Particularities of elaborating the cadastral documentation required for the first registration of romanian roads into the land register

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Abstract*: The paper presents the particularities of elaborating the cadastral documentation required for the first registration of Romanian roads into the Land Register, the steps that have to be followed and the authors' points of view.*

The necessary steps required for reaching the purpose, that is the first registration of Romanian roads into the Land Register, are presented in logical order.

Keywords*: road cadastre, first registration,* ***Land Register, GPS, GNSS.***

I.1. GENERAL OBJECTIVE

According to the provisions of the Law of cadastre and real estate publicity no. 7/1996, with the subsequent modifications and additions, it was enforced to draft the necessary cadastral documentation and register into the Land Register any building, public or private property, including the entire network of county roads.

Formally, the Road Cadastre is a specialty cadastre, as it is defined by the Law of cadastre and real estate publicity, "*... a subsystem for the systematic registration and inventory of real estate properties, from technical and economical perspective ...*".

I.2. REQUIRED DOCUMENTATION

In order to register building bodies into the Land Register, the cadastral documentation is required for the **first registration**, according to the provisions of the Order no. 634 from October 13, 2006, of the National Agency of Cadastre and Real Estate Publicity, for the approval of the Regulations regarding the content and modality to elaborate the cadastral documentation for registration in the land register.

The documentation accomplishes the identification, measurement and description of the building and ensures the registration of juridical documents and facts that refer to it. After the cadastral acceptance and the registration of documents into the land register, the land register report, the informing land register excerpt and the building location and delimitation plan will be issued to the beneficiary.

II. CONTENT OF DOCUMENTATION AND TECHNICAL REQUIREMENTS

II.1. Steps in Drafting the Documentation

In order to elaborate the cadastral documentation, the executant will go through the following steps:

a) establishing the location of the building;

b) carrying out the work by the service provider, involving the technical documentation, the execution of field and office works, the elaboration of the cadastral documentation;

c) filing the documentation at the office of cadastre and real estate publicity and register in the General Entry Register;

d) registering into the land register.

II.2. The Identification of the Building Location

Identifying the building location is done before the execution of the works and consists in:

- the executant together with the owner identifies the location of the building based on natural or conventional boundaries, in order to perform measurements;
- the executant materializes the boundaries of the real estate property, in conformance with the general cadastre norms, according to the ownership documents provided by the owner**.**

II.3. The Execution of the Works

Execution of the works consists in:

a) performing measurements for developing the geodetic high-density and survey networks in the **1970 national Stereographic projection system**, the surveying of cadastral planimetric details on the boundary of the building and inside it, recording attributes, verifying and validating existing data;

b) surveying planimetric and altimetric details;

c) exact data processing;

d) elaborating documentation by drafting and creating six copies of the work file, in analogue and digital format.

2.3.1. The Coordinate System

The planimetric details that represent the content of topographic maps are determined and reported in the coordinate system of the Stereographic 1970 projection plan.

2.3.2. The Geodetic Control Network

2.3.2.a. *Materialization*

In order to carry out topographic works, as well as to refer subsequent update and/or tracing works, there should be developed a system of benchmarked points, besides each land included in the work. The executant will supply and install benchmarks along the road, every 4-5 km. The benchmarks will be placed as close to the road as possible, usually in a protection area, where stability, accessibility and visibility are ensured.

2.3.2.b. *Determination*

The control points will be determined planimetrically, in the 1970 Stereographic coordinate system, and alimetrically, in normal heights 1975 Black Sea system. The points corresponding to a route or location will be included in a unitary network measured using instruments and methods that ensure an internal planimetric precision of ±5 cm and an internal altimetric precision of ± 1 cm (precision planimetric traverse, triangulation, GPS, geometric leveling). The observations performed in those control networks will be processed using the least squares methods, the method of indirect measurements. If the relative precision of the points from the state network used for determining the control network does not allow ensuring the mentioned internal precisions, then the control network will be processed as a free network built on the points of the state network.

II.4. Filing the Documentation

The documentation is filed at the territorial office of cadastre and real estate publicity by the provider, in the name of the owner, and the acceptance of the service will be done **after the beneficiary receives the land register excerpt.**

II.5. The Documentation for Ownership Tabulation

The documentation for tabulating the ownership into the land register will include:

a) application for requesting information and convention;

b) application for acceptance and registration;

c) affidavit concerning the alienation and identification of the measured building;

d) description of topographic and geodesic works;

e) zonal situational plan, scale 1:10000;

f) location and delimitation plan of the building, scale 1:1000;

g) measurements performed in the high-density and the survey network for topographic detail surveying, using classic methods or the GPS (Global Positioning System) technology;
h) surface computation;
i) topographic description of new points from the high-density and the survey network;

The documentation is handed on analogue and digital support, in six copies, using standard formats that allow typifying and formats that allow access to data and data transfer.

II.6. The Description of Topographic and Geodesic Works

The description of topographic and geodesic work will comprise:

- the methods and equipment used in measurements;
- the coordinate system;
- old and new geodesic points that were used;
- the state of old geodesic points;
- the description of new topographic points, determined in the work (high-density points of the control network or of the survey network);
- longitudinal profile;
- transversal profiles in the characteristic areas (crossroads, grade crossings, bridges, platforms, turns etc.)

II.7. Conditions Specific to GNSS (GPS) Determination

When using GNSS (GPS) determinations, the following elements will be presented:

- the location plan of the determined points;
- the schedule chart of measurement sessions;
- RINEX files on magnetic support, containing the performed measurements (including the name of the point, the correct height and the type of the antenna, the recording interval);
- the results of processing the measured vectors (bases) (relative coordinates and precision indicators by components);
- the compensated coordinates of points and the precisions in Cartesian geocentric system (X, Y, Z) and/or ellipsoidal system (B, L, h) and the results of the transformation in the national reference system (XS, YS, HN) for the determined new points.

II.8. Kilometer Posts

The positions of the kilometer posts are determined through coordinates and their labels are recorded.

II.9. Artworks and Specific Set-ups

The shape in the plan and the position of all buildings related to the road (bridges, platforms, viaducts tunnels, abutment walls, anchorages, drains, protected embankments, balustrades, protection belts, passages, ditches, guarding trenches, etc) are determined using topographic measurements.

II.10. Related Set-ups

These types of works include crossroads, grade crossings, special lanes, parking lots, gas stations, road enclosures, etc. Their shape and position is determined by topographic measurements and then is represented on the map.

III. NEIGHBORHOODS, SURFACES, INDEX OF COORDINATES

III.1. Neighborhood delimitation reports

Neighborhood reports will be compiled at residential section level within localities, and at field level outside localities, emphasizing their boundaries (DS, De etc.) and will be signed by the mayor of the administrative territorial unit where they are located. The data included in the neighborhood delimitation reports comprises the following elements:

- *the side* – represents the position (L-left or R-right) of the residential section or the field, with respect to the increasing direction of mileage;

- *from km+m, to km+m* – represents the kilometer beginning and ending positions of the boundary of the residential section or of the field;
- *number of the residential section/field* – represents the cadastral number of the residential section or of the field, from the cadastre of each administrative territorial unit where they are located;
- *usage category*– is established according to the valid norms for the general cadastre.

III.2. Surface Summary

The surface summary includes the area of the road parcels (road reservation and safety and protection areas), separated by administrative territories and usage categories (total, road reservation, safety areas, protection areas).

III.3. Index of Coordinates

The documentation will include the index of coordinates of the control network points, which is formed of the serial number, the code of the point and the X, Y, Z coordinates.

IV. Conclusions

The elaboration of the cadastral documentation for the first registration of roads into the Land Register is a complex procedure which requires high level training and experience in the field.

The first tabulation of roads from our country has to be done with discreetness and in a technically and juridically correct manner, in order to prevent potential planimetric positioning errors, which may lead to law suits and other unwanted events, taking into account that: The road cadastre is a specialty cadastre, and therefore should be compiled, as any specialty cadastre, after compiling the general cadastre.

The imposed precision is quite high and it is required for a planimetric and altimetric positioning, ± 5 cm for planimetry and ± 1 cm for altimetry.

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