

**CONTRIBUTION CONCERNING THE RURAL DEVELOPMENT  
OF THE SUBURBS OF TIMISOARA (TIMIS COUNTY)  
WITH A VIEW TO EUROPEAN UNION INTEGRATION**

**CONTRIBUȚII PRIVIND DEZVOLTAREA RURALĂ  
DIN ZONA SUBURBANĂ A MUNICIPIULUI TIMIȘOARA (JUD. TIMIS)  
PENTRU INTEGRAREA ÎN UNIUNEA EUROPEANĂ**

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**Abstract.** The paper presents the topographic measurements for the tabulation of a 16 ha pasture outside Giarmata, Timis County. The measurements were made for definitively removing the plot from the agricultural circuit and giving it another destination in the field of road construction, and also for planning a future recreation base there. The work was done with the help of modern devices (Leica TCR 705), and the data processing was performed with the local projection system, with stereographic projection type 1970.

**Rezumat.** Aceasta lucrare prezintă măsurătorile topografice pentru intabulare a 16 ha pășune în afara localității Giarmata din județul Timiș. Măsurătorile au fost făcute pentru a scoate definitiv parcela din circuitul agricol și a-i da o altă destinație în vederea construcției de drumuri și proiectarea unei viitoare baze de recreare. Lucrarea a fost făcută cu ajutorul aparatului moderne (Leica TCR 705) iar procesarea datelor a fost făcută în sistem de proiecție Stereo 1970.

**Key words:** cadastral work, agricultural circuit, plot dismembering, Leica TCR 705 total station  
**Cuvinte cheie:** lucru cadastral, circuit agricol, plan de dezmembrare, stație totală Leica TCR 705

### **MATERIAL AND METHOD**

Land measurement has evolved together with society itself; today this is a science based on mathematics, physics and astronomy. Mathematics elaborates and provides the methods for data processing. The tools for an accurate measurement of angles and distances are built using the principles of physics, while astronomy supplies the data necessary for setting out the networks of supporting points, for the purpose of finding the shape and size of the Earth.

Accurate representation on plans and maps of various objects and types of land requires knowledge in geography, geology, geomorphology and cartography.

Geography gives a *correct* treatment of the natural elements of land (relief, vegetation, soils, rivers, lakes, etc), of the results of human activity (agriculture, settlements, communication networks etc) as well as of the laws governing them.

For the graphic realization of plans and maps we need to have notions of topographic drafting, as the various objects and shapes on the land are represented on plans and maps through orthogonal projection on the horizontal projection plan of points, lines and limits on the field. These schematic drawings, to which we add conventional topographic signs, ease the understanding and reading of plans and maps.

The stages of topographical mapping are well known. Still, we will quickly mention them: *The basis is represented by the supporting geodetic network, constituted by the points of the national geodetic network; Determining the levelling network, constituted by the polygonal*

course stations; *Actually surveying these details*, this means determining the position of their defining points.

When total stations are used, the angles and distance are obtained directly after introducing the data regarding the height of the device and the prism. Using a special menu of coordinates becomes more and more profitable, because:

- *values x, y and z* of the points are obtained directly in the field by successive measurements; *control* is made directly, on the last sight;
- *mistakes* are generally excluded, as the measurements and recordings are made automatically, on the command given by the operator and confirmed by the device;
- *measurement errors*, which are practically limited to those of centring the device and the prism, materialize (when they appear) by not closing in on the coordinates of the final point.

*The actual reporting*, as the final operation, is performed automatically and safely, with the help of the corresponding equipment.

*The finishing off of the plan* presupposes transferring the lines of levels from the oleate to the minute, registering the toponymy, marking out of the boundaries, completing the basic data (scale, date of recording, the firm and authorized operator, etc).

*The accuracy of the survey* must be assured; the maximum errors admitted in determining the coordinates of the points on the contour of objects  $\pm 15$  cm *in the case of the land under study*.

## RESULTS AND DISCUSSION

Following the related synthesis, the practical part of the work consist in the survey works together with technical documentation use to register of a cadastral parcel having a surface of 16 hectares situated on GIARMATA village territory, TIMIS county and definitive modify the category of land destination. This data are to be further use in created a investment plan and to build a pleasure site on Beregsău river bank situated at 8 km. distance from Timisoara city (Figure1).

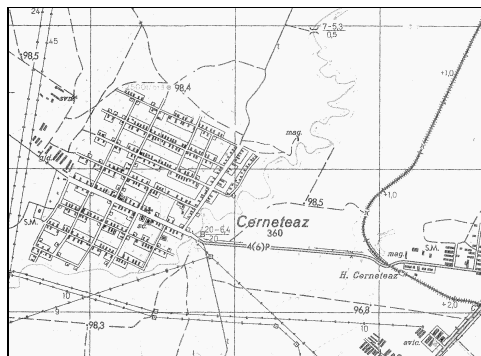


Figure 1. Frame plan scale 1:20000

The plot which is the subject of the present documentation is in the propriety of Giarmata village being part of the village pasture and having a surface of 16.3135 hectares. The plot is situated in the East part of the Cerneteaz locality, on West side of Beregsău river,

South side of communal road DC 58 which connect Giarmata village with Cerneteaz and it has on the North side the natural river Hpr 160.

The purpose of the paper consist in the presentation of the necessary works to complete all the necessary survey works due to the register without finality in Land Register and later on to change the land destination category (Figure 2).

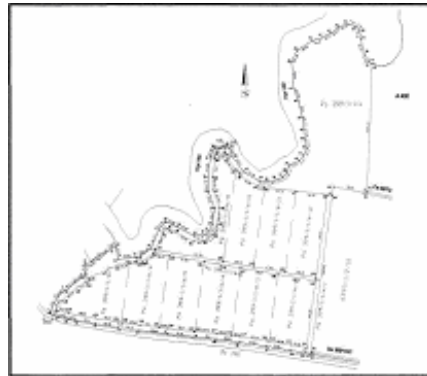


Figure 2. Map of the future pasture

The topographic survey has been made using the total station Leica TCR 705. The points coordinates were calculate for the Stereographic Projection System STEREO – 70. Prior the measurements, using the Free Station menu of the total station, the coordinates of station point (1) were computed. The points (having the known coordinates) from the national geodetic network use for the Free Station were Cornesti Church, Giarmata Nord, Airport Water Tower and Dumbravita Church – situate in the West side of the area.

The download and primary step of data processing according to the survey measurements has been effectuate on a computer by using the dedicated software such as Leica Survey Office, Notepad, Excel, Word, Autodesk 2004, Mapsys 4.4.

The situation plans at 1:2500 scale were made and for plans with level curves the 1:1000 scale was adopted (Figure 3).

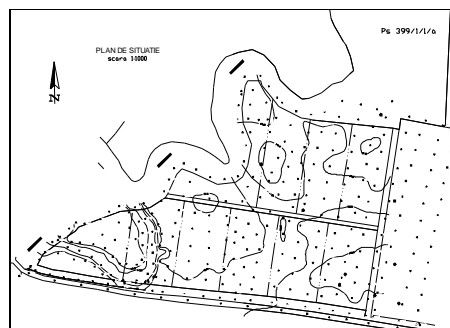


Figure 3. Lay-out plan scale 1:1000

## CONCLUSIONS

We must emphasize that due to the modern technologies, the survey works are executed by simplified technical procedures, procedures which are not requesting a supplementary operators' effort, leading us to a short execution period.

In the last years, topogeodetical methods practically has replaced all topographical classic survey, due to the fact that besides the planimetric quantitative survey, of high efficiency, it allows also an electronically assessment of effectuated works.

However, in future, the outstanding performance of the global positioning systems, will step forward towards to obtain results in a much better accuracy, quickly as time and cheaper as costs. Geographical Information Systems will have all the benefits of this evolution, the highest precision of SSP – permanent probes surfaces, from the inventory arrangements works.

The wide scale expanding of the computers, has determined, among other things, a new shape of geographical representation which is the *digital map*, that consists in the common shape accepted by the computer and further use in various fields of technical, economical social and scientific activities.

Data acquired with GPS devices lead to computed coordinates into a universal system of coordinates (such as U.T.M), in our country for instance, the Stereographic Projection System STEREO – 70 is used. Considering this, to integrate the data achieved by GPS systems, lot of coordinates transformation are necessary.

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