



 Research Article

IMPROVING THE ORGANIZATION OF TOPOGRAPHIC AND GEODETIC WORKS IN THE CADASTRAL SERVICE

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ABSTRACT

As socio-economic factors developed, the land cadastre became fiscal in nature and served mainly tax purposes. Land cadastre is constantly evolving and improving as a special calculation and evaluation phenomenon that occurred at a certain stage of development of society, and first of all, there were changes in the methods and techniques of study, accounting, evaluation, classification of land types and qualities. Geodetic works play an important role in the cadastral service. Their composition depends on the level of cadastre management and its automation.

KEYWORDS

Land plot, assessment, topographic and geodetic works, land management and boundary design, economic significance, location, environmental conditions, the value of the real estate.

INTRODUCTION

At present, the organization of geodetic works in the cadastral service is as follows.

Preparatory work. The following materials will be analyzed and collected during the preparatory work:

- Land management project;
- Administrative decision on the allocation of land;
- Agreement on lease or purchase of land;
- An extract from the register of land;
- Topographic plan or boundary drawing of the land plot;
- Diagrams and lists of coordinate points of state or local geodetic types;
- Land use certificate.

Field inspections of base points of geodetic networks. This is done to select the most convenient technology for conducting geodetic works to verify that the work points are maintained.

Development of a technical project. Checking the safety of geodetic work points and ensuring the selection of the most suitable technology for geodetic work to include in the pre-designed technical project the cost of the text part, graphic materials and costs.

Cadastral surveys. Depending on the assignment of the cadastre, as in the topography, these scales are carried out in these methods and with precision. Basically, the 1: 500 scale is widely

used, the 1: 2000 scale is widely used, and the 1: 10000 and smaller scales are the analysis-survey scales. In addition to cadastral maps and plans, land plots are given hereditary lands, boundaries of agricultural and other lands, cadastral numbers and name of the land plot, exploitation (records of land use category and other cadastral data). Cadastral maps and plans may not represent the topography of the site.

Coordinating and setting the boundaries of the land plot on site. At the points of geodetic substantiation of the boundaries of land plots, the characteristic points are removed in place according to the coordinates and fixed with special turning marks. If the boundaries are somehow pre-fixed, then the coordinates of the fixed points are determined. Reconciliation of established boundaries is carried out in the presence of representatives of public authorities, landowners or land users and they're, joint landowners [1-3].

Determining the area of land plots. The area of land plots is calculated mainly by analytical method on the coordinates of turning points. In some cases, cartographic materials are used.

Drawings of land boundaries. The boundary drawing is drawn on the ground in the main cadastral plan (or large scale) and drawn upon the basis of the results of the agreement of the boundaries.



The results of cadastral works are subject to mandatory control of fieldwork, as possible errors and disputes in the process of execution, which arise during the survey, are eliminated. In addition, compliance with the requirements of the relevant instructions and terms of reference in the conduct of topographic and geodetic works. The data obtained as a result of the work, that is, its data, are transferred to special receivers, and maps and plans are illuminated [4-7].

Maintaining cadastral database. Text and graphical data are created to manage and systematize large objects. Its presence only implies the storage of information. Provides fast delivery to consumers as well. In addition to the above work, the use of surveyors, and the assessment of the price and condition of the land are also involved in resolving disputes that arise.

MATERIALS AND METHODS

Determining the area of land plots is also one of the important geodetic works for land cadastre purposes. Depending on the economic importance of the land plot, the availability of planned topographic materials depends on the accuracy of the topographic conditions of the site required [8-11]. The following methods are used to determine the area:

- Analytical-field is calculated based on the results of measurement of the line on the ground, based on the results of the measurement of lines and angles on the ground or the results of their functions (coordinate ends of shapes);

- Calculated according to the coordinates of the graph area or plan;
- Determined using special tools (planimeters) or equipment (pallets) in the mechanical field.

In some cases, these methods are used in combination, for example, part of the value of linear quantities is calculated from the measurements on the ground, and part of the plan. The area can also be determined by a digital program of the location in a special program on the computer. The formulas of geometry, trigonometry and analytical geometry are used to determine the area in the analytical method [12-14].

In determining the area of small plots (areas occupied by bumps, yards, ploughed fields, crop fields) they are divided into simple geometric shapes, more triangles, rectangles, and in some cases trapezoids. Many options can be adopted when dividing a plot into simple shapes, but the accuracy of area detection will not be the same in different options. When calculating the area of a triangle graphically, the accuracy is higher than that of a right triangle and other shapes. It is advisable to use the mechanical method on broken line sections. Areas can be identified on straight-line and curved palettes. Determining the area on the plan using graphical and mechanical methods (planimeters and pallets) will take into account the deformation of the paper (plan). Requirements for the accuracy of determining the area of land plots depend on many factors: economic importance, location, environmental conditions, and the value of the property.



All these and other possible factors affect the normative value of the land, which is mainly the data provided for the calculation of the accuracy of determining the area of land and plots [11-16]. The required accuracy can be achieved by choosing the correct method of determining the plot area. The highest accuracy can be achieved by the analytical method of field identification. In this method, the plot area is determined on the spot, based on the results of measurements, and the error in determining the area depends on the errors from these measurements. Geodetic work on the nature of land use boundaries is carried out similarly to planning work on the nature of buildings, structures and other objects of human life.

The basis of geodetic works in the project. The basic objects of design in land management are districts, cities, urban-type settlements, rural settlements, separate land ownership boundaries, gardens, orchards and other land plots, ie objects with the status of creating an independent territory. Depending on the administrative decision, depending on the value of the farm and the area occupied, land surveying and site design are carried out based on geodetic measurements on the ground or using digital models (electronic maps) using topographic materials of different scales. Land survey project data geodetic design is performed. It includes the most convenient ways to move project points to the site with analytical preparation data, i.e., to provide the required accuracy of their location and to create planning drawings.

The coordinates of the points to be taken into account are calculated in the state or local coordinate system in analytical preparation. When necessary, the coordinates are recalculated from the local system to the state system and vice versa. However, in any case, the coordinates from which the points are derived must be calculated in a system in which the coordinates of the points for which the geodetic substantiation is given. All types of geodetic devices can serve as a given geodetic substantiation. Let them meet the requirements for naturalization and definition of land-use boundaries.

The following can be used: Triangulation, trilateration line angle type, polygonometry, satellite detection and in some cases theodolite paths. The naturalization of land-use boundary points from the given substantiation points is carried out by means of known planning methods: angular, linear, stvor and stvor-linear intersections, theodolite path by polar and right-angled or perpendicular method and other geodetic devices. Points issued in nature. As a rule, it is reinforced with some characters in place. Such signs may serve as well-defined contour points, for example, the corners of a building or capital wall in the viewed territories, the intersection axes of roads, the corner points of gardens and other objects on which points are selected. In such cases, the coordinates of these points are determined from appropriate geodetic measurements. The obtained data are transferred to the cadastral plans and entered into the cadastral bank data. When necessary, for example, when issuing an act of land ownership,

a drawing of the boundary of the land plot is made. The accuracy of geodetic data depends on the reliability of cadastral data.

CONCLUSION

In all land-related operations (establishment of property rights, purchase, gift, etc.), the area of land is of great importance, in which its required accuracy is determined by the nature of the assigned accuracy and land-use boundaries. Geodetic substantiation of the coordinates of the boundary point of land ownership, in determining the points of determination, has to perform difficult calculations, that is, taking into account all the errors of geodetic devices and the relationships between them. However, in such cases, the data provided for the design calculations can accept errors twice less than the errors of the next devices.

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