ANALYSIS OF THE STAGES NECESSARY FOR THE CONSTRUCTION OF AN OBJECTIVE TAKEN OVER IN CONCESSION, FROM A TOPO-CADASTRAL POINT OF VIEW

SERGIU POP[1], CRISTINA POCOL[1], SĂLĂGEAN TUDOR[1], NICOLAE POP[1]

[1]University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, 3-5 Mănăştur st., Cluj, Romania

ABSTRACT

Within the present work, a study was carried out regarding the concession of a building belonging to the Municipality of Cluj-Napoca, in order to dismantle it resulting in 32 plots and the access road to them, in order to authorize the construction works of 32 dwellings for young people. The notion of drawing represents the application on the field of the topographical elements known or extracted by calculation from the construction projects, elements that define a projected construction to be transposed or executed in the field. The field application of construction projects is aimed at ensuring compliance with the design and size of constructions and their components, as well as their absolute position, in a coordinate system. From the succession of constructive stages necessary for the construction of an objective, the materialization on the ground of the basic, main, and secondary axes of the construction and the materialization of the ±0.00 m elevation are detached. The law provides that the execution of construction works is allowed only on the basis of a building permit that is issued following a project called a Topographic Plan for obtaining the building permit.

INTRODUCTION

The concession is the contract by which one of the parties, called the concedent, transmits for a fixed period to the other party, called the concessionaire, the right and obligation to exploit a good, an activity or a public service, in exchange for a royalty (Olariu, 2021).

The possibility of concession of public property of the state or its territorial entities was achieved by:

- The New Civil Code
- Law no. 15/1990 on the reorganization of state economic units as autonomous companies and commercial companies
- Law nr. 215/2001 on local public administration,
- O.U.G. nr. 54/2006
- Law no. 98/2016 on public procurement
- Law no. 50/1991 regarding the authorization of the execution of construction works

The award of the concession contract, which may be made following an auction, by direct negotiation or direct award which is an exception to the tendering rule and applies in exceptional circumstances (Grecia, 2018).

According to *art. 15 of Law no. 50/1991,* the lands belonging to the private domain of the state or municipality, intended for construction, may be leased without public auction, for the realization of housing for young people up to the age of 35 years.

The tendering procedure may be conducted only if at least 3 valid tenders have been submitted following the publication of the notice of invitation to tender. If, following the publication of the notice of invitation to tender, at least 3 valid tenders have not been

submitted, the grantor is obliged to cancel the procedure and to organise a new invitation to tender (Herea, 2012).

If after the repetition of the tendering procedure, at least 3 valid tenders have not been submitted, the *direct negotiation* procedure is applied.

MATERIAL AND METHOD

The minimum limit of the concession price is established, as the case may be, by the decision of the county council, the General Council of the Municipality or the local council, so as to ensure the recovery in 25 years of the sale price of the land, under market conditions, to which is added the cost of the related infrastructure works *[art. 17of* Law *no. 15/1990].*

In the present study, the starting price per sqm of leased land was calculated as follows: the sale price of the free land without the cost of the related infrastructure works (15euro/ sqm), to which are added the expenses necessary for the arrangement of the street and the provision of the urban networks, divided by the area of the buildable plots (Table 1).

Table 1

Expenses necessary for the arrangement of the street and the insurance of the urban networks

	RON	EURO
Cost of street design	5110668.25	1083916.91
Urban networks cost	20436000.00	4334252.39
TOTAL	25546668.25	5418169.30

In the present study, the starting price per sqm of leased land was calculated as follows: the sale price of the free land without the cost of the related infrastructure works(15euro/ sqm), to which are added the expenses necessary for the arrangement of the street and the provision of the urban networks, divided by the area of the buildable plots.

The minimum price proposed to start the auction resulting from the calculation is the equivalent in lei of 435 euro /sqm (Table 2).

Table 2

Minimum price proposed to start the auction

AREA OF BUILDABLE PLOTS (sqm)	12903	
Free land value	912582 RON	193548.75 EURO
Investment value	25546668.25 RON	5418169.30 EURO
TOTAL	26459251 RON	5611718.051 EURO
Land value/ sqm after amnajare	2051 RON	435 EURO

The thickening of the support network involves the determination of the positions of new points in order to increase the density of the known points in the area of the studied objective, and it was achieved by forward (direct) intersection (Table 3, Figure 1).

Table 3

Coordinates of the thickening points

Point	Provisional coordinates		Corrections		Definitive coordinates	
	X	Y	ΔX	ΔY	X	Y
	[m]	[m]	[m]	[m]	[m]	[m]
P₁	583377.190	385720.943	-0.003	0.001	583377.187	385720.944
P₂	583340.844	385738.547	0.013	0.003	583340.857	385738.549
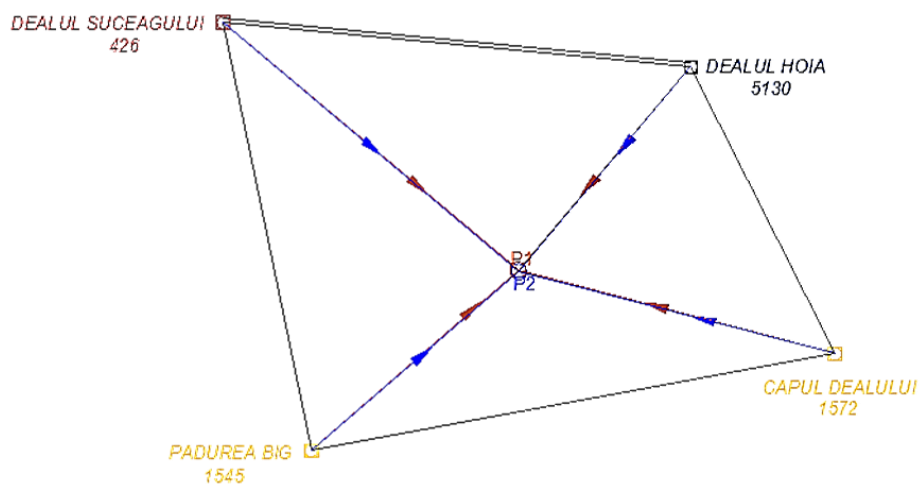
Figure 1. Sketch of the thickening network

RESULTS AND DISCUSSIONS

The building permit is issued on the basis of a TopographicPlan. Theapproval and approval of this topographical support will be made by the Office of Cadastre and Land Registration (O.C.P.I.). The content of the plan must reflect as suggestively as possible the surface elements of the land and its relief. As a means of communication, the topographical plane is actually an abstract representation of reality, because the content elements are in part selected and rendered simplified through symbols.

The documentation attached to the request for the reception of the topographical plans necessary for the preparation of the documentation for the authorization of the construction works includes the following (Popescu at. al., 2016):

- the slip;
- proof of payment of legal fees;
- request for reception;
- copy of the notice of commencement of the work, as the case may be;
- copy of the land register extract for information;
- copy of the urbanism certificate;
- the inventory of coordinates of the building in digital format;
- analytical calculation of areas;
- the technical memorandum, which will include: the working methods, the accuracies obtained, the data regarding the building, the area on which the work is performed, data regarding the existing and the proposed situation, specifying the way of materializing the limits;
- the topographical plan (in analog and digital format – .dxf format) at the scale of 1:5.000-1:100, as the case may be, which will include the representation of the relief for the area subject to investment (Figure 2);
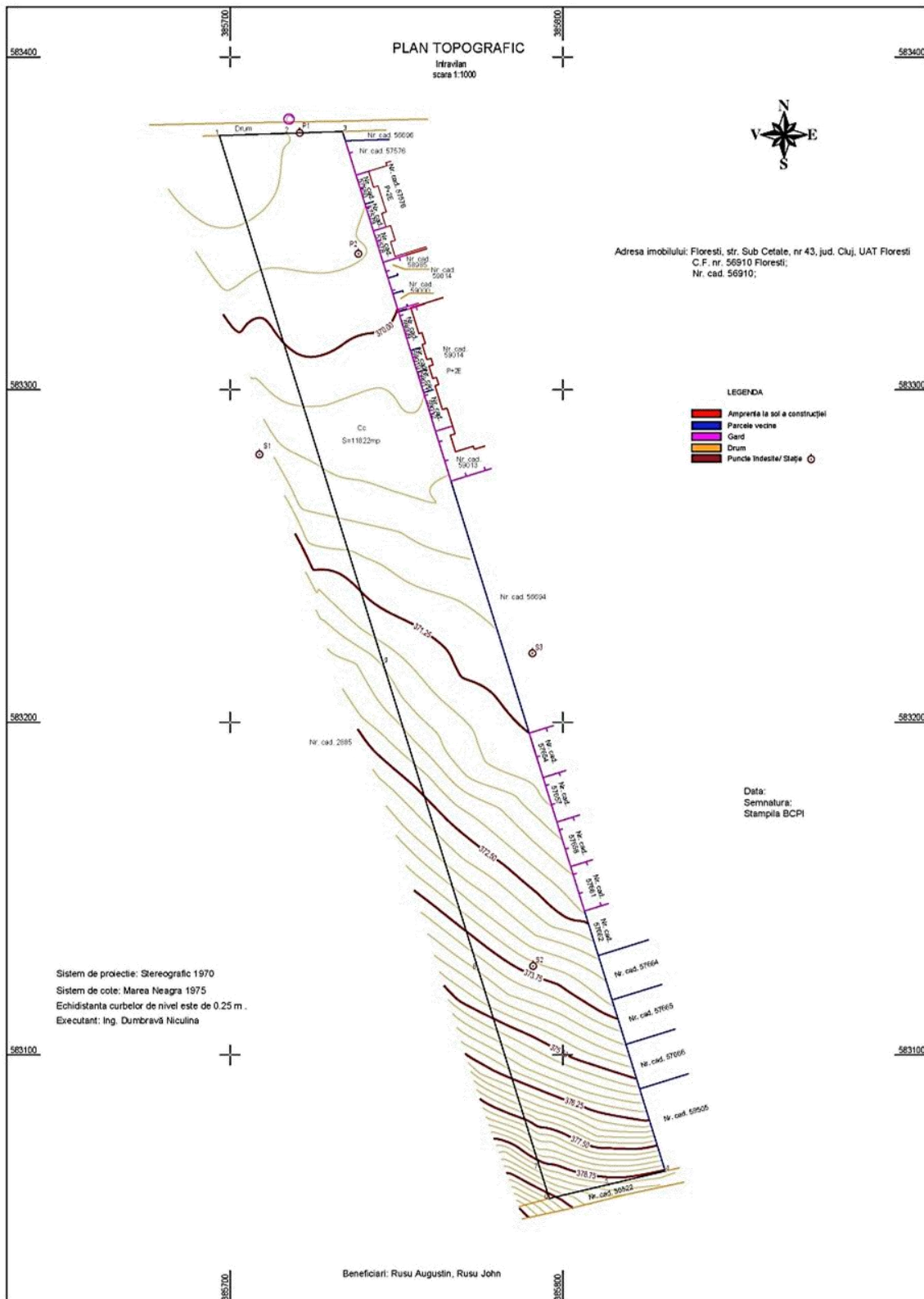- the dxf file.

Figure 2. Reprezentarea planului topografic

Having the approved documentation, the beneficiary asks the architect to carry out a project, in the form of a situation plan, which includes the location of the future construction, the green spaces, the parking lots afferent to the block, etc., as well as the axes of the construction. This project will come into the possession of the surveyor engineer, who is going to realize the general plan of tracing (Figure 3).
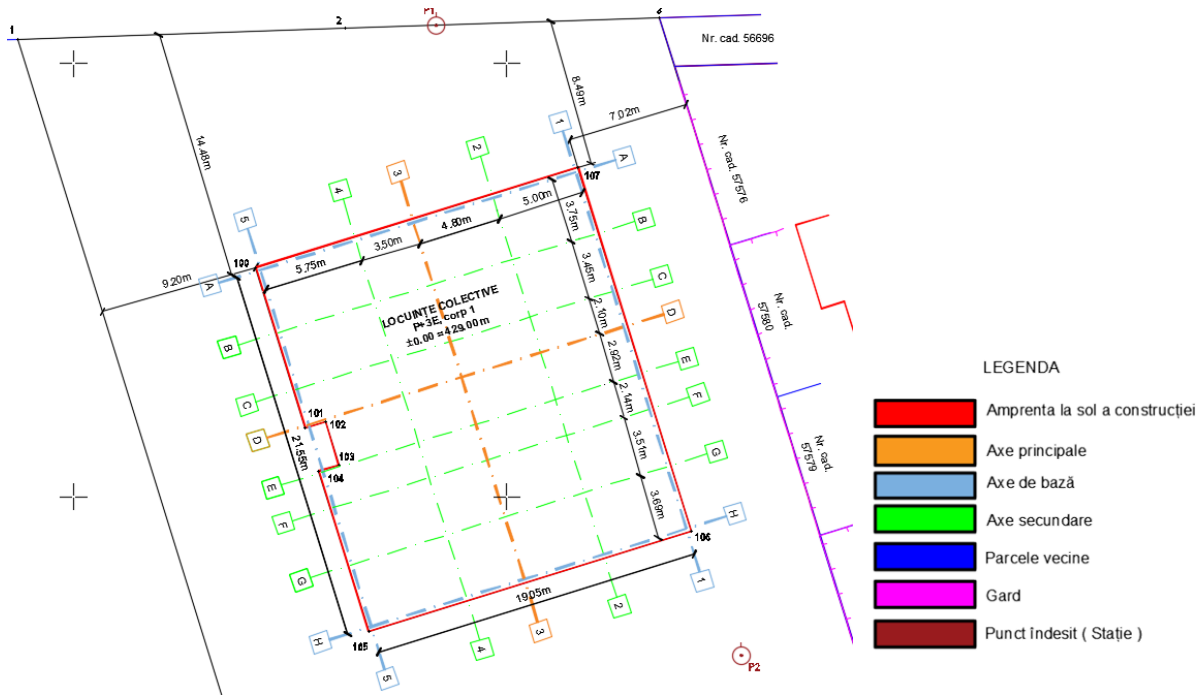
Figure 3. Situation plan

The drawingb az is determined by points P1 and P2, obtained from the thickening of the network, carried out in Chapter 3.

Before the start of the actual field tracing, the drawing elements will be calculated, namely the angles of orientation and the distances from the base of tracing at each axis intersection (Ortelecan at. al. 2016).

With the help of these elements we will draw the intersectional pucks of the axes, stationary in P1, and then we will check their position in the P2 station.

The materialization of the points in the field is done with the stake on which a nail is struck, which represents the mathematical point of the respective intersection of axes. (Figure 4).
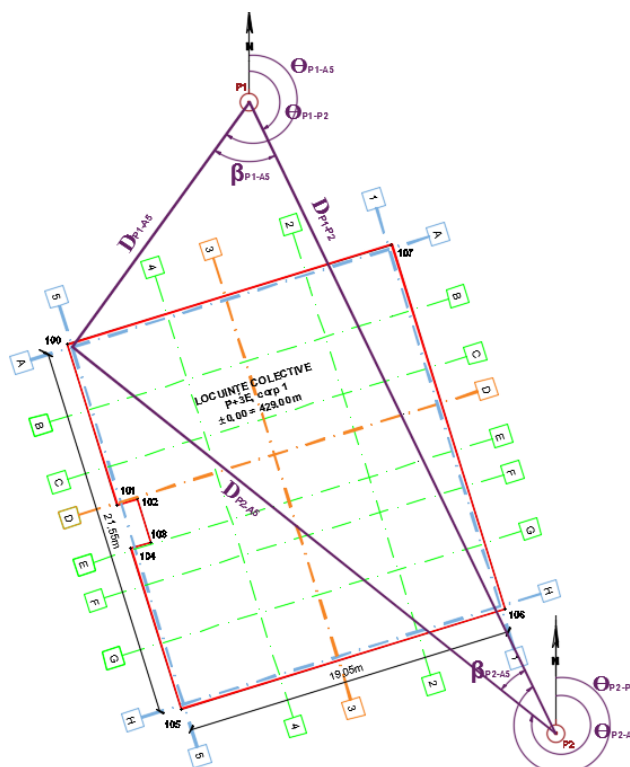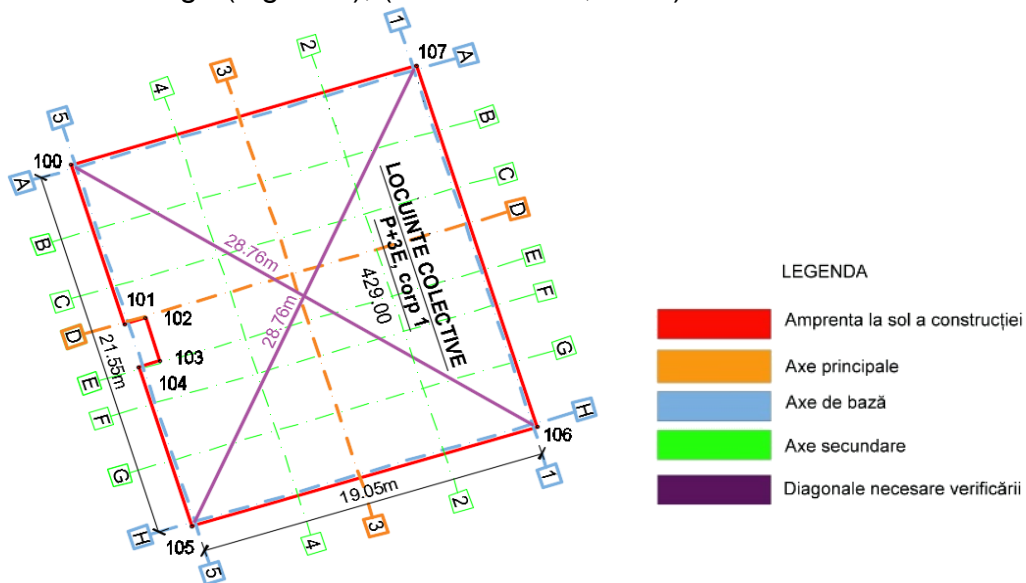

**Figure 4. Fielding of the projected objective**

A second verification of the correctness of the drawing, consists in measuring the diagonals of the drawn construction, diagonals that must be equal to each other and equal to those in the design (Figure 5), (Neuner at. al., 2001).

**Figure 5. Measuringthe diagonals of the drawn construction**

For the materialization of the A-A axis on the fencing, it is stationed on the point A1 and the nail beaten in the stake that materializes the point A5 is aimed. The horizontal movement is blocked and with the help of fine movement screws, the rear window is tilted in a vertical plane and the a1 point is marked *on* the fence. The "rear window is then turned over the head" and the position of the a2 point is materialized on the fence (Ortelecan at. al. 2013).

For the transmission of the axis 1-1 stationary at point A1 we will again target the materialized point A5, after which we rotate the rear window 100^g, block the horizontal movement and repeat the previous steps to materialize on the fence the points *1a* and *1b* (Figure 6).
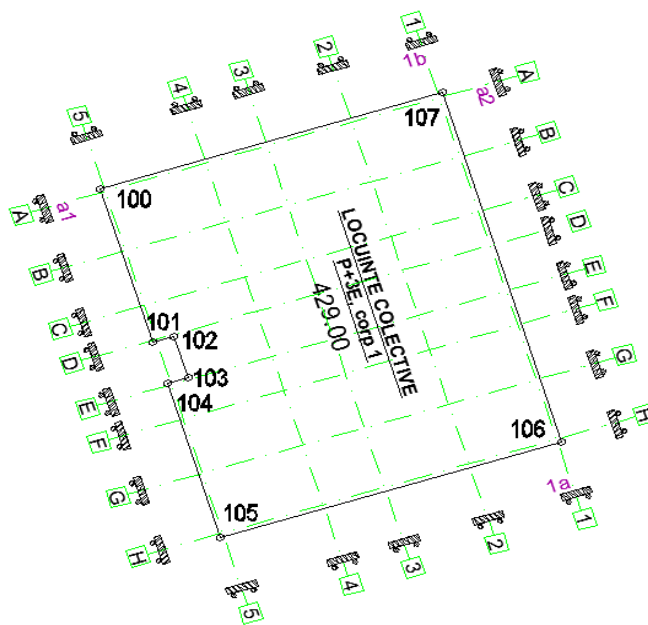
Figure 6. Marking of axes on the fence

To mark the quota **± 0. 00** of the construction is installed the device in the middle of the distance between the leveling point P_1 and the C point whose elevation is to be drawn. The reading on mira in point P1 shall be carried out and the quota of the visa plan calculated. The reading on the mira is further determined,necessary for the transposition on the field of the quota from the project. For the materialization of the elevation, it is lifted orlowered, until at the horizontal reticular thread, a reading (reading) equal to the calculated one will be performed. The position of the sole of the groom will give the projected elevation (Figure 7.), (Naş, Văcăroiu, 2010).
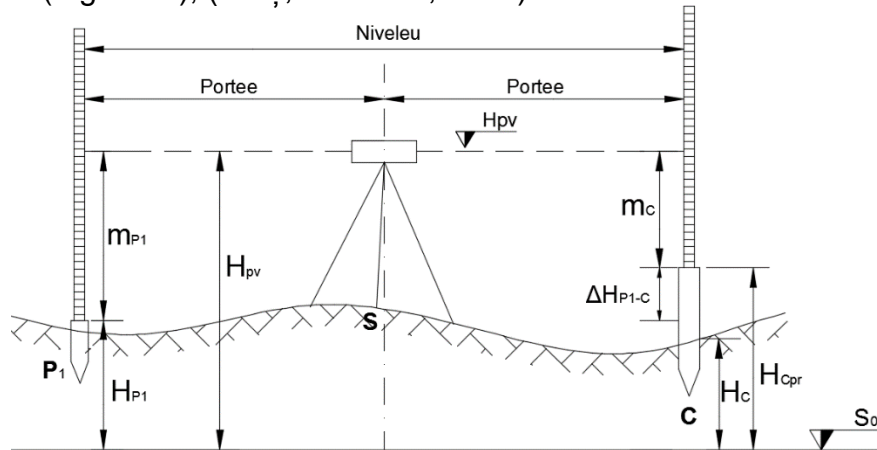
Figure 7. Drawing the ± 0.00 elevation of the construction through the middle geometric level

CONCLUSIONS

In conclusion, achieving the precision imposed in the drawing operations is the most important desideratum of the specialist surveyor engineer. We must admit that the seriousness of the materialization on the ground of the axes of a building depends on the entire succession of technical operations carried out until its completion.

The notion of drawing represents the application on the field of the topographical elements known or extracted by calculation from the construction projects, elements that define a construction is designed to be transposed respectively executed in the field. The field application of construction projects is aimed at ensuring compliance with the design and size of constructions and their components, as well as their absolute position, in a coordinate system.

From the succession of constructive stages necessary for the construction of an objective, the materialization on the ground of the basic, main and secondary axes of the construction and the materialization of its contribution ±0 are detached. 00 m. The law provides that the execution of construction works is allowed only on the basis of a building permit that is issued following a project called a Topographic plan for obtaining the building permit.

The fulfillment of the requirements imposed by the precision necessary for drawing was carried out taking into account the following considerations: the verification of the points of the support network in the area and its proper stuffing, the choice of some drawing methods appropriate to the required precision requirements, the use of the performing drawing means (modern instruments and accessories), the control of the tracing. In order to avoid the errors inherent in this operation, the trace elements were calculated in the first phase. An insufficient accuracy at drawing can lead to a faulty execution, implicitly to an inadequate quality of achieving the projected objective.

BIBLIOGRAPHY

1. Badea, Gh., 2013 - Cadastru, Ed. Conspress, Bucureşti.

2. Constantin, O.A., 2010 – Tehnica Satelitară Poziţionare Punctuală Precisă, Ed. Tehnopress, Iaşi.

3. Garcia-Ayllon, S., 2018 - Urban transformations as indicators of economic change in post-communist Eastern Europe: Territorial diagnosis through five case studies. Habitat International, 71, 29-37.

4. Herea, V., 2012 - Legal Regime of Lands and their Legal Circulation. Buletinul Institutului Politehnic din Iasi. Sectia Constructii, Arhitectura, 58(1), 169.

5. Leu N., V. Budiu, Y. Moca, C. Ritt, ,Yalerta Cioiac, Ana Ciotlăuş, 2002 - Topografie şi cadastru, Editura Universul., Bucureqti.

6. Naş S., Văcaru M., 2010 – Topografie noțiuni de teorie și aplicații, Editura Argonit, Cluj-Napoca.

7. Neuner, J., Badea, G., Onose, D., Badea A.C., Moldoveanu C., 2001 – Măsurători terestre. Fundamente, vol. I., Editura MatrixRom, București.

8. ***Ordinul Directorului General nr. 700/2014 privind aprobarea Regulamentului de avizare, recepţie şi înscriere în evidenţele de cadastru şi carte funciară.

9. ***Ordinul nr. 533/2016 privind aprobarea Specificaţiilor tehnice de realizare a lucrărilor sistematice de cadastru în vederea înscrierii imobilelor în cartea funciară.

10. Ortelecan M, Sălăgean T, Pop N, Ficior D, Deak J, Luput I 2016 - Aspects Regarding the Establishment of the Scale Coefficient in the Case of Distances Measurements in a Geodetic Network, Bulletin UASVM Horticulture 73(2): 315-320.

11. Ortelecan, M., Pop, I., Joldiș, R., Budiu, V., & Sălăgean, T. 2013 - Aspects regarding the implementation of the support network in cojocna didactic base UASVM. Bulletin of University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca. Horticulture, 70(2), 486-493.

12. Palamariu, M., Padure, I., Ortelecan M., 2002 - Cartografie şi cartometrie, Editura Aeternitas, Alba Iulia.

13. Petrescu-Mag, R. M., Petrescu, D. C., & Petrescu-Mag, I. V., 2017 - Whereto land fragmentation–land grabbing in Romania? The place of negotiation in reaching win–win community-based solutions. Land Use Policy, 64, 174-185.

14. Pop N, Pop S, Miluț M., 2020 - Realization of the topo-cadastral works necessary for the registration of a cadastral sector, belonging to Cătina commune, Cluj county in systematic cadastre, Annals of the University of Craiova - Agriculture, Montanology, Cadastre Series, ed. Universitaria, Craiova, România, ISSN 1841-8317.

15. Popescu, G., Popescu, C. A., Herbei, M., & Dragomir, L., 2016 - The Study Related to the Execution of a Triangulation Network in the Dump of Rovinari Pit, in Order to be Restored to the Economic Circuit. Bulletin UASVM Horticulture, 73, 2; 327-332

16. Ulariu, C. C., 2021 - CONCESSION, A WAY OF MANAGING PUBLIC DOMAIN. LESIJ-Lex ET Scientia International Journal, 1(XXVIII), 87-111.