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SIMPLE AND ACCURATE METHODS OF SYOMKAS PERFORMED IN THE FORMATION OF THE EARTH

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Annotation:
This article provides information on simple and precise methods of S'yomkas performed in land formation, theodalite, tacheometric, menzula, phototeodalite and other methods**.**

Keywords: land formation, syomka, theodalite, tacheometric, menzula, phototeodalite, relief, contour.

INTRODUCTION

In order to draw a plan, map and profile of a certain plot on the surface of the earth, and to perform various geodetic-engineering works, various geodetic measurement works are carried out in this place. Then, according to the results of these measurements, the necessary drawing is drawn at home. Accordingly, geodetic work is divided into 1. field work and 2. camera work. In field work, various quantities are measured on the spot with various measuring instruments and their value is determined. Camera work is also divided into graphic work and computational work. In calculation works, the results measured in the field are checked on the basis of mathematical rules, measurement errors are determined, and then the necessary numerical values are found for drawing a plan, map and profile. In graphic works, the necessary drawings are drawn based on the calculation results.

The sum of geodetic measurement works performed to determine the location of objects (things) in relation to each other on the horizontal and vertical plane is called surveying (planning). In the survey, depending on the requirement, the details or relief of the place or both are required to be fully determined and depicted on paper. Accordingly, the camera is divided into a horizontal camera and a vertical camera. If the projection of the points in the place on the horizontal plane is determined to describe the detail (situation) of the place in the drawing, it is a horizontal drawing. If the height of points on a location is determined relative to or relative to a given surface, it is a vertical survey or elevation survey.

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Determining the relative height between two points on a vertical survey is called leveling [1,2,3].

RESULT AND DISCUSSION

Horizontal and vertical survey performed simultaneously with one tool is called topographic survey. Depending on the type of tool used in performing the above-described types of shooting and the method of execution, shooting is divided into the following.

Theodolite: or protractor; in this, the distance between two points is measured, and the angle between the lines is measured with a theodolite. Based on the results of the survey, a contour plan is drawn that describes a single detail of the place.

Tacheometric surveying: is a topographical survey, in which horizontal and vertical surveying is done simultaneously with a tool called a tacheometer.

Menzula survey: this is also a topographic survey, which is carried out simultaneously with tools called a scale and a compass; During the shooting, camera work (calculation and graphic, i.e. drawing) is also performed.

Phototheodolite surveying: this work is performed using a phototheodolite, a device made by combining a theodolite and a photo camera [4,5].

Aerial photography: in which the location is photographed from the air using a special camera mounted on an aircraft. Depending on the content of the product, aerial photography can be divided into three main categories: a) contour photography, where a single detail of the place is depicted; b) combined survey, in which the details of the place are photographed from the plane, but the relief of the place is photographed from the ground level: c) stereophotogrammetric survey, in which a topographic plan of the place is formed, the relief is described by horizontal lines, which is works are performed using special photogrammetric devices.

Vertical surveying or leveling: this determines the height of points on the ground. Depending on the use of different methods and tools, it is divided into:

a) geometric leveling, in which the difference between the heights of two points on the ground, that is, the relative height, is determined by means of a horizontal line of sight;

b) trigonometric leveling, in which the relative height is determined using trigonometric formulas through distance and vertical angles [6]. This method is used in tacheometric and scale gauges. When the dalnomer distance is used to

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determine the relative height, it is also called tachyometric leveling;

c) physical leveling, this method is based on the laws of physics and is divided into barometric, hypsothermometric and hydrostatic leveling according to the tool used and the method of operation. Leveling using hydrostatic or water levels, in which the surface of the liquid in adjacent containers containing liquid is used to lie on the same horizon, and the relative height of two points is determined;

g) mechanical or automatic leveling - the height of the points is determined automatically by means of different types of devices.

In addition to the above fishing nets, compass, ecker and chamalash fishing nets, which are less accurate, are also used in the experiment.

Compass gauge: the magnetic azimuths of the lines on the ground are determined by the compass, and the angle between the lines is determined by them, the length of the lines is measured, this gauge is used instead of the auxiliary gauge.

Ecker gauge: is also an auxiliary gauge, based on making right angles on the spot with the help of the gauge [7,8]. Ecker can be used alone on flat ground.

Chamalash Shooting: Carried along with more barometric leveling. The site plan is drawn in the field, and the distances are measured in steps or steps. Below we will get to know the mentioned shooting methods in full.

Basics of surveying: In order to draw a plan, map and profile of a given large or small place, horizontal or vertical surveying is first carried out in this place with one of the surveying methods introduced above. In order for surveying results to be correct and reliable, it is necessary to scientifically base them and carry them out in a single system. based on [9,10]. When this rule is applied, there is an opportunity to identify and correct errors that occur during the measurement and calculation period.

The essence of the general-to-part method is that first, the location of several points, for example, their coordinates or heights, are found with high accuracy, and they are called main reference points. Then, based on these base points, secondary points are obtained around these points. They are more numerous and closer to each other, and their measurement accuracy is less. Then, based on these points, some third-order points are found, which will be the second-order base points. The distance between these points is even smaller and the measurement accuracy is even lower. Polygonal geodesic grids made of points found in this way are called, in which the lower-level reference points are based

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on the higher-level reference points. This grid of base points is also called a grid of base points.

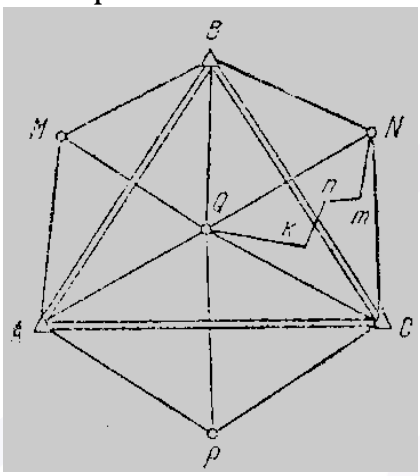

Figure. 1

Let's get acquainted with the example shown in Figure 1 as an example of the way to set the anchor points. Points A, B, and C, taken at a distance from each other, are the initial reference points, and their location is very precisely found. These points are the vertices of a triangle, based on which the two-level points M, N, R, Q are found. Then m, n, k points of the third level were obtained in Nva Kara based on these points. Such points as m, n, k can be taken between any high-level base points. These points are located close to each other, and when photographing the details and relief of the place, the tool is installed on these points, then the photograph is taken, these points are called photographing points.

In our country, the ground has been prepared for carrying out horizontal and vertical surveying works in one system, based on the rule of transition from general to partial, that is, a network of plan and height reference points has been established by the state in the territory of our country, which are the basis for carrying out geodetic works. will be points [11,12].

Geodetic works in horizontal surveying: In horizontal surveying, the horizontal placement of the line between two points and the angle between these lines, as well as their location relative to the four sides of the earth, depending on the direction of the lines, are determined, then the ways of describing them on paper are determined. is studied. Since the measurement of the horizontal position of the angle with a theodolite is of primary importance in this work, this gauge is also called an angle measuring gauge and sometimes a theodolite gauge.

Horizontal surveying: In horizontal surveying, the boundary of a given place and its details are photographed, and the contours of a single place are depicted on a plan.

Shooting works include:

1) prepare for the shoot,
2) determination of the polygon and theodolite path;
3) connecting the landfill and the road to the point;
4) measuring polygon elements;

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5) photographing the detail.

After that, camera works:

a) calculation works and

b) graphic works are performed.

Survey works can be organized differently depending on the structure of the place, the structure to be built and the set demand [13,14]. For example, constructions such as a factory building, a railway station, an airfield, a stadium, and agricultural land occupy a certain area; but stone and constructions such as railways and canals are built in a line extending in one direction with a certain width. Taking this into account, the points that will serve as the basis for drawing the place are first set. These points are considered to be the vertices of closed or open polygons taken in place. A polygon marked in place is called a polygon.

When surveying any polygon, it is necessary to measure the following three elements (main parts):

1) horizontal positions of the length of polygon sides d_1,d_2,. . . , d_n;

2) directions of sides a_1,a_2, ... a_p

3) horizontal positions of the angles between the sides b_1, b_2, , b_n. The value of these measured quantities will be sufficient information for drawing a plan.

Taking a line: the location of points on the Earth's surface is determined by a vekha (a stick) in geodetic works; it is made of wood with a diameter of 3-6 cm and a length of 2-3 m. At one end, a sharp metal tip is put on for good fixation to the ground. Vekha is painted with white-black or white-red paint every 20 cm.

The points are fixed to the ground with long wooden or iron stakes depending on the location. The line is marked by vekhas placed at its two ends. To measure the length of a line in place, you must first prepare it for measurement. In order to measure the long lines correctly, they are divided into several parts and marked with vekhas. Determining the position of points lying on a vertical plane (horizontal) in one direction is called taking a line.

Line measuring and tools. After the line to be measured is determined by taking a line on the spot, its horizontal alignment is measured with various line measuring instruments. In the direct measurement of the length of the line, suspended devices or ground measuring tools are used [15,16].

If great accuracy is not required when measuring a line, a tape or ruler is used.

The measuring line is not always horizontal. Depending on the structure of the place, it deviates up or down. To draw a plan, it is necessary to measure the horizontal alignment of the inclined lines, which can be measured directly and

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indirectly, depending on the location. For example, if the vertical angle between AB=D's horizontal superposition AA_1=dAV and its horizontal superposition AA_1 is , then we write the following from the right-angled triangle AVA_1 (Fig. 2)

$$d = D\cos\upsilon$$

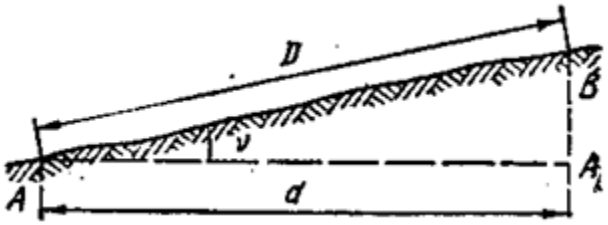

Figure 2

Line slope correction table (correction is given in mm)

Table 1

Slope Corner		Distance, m									
°	'	10	20	30	40	50	60	70	80	90	100
1	00	2	3	5	6	8	9	11	12	14	15
1	30	3	7	10	14	17	20	24	27	30	34
2	00	6	12	18	24	30	37	43	49	55	61
2	30	10	19	29	33	48	57	67	76	86	95
3	00	14	27	41	55	69	82	96	110	124	137
3	30	19	37	56	75	94	112	131	149	168	187
4	00	24	49	73	98	122	146	171	195	220	244
4	30	31	62	92	123	154	185	216	246	277	308
5	00	38	76	114	152	190	229	267	305	343	381
5	30	46	92	138	134	230	276	322	368	414	460
6	00	55	110	164	219	271	329	384	438	493	5418
6	30	64	129	193	257	322	386	450	514	579	643
7	00	75	149	224	298	373	447	522	596	671	745
7	30	86	171	257	342	428	514	599	685	770	856
8	00	97	195	292	389	487	584	681	778	876	973
8	30	110	220	329	439	549	659	769	878	988	1098
9	00	123	246	369	492	616	739	862	985	1108	1231
9	30	137	274	411	548	686	823	960	1097	1234	1371
10	00	152	304	456	608	760	912	1063	1215	1367	1519

Determining the direction of lines in place: Determining the direction of a given line relative to the four sides of the earth with respect to some cardinal direction is called orienting the line. It is known that only one meridian passes through any point on the earth's surface and its direction does not change. Accordingly, the direction of the line passing through the point is determined by the angle

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formed by the given line relative to the direction of the meridian of this point. These angles are divided into azimuth, rhumb and direction angles [17,18].

Theodolite surveying and methods: To draw a contour plan of the place, the details of the place are first surveyed. Details are natural and man-made buildings, roads, ditches, forests, power lines, etc., whose position and shape should be determined correctly. Depending on the location, the following methods are used in S'yomka.

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