

## TO THE ISSUE OF WITHDRAWAL OF INFORMATION FROM CLOSED GEODETIC POINTS

Trevoho I.<sup>1</sup>, Ilkiv E.<sup>2</sup>, Galyarnyk M.<sup>2</sup>

<sup>1</sup>*Lviv Polytechnic National University*

<sup>2</sup>*Ivano-Frankivsk National University of the Oil and Gas*

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### Formulation of the problem

"Closed" (this term, in our opinion, requires discussion of the geodesic community) access to geodetic points due to construction work due to insulation, facing of buildings (buildings), as well as the improvement of pedestrian paths, sidewalks, reconstruction of routes, leads to the impossibility of their use by appointment. Most often "close" wall marks, rappers of leveling lines I and II classes, working centers and wall rappers of polygonomic points.

### Analysis of research and publications related to solving this problem

On the basis of the results of our monitoring, the level of marking and rappers, polygonomic points, the analysis of scientific, normative and technical literature, and familiarization with the results of technical reports on the survey of leveling marks on the leveling lines [1, 2] found that geodetic points are often preserved, but "closed". This is due to construction work and the improvement of pedestrian paths, sidewalks. The "closure" is also affected by changes in the ownership of land, buildings (structures), which leads to legal contradictions. In particular, the location of items in a foreign territory, a land plot, the so-called easement of use by owners of buildings, is another thing, because the wall rampart, the brand is a state property that is in another use) are preserved, but they have lost their full access and, accordingly, they are often impossible to use for purpose.

### Unresolved parts of the general problem

The inadequate attention of the scientific community and departments of the State Geodetic Committee led to the lack of scientific and technical developments regarding this problem. This, in turn, influenced the topographic and geodetic material and technical support for these processes, as well as the legal contradictions in the functioning of the geodetic foundation on the territory of Ukraine and access to the geodetic points.

**Task of the research (problem statement setting)**

To develop scientific and technical, legal proposals and to define ways to solve the geodetic information removal from "closed" level marks, work centers and wall rails of polygonomic points of geodesic networks of condensation.

### Presentation of the main material of the problem

At the present stage, the functioning of the DHM of Ukraine and the geodetic networks of condensation solve the problem of the opening of soil geodetic points by conducting ordinary land excavations in violation of the rights of land users and owners of land plots. The impossibility of removing geodetic information for wall geodetic signals leads to inefficient use of the existing geodetic basis and an increase in the cost of topographic and geodetic work. Examples of "closing" items are shown in Fig. 1, 2, 3, 4.



*Fig.1 "Closure" of the wall rapper with a cladding tile and a pavement of the working center of the polygonal station*



*Fig.2 "Closure" of the working center of the polygonal point by the pavement*



*Fig. 3 "Closure" with profiled wall sheet of wall rails 2 and 3 polygonometric item at destroyed working*



*Fig. 4. "Closure" of the wall rafter with plaster*

The current order [3] in this given situation provides only "identification of the frame and

determination of its condition". Taking into account material and technical provision of such measures [4], we have a situation of a significant number of surviving wall markers, rappers and horizontal marks and somewhat smaller number of working centers of polygonomic points, from which technologically and legally impossible to transfer geodetic information. These items do not fall under the proposed legislative normative documents, terms and technologies for the removal (transmission) of geodetic information from the "closed" wall rampart (mark).

For facing, materials are used to protect the surface of the wall, the foundation from environmental influences [5], Fig. 1, 2, 3, 4, in particular: natural stone, artificial stone, facing brick, facing panels, thermal panels, brick tiles, decorative plaster, siding, ceramosideing, profiled wall sheet. There are various types of materials for insulation of the facades of buildings. They have different physical and chemical properties, as well as thickness. This necessitates the analysis of the physical fields of the localization of the rapper (brand). Physical fields can be natural and artificial, but given that buildings (structures) are sources of abnormal physical fields, it is better to use artificially created physical fields when removing information.

That is, there is a situation in which the resulting graphical representation of the physical field (may be in horizontal or vertical planes) can be translated into geodetic information. It is also necessary to substantiate the accuracy of the removal of geodetic information and to implement the proposed technologies in the practice of topographic and geodetic works.

Most often this situation is typical for wall rappers, grades of leveling (high-rise) networks of classes I and II, whose operation time is hundreds of years. Such rappers, stamps are especially valuable in tourist and geodetic and other respects, in particular for obtaining information about the movements of the earth's crust during the existence of the brand (rapper). During the operation of such rappers and brands, their height increases (decreases) relative to the underlying surface and increases the depth of their location in the wall. This is the result of multiple reconstruction of sidewalks, access roads of the railroad, plaster, facing materials on the walls of buildings (structures). All this makes it impossible to perform a high-level binding to them without violating the requirements of the instruction [6].

This situation is also typical for wall frames and working centers of geodesic networks of condensation, which were created in cities, settlements of Ukraine 40 and more years ago, as shown in Fig. 1, 2, 3, 4.

The peculiarity of this situation is also that the "closed" geodetic points in industrial enterprises, energy facilities, etc. are secondary to the existing

technological processes, while the points of the DGM of Ukraine are primary - to the environment.

At present, there are no scientific and technical developments in Ukraine in the topographic and geodetic field of activity and, accordingly, recommendations to specialists (performers of works) to do in such cases.

In related industries there is a large practical experience in monitoring buildings, structures that use microgeophysics technology [7], which can be partially carried over to solve this problem.

The basis of scientific and technological developments, in our opinion, should include: research refraction of the optical beam for a deeply placed in the wall of a level mark for a small distance; development of a device for the removal of geodetic information at a height of 10 - 30 cm above the surface; justification of the accuracy of measurements and their implementation in the practice of topographic and geodetic works and legal developments in the context of access or use of someone else's property, since the existence and creation of guarded areas of geodetic points provides only for their preservation, rather than use.

### Conclusions

1) It is established that the execution of construction works, in particular, facing and the insulation of buildings (structures), the installation of new ones and the restoration of roads and roads led to the closure of many geodetic points. This is especially noticeable in recent years.

2) To solve this problem, it is proposed to develop appropriate ones

regulatory and technical documents, as well as legal ones regarding the rights of use and access to geodetic points.

3) To solve the technical issues of the problem is proposed

use technologies of microgeophysics.

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I. Trevoho, E. Ilkiv, M. Galyarnyk

It was established that the execution of construction works, in particular, facing and insulation of buildings (structures), the installation of new ones and the restoration of roads and lanes led to the closure of many geodetic points. This problem is compounded by unresolved legal issues of use and ownership in ensuring the functioning of the DWG. To solve this problem it is proposed to use microgeophysics technologies, as well as to develop relevant legal documents.