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Real Estate Boundaries on Maps for Projects**

1. Introduction

An update detailed map for projects is applied to get permission for building structure. Such map is attached to architect – building project. A project of use of parcel or field of investment is created on it.

Map which is not update loses its validity and can not be used for project. It may occur after passing a defined period of time or in the moment, if performed work has been broaden with new objects which must be taken into account. It means that they must be inserted on map. Necessity of updating map in case on new survey is out of discussion. Yet, if we consider time of validity of map, the problem is controlled by inner orders and regulations of architectonic-building administration existing in Polish districts¹. Because of the fact that regulations are not consistent to each other, a clerk of the district office may be in doubt if such map, devoted for project has still validity or not, after some months or even some years after the time when map had been made. In such a case it will be necessary to confirm by licensed person if map is in consistency with the field situation or to perform surveys for making a new map, having new objects.

Number of performed investments and the fact that maps for projects are not update faster and faster causes, that such maps are made more often in last years. Such works are also willingly performed by surveyors because they seem to be easy and simply in comparison to rest surveying works. Additionally maps for projects are performed by surveyors having suitable licenses. In 1984, Minister of Administration and Spatial Economy released order about the case of surveying and mapping services made by individual units of management [5]. It was determined in the order that it is necessary to have licence by surveyor for preparing maps for projects.

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** The work has been made within Geomatics Department researches no 11.11.150.006

¹ There are some 380 district in Poland called "powiat". The head of such district is "starosta".

Although demands concerning licenses had changed through years, similarly as ranges of licenses themselves, yet surveyors having authorizations for performing detailed maps are the most numerous group among all licensed surveyors. According to information inserted on General Surveyor Office Internet web page [11], within last 25 years such licenses were granted to about 18 thousands surveyors.

Moreover, numerous social and economic changes which took place in 1989 and then after entering Poland to European Community caused, that ownership right become extremely important. Thus, owners of real estate want to know where the range of property is. It is especially visible during investment process, when projected and next built up structures can not overpass real estate boundaries.

Big number of surveyors, authorized for making maps for project an the fact that it is one of the most frequently performed surveying work is the reason that one can recognize problem of boundaries on maps for project as one of the most important one for contemporary surveyors, especially from the point of view of ownership right, playing crucial role nowadays.

2. General Rules of Working out Maps for Projects

The legal basis for working out maps for projects is Order of Ministry of Spatial Economy and Building Structure from 1995 year – in case of kinds and range of surveying works applied obligatory in building structure [6].

Map for project becomes usually through updating an existing a piece of fundamental map. Updating is a result of field survey, performed by licensed surveyor. Updating concerns changes of full contents of fundamental map including cadastral objects.

The contents of the map for project, besides objects being the part of fundamental map, are also other object mentioned in order [6]. They are first of all lines delimitating lands of different use, lines of development of building grounds, axes of roads and other objects necessary for client's demands.

Map for project comprises area of investment with the strip of land surrounding this area of 30 m width. Of course, the range of map can be broader, according to client's wish. Map for project is also used if one applies for administrative decision of buildings conditions. Such map comprises so called "analysed area" usually greater than which is described in the Act about spatial planning [8] and orders to this act. The whole area should be updated during surveys.

According to suggestion given by Major Office of Geodesy and Cartography [11], orders of works by preparing maps for projects should be as follows:

- updating fundamental map by new object including cadastral objects,
- preparing copy of fundamental map,
- inserting objects of map for project.

3. Cadastral Objects on Maps for Projects

On the basis of surveying and mapping law [9] fundamental map contains, among others, cadastral data and spatial data concerning geographical objects. Because of the fact that map for project includes, as it has been mentioned earlier, objects of fundamental map, thus these objects should also be inserted on it.

Detailed list of cadastral data has been determined in order of Minister of regional Development and Buildings – in case of cadastre [6]. The order clearly determines what cadastral data are. They are also data concerning land use and classes, their boundaries and descriptions.

Map for project should contain all cadastral data concerning not only worked out area but also area outside boundaries of projected investment.

Inserting on fundamental map and then on map for project updated cadastral data may be done at that time, when these data had been revealed in cadastral file, kept in district surveying documentation centre². Surveying centre demands from surveyor to deliver to centre suitable data in order to update cadastral file, and then fundamental map. It is a very reasonable demand. Inserted changes to cadastral file should be made in accordance with [6]. Unfortunately many cadastral offices will demand from owner of parcel a suitable submit. Yet, it may be, especially to the relation to adjoining parcels, sometimes difficult.

One should moreover emphasize, that according to [6], surveying works accepted by documentation centre, having list of cadastral changes, are the basis for updating of cadastral file. Cadastral office decides what shape and range should have updating process. It is not the subject of surveyor completing surveying works.

Surveys of land use for parcel should show factual status on the ground, exclusively.

4. Boundaries on Maps for Projects

There is nowadays in cadastre the term concerning legal boundaries or boundaries according to factual status. The former are boundaries become during such processes as:

- real estate delimitation,
- real estate subdivision (new boundaries),
- real estate assemblages (new boundaries),
- real estate assemblages and land exchanging (new boundaries),
- court cases concerning ownership,
- other processes, for example real estate expropriation.

Common feature these processes is preparing suitable surveying file which must be then accepted by surveying documentation centre. There is also attached a legal document, accepting boundaries determined during surveys at presence of parties in the field. Legal document is mostly decision of mayor or court verdict. Afterwards legal boundaries become.

One should remark that in case of delimitation boundaries exist but they are mostly the subject of litigation. In case of other processes they are new boundaries. Documentation worked out while these surveys has coordinates of corners of boundaries. Such survey should be performed with accuracy of 0.10 m in the relation to the III class order. Such demands fulfil also details of the I group of accuracy, on the basis of [3]. According to suggestions of General Surveyor, in turn, accuracy of relocation such boundaries should not be less than 0.15 m.

The second type of real estate boundaries are boundaries according to factual status in the field. These boundaries become in seventies of XX century during establishing cadastre in Poland. Excluding few exceptions (some territories of former Prussian cadastre, small territories of central Poland, where boundaries surveys were followed by their determination in the field), these boundaries characterize of relatively little accuracy resulting usually from cadastral map scale. In some regions of southern Poland the only document confirming the course of boundary is cadastral map existing in analogue shape. Accuracy of determination of boundary corner on the basis of such map, one can present by formula:

$$m_p = \sqrt{m_{wk}^2 + m_t^2 + m_w^2},$$

where:

m_p – error of determination of point location,

m_{wk} – error of mapping of point,

m_t – error of map transformation,

m_w – error of boundary points vectorization.

Moreover one should add an error of setting out boundary point in the field. Error of mapping is really rather difficult for estimation. Transformation error is usually determined by thickness of mapped boundary line (0.18 mm in map scale 1:500, 0.13 mm for rest scales [4]), multiplied by denominator of scale of the map. To simplify problem this value is assumed to be as 0.1 mm multiplied by denominator of scale of the map. Vectorization error, as it has been proved in [1] one can not take into account, because it does usually not exceed 0.33 value of transformation error. Thus, for map in scale 1:2000 it is 0.20 m at least. Taking additionally error of mapping and repeated setting out in the field, this value is usually given as three times more – in this case 0.6 m.

One should remark here, that if setting out process was performed not on the basis of project map in digital shape but in analogue one, this error can be more considering the following processes of scanning and vectorization map for project.

Presented short analysis is essential because of the fact, that surveyor preparing map for project gives an information that boundaries on map “have been shown on the basis of cadastral map”. It is generally not admissible but in case of location of building, with parallel walls to boundaries at minimum 4 m distance from boundary (walls with windows) or at 3 m (walls without windows) can cause incorrectness disturbances during building up process and make problems with accepting building for use. Such situations can easy cause boundary dispute between parties and as a consequence – litigation.

Location of building at minimum distance from parcel boundaries causes, that setting out survey must be necessary performed with much more accuracy even though boundaries are legal ones. By boundaries according to factual status, even accurate setting out process does not guarantee that location of object will be consistent with decision of permission of building. In this case, errors of location of boundary corners is so big, that determination of location of building is really not possible.

In such cases the only way out is determination of boundaries through delimitation or relocation process before map for project is made. Unfortunately it prolongs significantly process of performing such a map and also increase costs of works.

5. Conclusions

On the basis of researches and discussion one can draw the following conclusions:

- Map for project should contain updated cadastral objects for the whole worked out area. Inserting them on map for project must be followed by changing cadastral file in surveying documentation centre.
- On the map for project can be also mapped real estate boundaries according to factual status or legal boundaries. The latter are the most recommended because they guarantee that projected object does not exceed the line expressing the range of ownership.
- In case of expected litigation between owners the only way out is to perform delimitation or relocation of boundaries. It must be done earlier than the map for project has been made.

References

- [1] Hanus P.: *Ocena przydatności dokumentacji byłego katastru austriackiego dla potrzeb prac geodezyjnych*. AGH, Kraków (Ph.D. thesis, unpubl.).
- [2] Hycner R., Hanus P.: *Wykonawstwo geodezyjne*. Wydawnictwo „Gall”, Katowice 2007.
- [3] Instrukcja Techniczna G-4: *Pomiary sytuacyjne i wysokościowe*. 3rd Ed. Warszawa 1988.
- [4] Instrukcja techniczna K1: *Mapa zasadnicza*. Warszawa 1998.
- [5] *Rozporządzenie Ministra Administracji i Gospodarki Przestrzennej z dnia 16 stycznia 1984 r. w sprawie świadczenia usług geodezyjnych i kartograficznych przez jednostki gospodarki nieuspołecznionej*. Dz. U. z 1984 r. Nr 10, poz. 42.
- [6] *Rozporządzenie Ministra Gospodarki Przestrzennej i Budownictwa z dn. 21 lutego 1995 r. w sprawie rodzaju i zakresu opracowań geodezyjno-kartograficznych oraz czynności geodezyjnych obowiązujących w budownictwie*. Dz. U. z 1995 r. Nr 25, poz. 133.
- [7] *Rozporządzenie Ministra Rozwoju Regionalnego i Budownictwa z dn. 29 marca 2001 r. w sprawie ewidencji gruntów i budynków*. Dz. U. z 2001 r. Nr 38, poz. 454.
- [8] *Ustawa z dnia 27 marca 2003 r. o planowaniu i zagospodarowaniu przestrzennym*. Dz. U. z 2003 r. Nr 80, poz. 717.
- [9] *Ustawa z dnia 17 maja 1989 r. Prawo geodezyjne i kartograficzne*. Dz. U. z 1989 r. Nr 30, poz. 163, z późn. zm.
- [10] *Ustawa z dnia 7 lipca 1994 r. Prawo budowlane*. Dz. U. z 1994 r. Nr 89, poz. 414 z późn. zm.
- [11] www.gugik.gov.pl.