

TOPO-CADASTRAL WORKS FOR THE CONSTRUCTION OF THE SEWAGE TREATMENT PLANT IN THE VILLAGE OF TOMNATIC

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Abstract: *This scientific work seeks to highlight the complexity of the sporadic cadastre and its importance. Each cadastral work requires passion to be able to understand each individual case, patience and dedication in relations with the beneficiaries, and not in the end attention to each detail, no matter how small, it can make a big difference. Building works are among the most delicate works, because here you can encounter all kinds of complications, a little inattention and the work cannot be completed, that is why in this work I have described every aspect of this kind of work, from the presentation of materials and methods with the help of which the work was carried out, up to the stage of measurements and the documentation part, each stage is described in detail, from the way in which the measurements were made and the method used, to the way in which the necessary documents were obtained and their submission.*

Keywords: *Sporadic Cadastre, Building, Marking, Documentation, Plans.*

INTRODUCTION

The sporadic cadastral works represent a large complex of works that includes the technical part represented by the measurements carried out in the field and the legal part represented by the documents attesting the property right over the building, with or without constructions.

Depending on the type of work, in the part of the sporadic cadastre, the following can be carried out: registration of the ownership right, gluing or ungluing on the building, information updating works, or noting real rights derived from the ownership right.

One of the sporadic cadastral works frequently encountered at the present time are the works of updating the technical information in the Land Registry.

Tabulating a building and registering it in the Land Register is an important and definitive step for any new construction.

The right ownership over new constructions is registered in the Land Register based on the building permit, and the reception report upon completion of the works, or a certificate based on which the construction was built, documents issued by the local authorities (city halls).

For the works to update the technical information in the Land Registry, at the time of submission, OCPI will request the following documents so that the work can be registered and subsequently resolved. These documents are represented by the location and delimitation plan of the building, Annex 1.31, Annex 1.32, Annex 1.33, the calculation of the areas and the building attestation certificate.

MATERIALS AND METHODS

To carry out this work, the measurements were made with the SOUTH S82V GPS, this being an RTK GNSS receiver, built for precision, reliability and ease of use.

The working method used to make the measurements is the STOP AND GO Method, it is used when a quick determination of the coordinates is desired, but with greater precision.

AutoCAD is a CAD program used in the design of building plans in two dimensions (2D), less in three dimensions (3D), developed and marketed by the American company Autodesk. The system-specific („native”) files are dwg and the extremely widespread dxf (Drawing eXchange Format).

Carlson SurvCE is the most flexible data collection application on the mobile platform. SurvCE supports most GNSS equipment and total stations on the market, including the latest ones.

RESULTS AND DISCUSSIONS

The work was developed in two stages, the field one in which the measurements were carried out and the office one in which the documents received from both the beneficiary and the designer were checked.

In the field stage, the topographic survey was elaborated, this being done with the help of the SOUTH S82V GPS.

In the first phase, we resort to identifying the location of the building with the help of Google Earth, this stage helps us to visualize the important points in the land, then the actual topographic survey is carried out. The corners of the building are measured, and for a better check, at a distance that ensures a smaller error, the infection points of the construction are measured again, at their intersection, the footprint of the construction is determined.

On the date data from the field was taken using the South GPS software package, resulting in the detail points used in the development of the situation plan. The coordinates of the support and lifting points are obtained by transforming the Cartesian geocentric coordinates into geographic coordinates (WGS 84), then they are transcalculated using the method of the 7 calculated parameters (the Krasovski ellipsoid), so that the coordinates are finally projected in the projection system Stereographic 1970.

The operation helped to obtain the location and delimitation plan, but also the inclusion in the area.

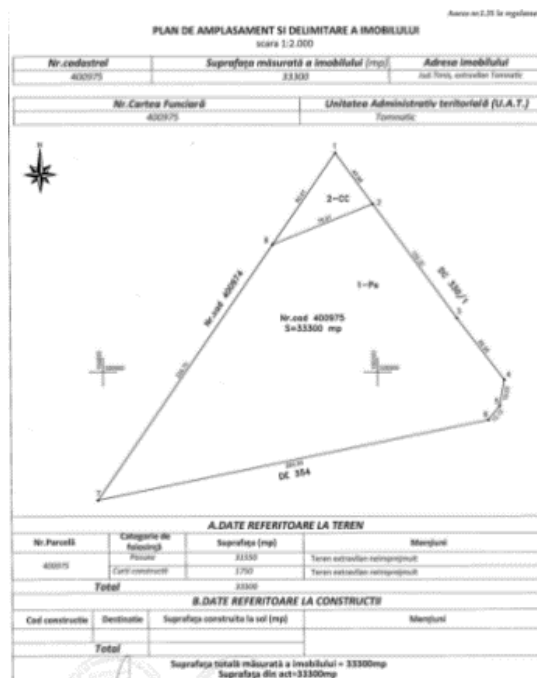


Figure 1. Location Plan and delimitation of the building.



Figure 2. Area layout plan.

When making the framing in the area, the 1:5000 scale plans for the suburbs were used, in which you can see the way in which the soils were organized, and in which you can see the number of fields, the number of plots, but also the category of use.



Figure 3. Plan scale 1:5000 for extravilan.

After these stages were successfully completed, we moved on to obtaining the last necessary administrative documents, first the Regularization of the tax for the building permit was obtained from the municipality, then the quotas from the ISC Timis, so that in the end we reach to receive the building attestation certificate obtained from the town hall.

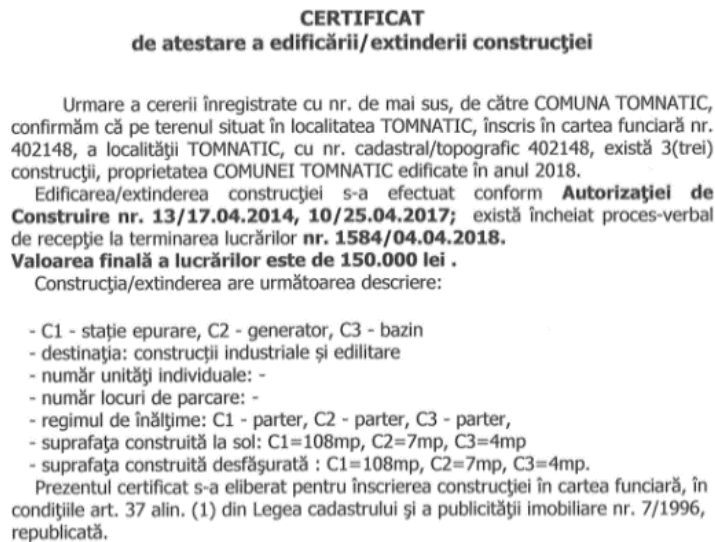


Figure 4. Building attestation certificate.

After this operation, the cadastral documentation for the submission of the work in the OCPI database is drawn up, for this stage the following are necessary, previously obtained: The building authorization that was the basis of this work and the plans intended to remain unchanged, the Certificate of Attestation of Existence issued in our case by the Tomnatic City Hall and the Declaration regarding the real value of the works executed on the basis of the building permit.

For the documentation submission stage, the cadastral documentation was drafted in order to register the constructions in the Land Register.

The first time the locations and delimitation plan of the property body was made, it is the sketch of a building, made on the basis of topographical measurements carried out by an authorized person. It includes: the sketch of the land, the coordinates of the points, the area of the building, the category of use, the address of the real estate, data related to constructions (if applicable) and mentions regarding the land and/or construction.

Annex 1.33 or the Technical Report describes the stages of the work, the equipment used, the topographic survey method used, the description of the office works, the preparation of the location plan and the calculation of the surfaces.

ANEXA NR. 1.33 la regulamentul

MEMORIU TEHNIC

1. **Adresa imobil:** estravilan localitate Tomnatic, Jud. Timiș.

2. **Tipul lucrării:** edificare case de epurare în comuna Tomnatic.

3. **Scopul proiectării și simulării din teren:** în însoțirea documentației s-a prins cont de documentația anticată anterior nr. 2745/12.11.2016 parcela cu număr cad. 481248 este situată în estravilanul localității Tomnatic, pe parcela cu număr cad. 491248 există următoarele construcții: C1-stație epurare, C2-generator și C3-bucin.

4. **Operațiuni topo-cadastrale efectuate:**
 Metode și aparatura folosite la măsurători:
 În fața de teren: ridicarea topografică s-a realizat prin măsurători GPS. În mod RTK (Real time kinematic), metoda Stop&Go, utilizând corecții diferențiale primite de la serviciul specializat ROAPDS, amândouă buchi a capta următoarele: RO_2PK_3_1_G06 obținută la zi, coordonate stereografice 1970, în sistemul de etalonare națională Mărea Neagră 1973. Achiziționarea punctelor de detaliu s-a realizat cu ajutorul receptorului GPS South 5827, metoda Stop&Go.
 În fața de birou s-au prelucrat datele din teren, folosind pachetul de programe SOUTH GPS, rezultând punctele de detaliu utilizate la realizarea planului de situație. Coordonatele punctelor de aprijin și de ridicare se obțin prin transformarea coordonatelor carteziene geocentrice în coordonate geografice (WGS84), cu ajutorul informațiilor și corecțiilor primite în timp real de la sateliți și de la stațiile permanente GNSS din zonă, apoi acestea sunt transcalibrate cu ajutorul metodei celor 7 parametri calculați (algoritmul Kenward 1940), pentru ca în cele din urmă coordonatele să fie proiectate în sistemul de proiecție stereografică 1970. Aceste transformări sunt realizate de programul specializat Carlson SurvCE. Soft integrat în cartea de teren Geac al receptorului GPS South 5827. Instrumentul asigurând, conform specificațiilor tehnice oferite de producător pentru modul RTK, o precizie de 10mm+1ppm RMD în decimetri planimetrici, respectiv 10mm+1ppm RMD pentru decimetri altimetrici.
 Softul Carlson SurvCE are implementat programul de tranșcalibră TRANSCALAT furnizat și emis de către Agenția Națională de Cadastru și Publicitate Imobiliară din România.
 Planul de situație a fost redactat folosind programe specifice de birou, de raportare grafică, de parcurere, de structurare automată a definiției detaliu din desen. Rezultatele obținute sunt stocate în format digital, pusând în ulterior accesare și listare în format analogic.
 S-a calculat suprafața prin metode digitale.
 $S = S[(N_i+1) - (N_i-1)] \times T(i)$
 Sistemul de coordonate:
 Lucrarea a fost însoțită în sistem de proiecție STEREOGRAFIC 1970;
 sistem nivalitic Mărea Neagră 1973.
 Calculul suprafeței a fost realizat prin metode analitice utilizând inventarul de coordonate stereografice ale punctelor de contur de la parcela, obținute în urma măsurătorilor. Aceste coordonate și suprafața calculată sunt prezentate în tabelul de mai jos:

$S = \sum_{i=1}^n (y_i - y_{i-1})$
 $S = 185869mp$

Nr. Pt.	COORDONATE	
	N (x) m	E (y) m
1	263337.40	164209.10
2	263354.43	164243.11
3	263360.35	164260.10
4	263366.93	164269.10
5	263372.93	164270.35
6	263373.31	164269.14
7	263373.62	164271.89
8	263372.27	164269.80
9	263371.24	164268.93
10	263370.22	164268.23
11	263370.48	164270.75
12	263370.13	164270.90
13	263370.24	164271.68

Data : noiembrie 2019 Executant,

Figure 9. Annex 1.33

In order for the documentation to be complete and to be able to be submitted, it is necessary to complete documents such as:

Constraction certificate – the purpose of the certificate is to attest that: the construction of the building was based on the building permit, the plans intended for unchanged and the architectural report, also intended for unchanged, and that at the time of the reception carried out by the public institutions there was a record of reception at the end of the works. The certicate contains data about the owner of the construction, it specifies the Construction Authorization, as well as the technical data of the construction, such as the height, the built surface and the developed surface of it. This act represents an administrative act and is valid as long as the construction exists on the land.

**CERTIFICAT
de atestare a edificării/extinderii construcției**

Urmare a cererii înregistrate cu nr. de mai sus, de către COMUNA TOMNATIC, confirmăm că pe terenul situat în localitatea TOMNATIC, înscris în cartea funciară nr. 402148, a localității TOMNATIC, cu nr. cadastral/topografic 402148, există 3(trei) construcții, proprietatea COMUNEI TOMNATIC edificate în anul 2018.

Edificarea/extinderea construcției s-a efectuat conform **Autorizației de Construire nr. 13/17.04.2014, 10/25.04.2017**; există încheiat proces-verbal de recepție la terminarea lucrărilor nr. **1584/04.04.2018**.

Valoarea finală a lucrărilor este de 150.000 lei .

Construcția/extinderea are următoarea descriere:

- C1 - stație epurare, C2 - generator, C3 - bazin
- destinația: construcții industriale și edilitare
- număr unități individuale: -
- număr locuri de parcare: -
- regimul de înălțime: C1 - parter, C2 - parter, C3 - parter,
- suprafața construită la sol: C1=108mp, C2=7mp, C3=4mp
- suprafața construită desfășurată : C1=108mp, C2=7mp, C3=4mp.

Prezentul certificat s-a eliberat pentru înscrierea construcției în cartea funciară, în condițiile art. 37 alin. (1) din Legea cadastrului și a publicității imobiliare nr. 7/1996, republicată.

Figure 9. Building attestation certificate

CONCLUSIONS

The period of development of the works lasted 2 years, throughout the course of the works, the responsible surveying company carefully supervised the development of the site activities, the surveying company was also responsible for all the necessary documents, at each stage of the work the surveyor was present in land to follow everything that happens and to check if there are errors or not.

The complexity of the work was not as great as we would have expected, given that the part of the documents was quite extensive, a lot of opinions from public institutions, fortunately we had understanding and help from both officials, but also from the beneficiary who was prompt to our every request.

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