273228.171	455934.444	69.774	pod
13.000	273203.641	455985.013	69.364	
14.000	273207.792	455985.881	69.382	
15.000	273194.571	456058.081	69.331	
16.000	273198.165	456058.987	69.111	
17.000	273174.596	456182.707	69.072	
18.000	273171.182	456183.293	69.169	
19.000	272811.680	455669.972	70.198	cn
20.000	272809.834	455673.933	70.068	md
21.000	272800.538	455674.474	69.616	cn
22.000	272802.198	455675.391	69.616	cn
23.000	272803.835	455676.601	69.522	cn
24.000	272804.504	455678.825	69.557	cn
25.000	272803.864	455683.394	69.621	cn
26.000	272810.945	455683.149	69.470	a
27.000	272831.848	455692.304	69.360	a
28.000	272715.766	456120.325	68.088	cn
29.000	272718.785	456118.009	67.964	

30.000	272721.858	456118.319	67.849	
31.000	273134.803	456359.513	68.859	
32.000	273137.693	456360.562	69.138	
33.000	273102.959	456572.478	69.067	tub
34.000	273094.342	456570.625	68.972	
35.000	273090.686	456570.451	68.998	
36.000	272991.792	456996.403	68.530	
37.000	272994.638	456999.741	68.517	
38.000	272935.458	457326.797	68.282	
39.000	272937.253	457326.585	68.288	

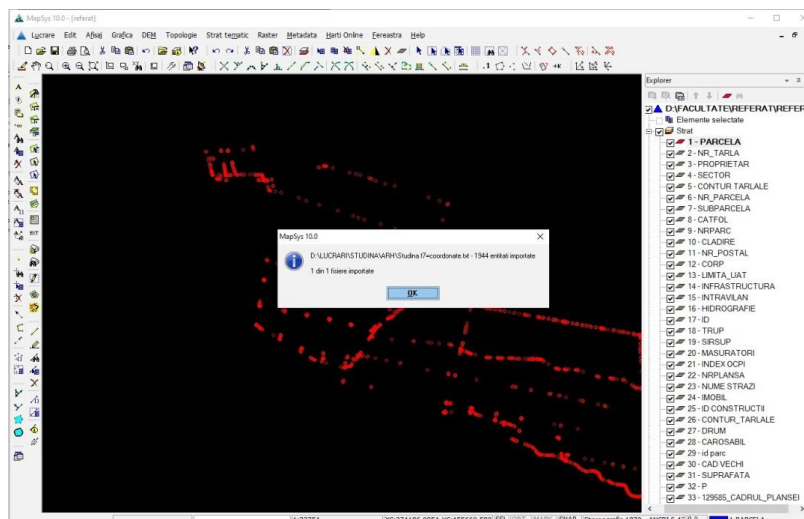


Figure 2. Point reporting in the plan

After entering the points in the plan, join them on the corresponding layer to form the contours of the fields (figure 3).

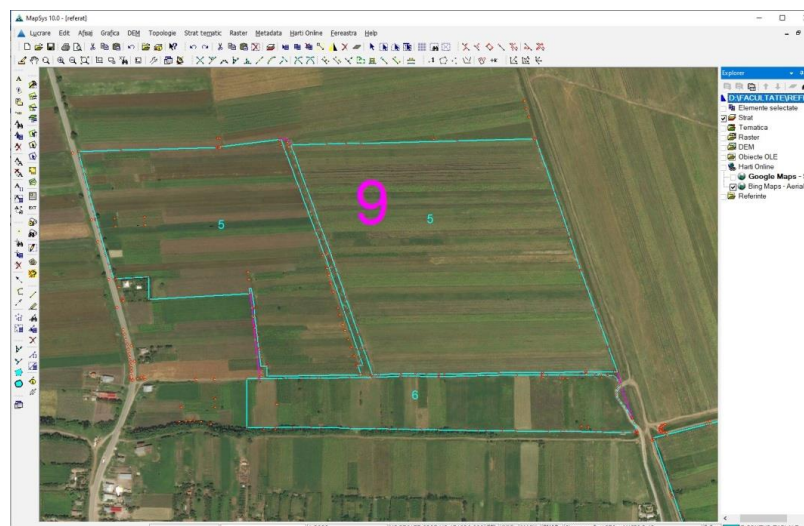


Figure 3. The outline of the land plots in the cadastral sector

The area of the plot in the measurements must be at least equal to the total area in the title deeds of that plot. After checking if this coincides with the one in the documents, or if it is smaller, it goes to automatic parcelling. This is done in the PLOT layer, based on the parcel table.

First topology is created to check the closure on the surface of the field. After solving the non-closures, we move on to the actual parcelling. In the parcelling window, check surfaces from the table, open the table window in which the table is selected, and assign the field from the

table to which the respective value corresponds to the established layers. Once the graphic part is completed, topology is made on each linear layer in order to create a database in which all the information is retrieved (cadastral number

assigned by the executor, plot area, use category, field number, plot number, etc.). Attributes are retrieved through the COLLECT ATTRIBUTES command, where the corresponding layer from the work is selected for each attribute (figure 4).

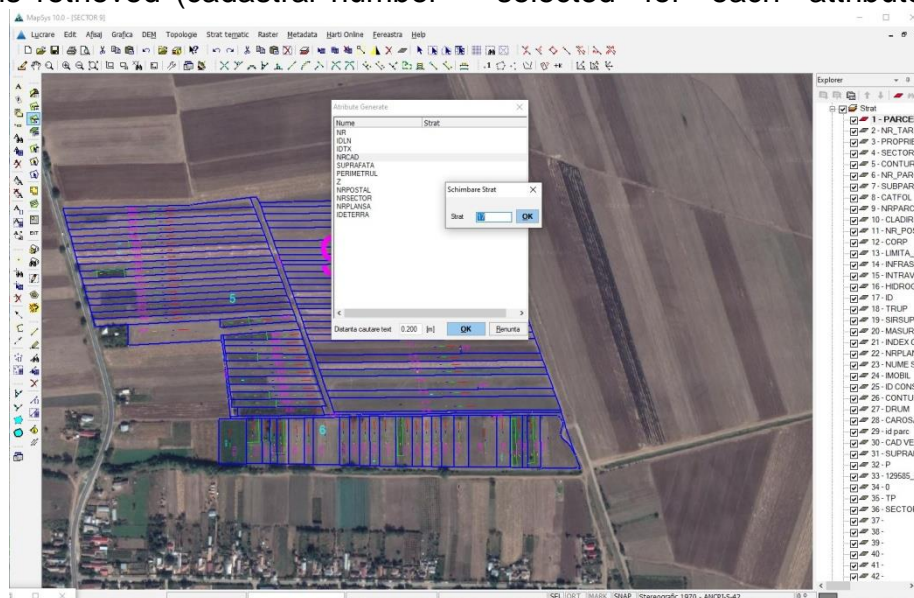


Figure 4. Attribute generation

With the help of the AutoCad program, the cadastral plan is drawn up (figure 5).

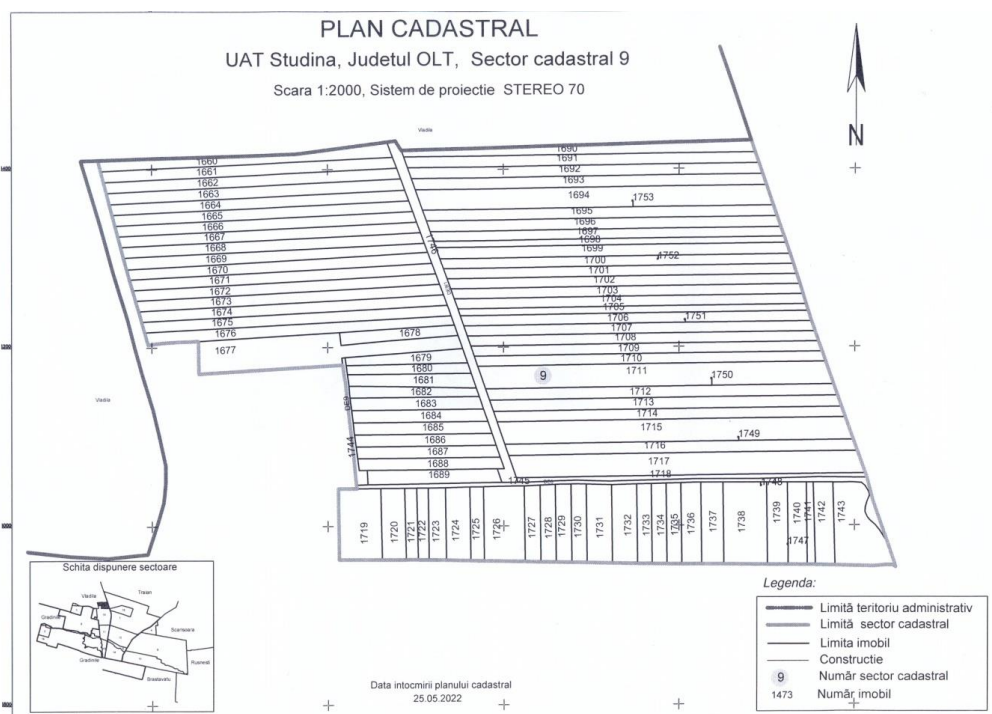


Figure 5. Cadastral plan

The surface area was calculated using the analytical method, using the coordinates of the points on the cadastral sector contour. The total area of the sector is 31.28 ha.

CONCLUSIONS

Systematic registration is considered a fast and accurate method of determining the

surfaces and registering the buildings in the Land Register.

To carry out the work, GNSS technology was used using the ALTUS APS-3 receiver, the elevation being carried out in the Stereographic 1970 projection system. With the help of the ALTUS APS-3 receiver, kinematic measurements were made using the ROMPOS service. The characteristic points of the fields that make up the cadastral sector were determined, as well as all the details in the field.

After determining the absolute coordinates of the points, with the help of the Mapsys 10 and AutoCad programs, they were reported on a plan, after which they were joined according to the sketches on the ground, obtaining the cadastral plan at a scale of 1:2000.

The surface of the building was determined from the absolute coordinates of the contour points, using the analytical method. The total area of the sector is 31.28 ha.

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