

Analysis of land management expertise in order to determine the location of the boundaries of a residential building and land plot

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Abstract. The article discusses the issue related to determining the real location of a residential building using available archival documents. The location of the land plot on which the capital structure specified in the documents should be located is also determined. A study was conducted using remote sensing data taken from various years and presented to determine the location of a residential building.

1 Introduction

One of the main information, according to paragraph 2 of Article 8 of Federal Law No. 218-FZ, with the help of which a land plot can be defined as individual, is a description of the location of the boundaries of the object - the land plot. In order to be the unconditional owner of a plot, you need to know exactly where its boundaries are - these are the lines that define the boundaries of the land plot. They are installed on the ground (in situ) and recorded in documents of the established form (plans, boundary drawings) [1].

As a result, in practical forensic activity the same methods are used as in scientific research, if their use does not contradict the requirements of legality and ethical standards, that is, it meets the principle of admissibility in its general form. Otherwise, the forensic expert is practically unlimited in the choice of research tools and methods, subject to the general rules of working with evidence [2].

Boundary examination is an activity carried out by qualified experts in the field of land management to examine documents for a land plot, analyze the essential characteristics of a land plot (area, percentage of development, cartographic survey), as well as the reasons for imposing boundaries and ways to eliminate them. A land examination can be carried out at your own discretion (by contacting cadastral engineers) in order to determine the actual location of the boundaries of your plot before going to court or during legal proceedings [3].

In the context of the development of a multi-structure economy and actively developing land and property relations, technical knowledge is of particular relevance, especially when considering court cases. In addition, this trend covers expertise appointed by court order to

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consider issues requiring special knowledge in various fields of science, technology, art, and craft [4].

One of these issues is the correspondence of the information of the Unified State Register of Real Estate about the location of the boundaries of a land plot with its actual location, the actual boundaries existing on the ground, fixed using natural objects or objects of artificial origin (fences, walls of buildings) according to actual land use [5].

Such characteristics of land plots as the location of boundaries, area, dimensions, configuration, determined for the preparation of an expert opinion, can be obtained with sufficient accuracy only by carrying out a complex of engineering and geodetic work. This determines the application of the principles and methods of applied geodesy in such a field of activity as forensic examinations [6].

The essence of a forensic land survey is to help the court obtain answers to questions experimentally. Therefore, at the final stage of the examination, precise provisions (conclusions) regarding violations on one side or another regarding land legislation must be formulated [7].

The result of a forensic land management examination is an expert's conclusion, which contains a detailed description of the experiment performed, formulated and substantiated conclusions (answers) on the questions posed by the court.

As a result of the study, it is necessary to determine the actual location and coordinates of a residential building with cadastral number 26:11:021003:72 and a land plot from the lands of settlements for the construction of an individual residential building with cadastral number 26:11:021003:35, with an area of 1000 square meters. address Balki farm, 8/2.

2 Analysis of land plot research

In accordance with the information of the Unified State Register of Real Estate (USRN) - The object of unfinished construction - a residential building with cadastral number 26:11:021003:72 at the address: Balki village, 8/2 is registered without border coordinates (terrain boundaries are not established in coordinates). The main characteristic of the object "building area" is indicated in the amount of 52 square meters.

A land plot with cadastral number 26:11:021003:35, with an area of 1000 square meters, the location is established relative to a landmark located within the boundaries of the site, the landmark address is Balki Farm, 8/2, in accordance with the information of the Unified State Register of Real Estate, has established (clarified) boundaries and area. Category of land: Land of settlements, permitted use: For the construction of an individual residential building. In fact, on the ground, the area with the indicated coordinates is located in the central part of x. Beams on the bank of the flowing reservoir of the Kizilovka River.

Table 1. Description of structural elements.

Name of the structural element	Description of the structural element
Foundations	pilobute
a) walls and their exterior decoration	pilobute

The archival documents contain a technical passport for an unfinished construction project - a residential building at address x. Beams, 8/2 as of 01/17/2008. Cadastral number in technical. The passport indicates: 26:11:02103:0035: 25294/167:1000/A. In accordance with the data in the specified technical passport, there is an unfinished construction site in the area at the specified address. A one-story residential building. In Section 2 The

composition of the object is indicated: “Object of unfinished construction - residential building”, the wall material is “pilobut”.

Thus, based on the data from the technical passport - on the ground at the time of preparation of the technical passport on January 17, 2008 at address x. Beams, 8/2 there is a foundation and partially external walls made of sawn rubble.

In the graphic part of those. The passport indicates the size of the object, its location relative to the boundaries of the site, as well as relative to the “road” object on the ground.

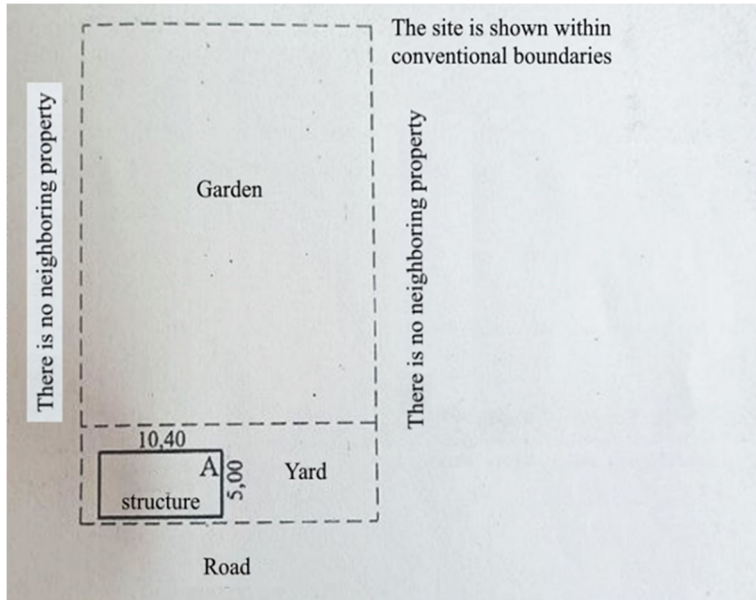


Fig. 1. Technical passport dated January 17, 2008 for the facility at x. Beams, 8/2.

At the same time, the technical passport does not contain coordinates, geodata, location relative to the cardinal directions, or indication of the addresses of neighboring plots, which would make it possible to unambiguously establish the boundaries of a land plot on the ground. Thus, determine the location of the boundaries of the property with cadastral number 26:11:021003:72 at the address: Stavropol Territory, Shpakovsky district, x. Beams, 8/2 is possible only by indirect signs - the size of the building, the material of the walls and foundation, the presence of a road.

During an on-site survey, it was not possible to detect the location of the specified property (unfinished construction) measuring 10.4 by 5.0 within the boundaries of a land plot with cadastral number 26:11:021003:35 at the time of the survey. Within the boundaries of the land plot with cadastral number 26:11:021003:35 at the time of the on-site survey, the specified property or its traces (remains of the foundation, walls, traces of a pit or other visual signs) are absent.

The existing real estate property (gatehouse) does not correspond to the technical passport data and, in accordance with the instructions of the parties and satellite imagery data, was built much later than 2008 (in 2022).

To establish the possible presence of a property in the study area with the characteristics specified in the 2008 technical passport, a study of the situation in the area where the building was located on different dates was carried out using the photogrammetric method based on satellite imagery from open sources.

Based on the results of the study of satellite images, we can conclude that there are no signs of the presence of buildings, foundations, or traces of construction work on the territory

of the land plot with cadastral number 26:11:021003:35 at the coordinates specified in the Unified State Register of Real Estate, as well as in the adjacent territory. 2004 to April 2012. Also, during this period, there is no road in the area along which the land plot with cadastral number 26:11:021003:35 is located at the coordinates indicated in the Unified State Register of Real Estate.

That is, the Technical passport dated January 17, 2008 for the unfinished construction project at address x. Balki, 8/2 could not relate to the territory of the land plot with cadastral number 26:11:021003:35 in the coordinates at which the plot is currently registered in the Unified State Register of Real Estate. An object of unfinished construction - a foundation and walls made of sawn rubble measuring 10.4 by 5.0 on the territory of a land plot with cadastral number 26:11:021003:35 in the coordinates at which the site is registered in the Unified State Register of Real Estate, was currently absent and is absent (in the period from 2004 to present time)



Fig. 2. Study of the situation in the area where the land plot with cadastral number 26:11:021003:35 is located on different dates using the photogrammetric method based on satellite image data for 2004.

The image taken in March 2004 shows characteristic objects for visual reference: a fork in the road, a coastline. The territory of the site cadastral number 26:11:021003:35 and the adjacent territory does not contain signs of the presence of buildings, foundations, or traces of construction work. There is also no road in the area, along which at the time of the survey the boundaries of the site 26:11:021003:35 are located.



Fig. 3. Study of the situation in the area where the land plot with cadastral number 26:11:021003:35 is located on different dates using the photogrammetric method based on satellite image data for 2009.

Similar to the previous image, the territory of site cadastral number 26:11:021003:35 and the adjacent territory do not contain signs of the presence of buildings, foundations, or traces of construction work. There is also no road in the area, along which at the time of the survey the boundaries of the site 26:11:021003:35 are located.



Fig. 4. Study of the situation in the area where the land plot with cadastral number 26:11:021003:35 is located on different dates using the photogrammetric method based on satellite imagery for 2012.

The image taken in April 2012 showed that the territory of site cadastral number 26:11:021003:35 and the adjacent territory also do not contain signs of the presence of buildings, foundations, or traces of construction work. There is also no road in the area, along which at the time of the survey the boundaries of the site 26:11:021003:35 are located.



Fig. 5. Study of the situation in the area where the land plot with cadastral number 26:11:021003:35 is located on different dates using the photogrammetric method based on satellite imagery for 2015.

According to remote sensing data taken for July 2015, a road appears on the ground along which the boundaries of the land plot cadastral number 26:11:021003:35 are located at the time of the survey. The territory of the site cadastral number 26:11:021003:35 and the adjacent territory does not contain signs of the presence of buildings, foundations, or traces of construction work.



Fig. 6. Study of the situation in the area where the land plot with cadastral number 26:11:021003:35 is located for different dates using the photogrammetric method based on satellite imagery for 2022.

From the images taken in December 2022, it is clear that the boundaries of the cadastral number 26:11:021003:35 section and other sections are aligned with the image. There are no signs of the presence of the object specified in the 2008 technical passport on the site.

In order to determine the possible location of the building and land plot at address x. Balki, 8/2, cadastral registration data (USRN) of the territory of the x. Beams. It was revealed that the road along which the land plot with cadastral number 26:11:021003:35 is located at the time of the survey was registered in the Unified State Register of Real Estate as a Structure with cadastral number 26:11:000000:6908.

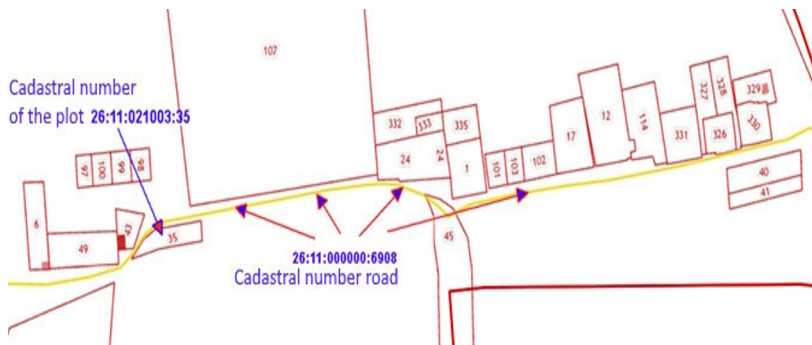


Fig. 7. Location of the road with cadastral number 26:11:000000:6908.

At the same time, to the east of the studied land plot with cadastral number 26:11:021003:35 there is a land plot with cadastral number 26:11:021003:40 with an address similar to the studied plot x. Beams, 8.

The distance between sections 26:11:021003:35 (H. Balki, 8/2) and 26:11:021003:40 (H. Balki, 8) is 544 meters in a straight line. Such a distance between the boundaries of land plots that have adjacent addresses (No. 8 and No. 8/2) does not correspond to the usual addressing order and suggests an error in the location of the plot with cadastral number 26:11:021003:35. Following the usual order of addressing, the land plot with cadastral number with cadastral number 26:11:021003:35 (H. Balki, 8/2) should be located adjacent to the plot 26:11:021003:40 (H. Balki, 8).

When studying the situation in the area of site 26:11:021003:40 (Balki village, 8) for using the photogrammetric method based on satellite imagery, a real estate object was discovered, the size of the image corresponding to the characteristics specified in the

Technical Data Sheet of 2008 and existing on the ground at the time of preparation of technical passports (from 2004 to 2009).



Fig. 8. Location a) building on site 26:11:021003:40 and b) building next door.

In this photo, the remains of the foundation or walls are clearly visible, the road is also visible, the dimensions of the structure next to the site 26:11:021003:40 (H. Balki, 8) correspond to the dimensions specified in the technical passport of the unfinished construction project - a residential building at X. Beams, 8/2 as of 01/17/2008 (10.4 by 5.0 meters).

To establish the location of the actual boundaries of the structure, geodetic measurements were made on the ground using satellite geodetic equipment in RTK mode. The measurements were carried out in the MSK-26 coordinate system from SK-95 zone 1, adopted for cadastral registration.

Thus, the location of the structure with cadastral number 26:11:021003:72 is determined according to the Technical Data Sheet dated January 17, 2008 for the Unfinished Construction Project - a residential building at address x. Balki, 8/2, satellite imagery and on-site survey data



Fig. 9. Location of the structure with cadastral number 26:11:021003:72.

3 Conclusion

Based on the research and the studied case materials, the following conclusions can be drawn.

The only document containing information about the location of the unfinished construction of a residential building with cadastral number 26:11:021003:72 at address x. Balki, 8/2 is a technical passport for an unfinished construction project - a residential building at x. Beams, 8/2 as of 01/17/2008.

It is possible to determine the location of the specified structure from the document by indirect signs: dimensions, location relative to the road, material of the foundation and walls.

An object of unfinished construction - a foundation and walls made of sawn rubble measuring 10.4 by 5.0 on the territory of a land plot with cadastral number 26:11:021003:35 in the coordinates at which the site is registered in the Unified State Register of Real Estate, was currently absent and is absent (in the period from 2004 Until now).

Land plot with cadastral number 26:11:021003:40 having an address adjacent to the one under study: x. Balki, 8 is located at a distance of 544 m from the study site with cadastral number 26:11:021003:35 in the coordinates at which the site is currently registered in the Unified State Register of Real Estate.

In fact, on the ground next to the site with cadastral number 26:11:021003:40 x. Beams, 8 there are remains of a structure made of sawn rubble. This structure has been clearly visible in space photographs since 2004. The dimensions of the structure measured from a satellite image correspond to technical data. passports from 2008. The location of the discovered remains of the sawmill structure does not correspond to the location of the site with cadastral number 26:11:021003:35 in the coordinates at which the site is registered in the Unified State Register of Real Estate. At the same time, the location, shape and size of the discovered remains of a structure made of sawn rubble corresponds to the situational plan, size and shape specified in the technical documents. passport 2008. According to satellite images, the structure existed in this place at the time of preparation. passports from 2008 to address x. Beams 8/2 and is located next to a land plot with cadastral number 26:11:021003:40, having the address x. Beams, 8.

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