ORGANIZATION OF GEODESIC WORK. STATE GEODESIC NETWORKS

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Annotation. Although the coordinates of a few main reference points are determined astronomically by the geodetic method, the coordinates of all the remaining points are calculated using mathematical formulas. The geodetic method is divided into several types.

Keywords: Description, Foundation Networks, Historical And Elevation State Networks, Triangulation, Trilateration, Polygonometry, Level Networks.

A network of base points whose coordinates and heights are known and firmly fixed to the ground at different distances is called a state geodetic network. The networks and their points will be installed in accordance with the project developed by the General Directorate of Geodesy and Cartography.

Geodetic networks are divided into planar and elevation networks. Planned networks are established by astronomical and geodetic methods. In the astronomical method, the geographical coordinates of the location of each base point are determined independently by astronomical observation. Although this method is much lighter, it cannot meet the demand for geodetic works because it is less accurate. Cards with a scale of less than 1:50,000 alone can be used to justify.

Although the coordinates of several main reference points are determined astronomically by the geodetic method, the coordinates of all the remaining points are calculated using mathematical formulas. The geodetic method is divided into several types. For example, one or more of the methods are used, such as triangulation, trilateration, polygonometry, hips of different shapes, diagonalization rectangular and geometric grid (network).

Triangulation is a series of triangular systems in place where the corner ends are the base points. The points are set so that at least three adjacent points are visible from each point, and the lengths of the sides of the triangle do not differ greatly from each other. For example, a link or series of triangulation is given. On a flat surface, an AB line not less than 5 cm in length is taken on the plan scale, which is measured with an invar wire to an accuracy of 1: 1,000,000. This line is called the base. At the end of the row, Rp is also measured from the base. Then the base is made into a rhombus, shaped like a small diagonal. The large diagonal is called the output side of the CD triangulation. The ends and sides of a rhombus are called the base network. The angles shown in the figure are accurately measured. The coordinates and azimuth of the exit side of points A, C, V, and D are determined by astronomical observation, which is called the Laplace point. Then the length and direction of the sides of the triangle and the coordinates of the points are calculated based on the rules of mathematics using the base length and measured angles. Calculated in this way, the KZ base is also found. The difference between its measured lengths is corrected by allowing corrections.

The construction of triangulation bases is organized and established based on scientific rules. State triangulation networks are divided into 4 classes and are called 1st, 2nd, 3rd and 4th class. Class 1 triangulation lines are drawn in the direction of the meridian and parallels.
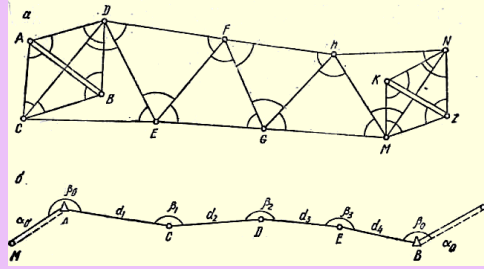
When current technical advances are applied, it is possible to measure the length of its output side with radio or light dalnomers, which allows it to be measured with an accuracy of 1: 400,000, without measuring a separate base in the triangulation network. When the triangulation network is built on the site of engineering structures, the base length in structures such as tunnels, bridges can also be measured with scaled steel or invar wire.

Trilateration is used in place of triangulation instead of triangulation, as the work of measuring and calculating bases and angles in triangulation has become more complicated, and more recently light and radio dalnomers have been discovered. If the lengths of the single sides of all triangles in a series of triangles are measured, and the angles and coordinates are calculated thematically, this series of triangles is called trilateration. In this case, the length of the sides is measured using radio or light dalnomers. Then the value of the angles can be determined using the AI Durnev formula based on the side lengths.

The lengths of the sides of a polygonometry with different dalnomers, e.g. radio, lighting, with optical dalnomers, or invar wire, can be measured using tapes. Sometimes other measured quantities can also be calculated. Polygonometry traves whose sides are precisely measured with an invar wire are called traves. If the sides of a polygonometry are determined using a short base and an acute angle (parallax angle) based on it, it is called parallax polygonometry or short base polygonometry. For example, if ABCD is a polygonometric walk, its sides are set horizontally perpendicular to the direction of AV, VS, and SD using an MN base tripod of known length in the middle of each line to measure AV, VS, CD. Then, as shown in the figure, the parallax angles ph1¬, ph2, ph3, ph4¬, ph5¬, and phb, standing at points A, B, S, and D, are precisely measured. Then the intervals AR, RV, BQ, QC, Ct and tD are calculated using mathematical formulas.

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