



## HOW TO MAKE TOPOGRAPHIC SURVEY ON ELECTRONIC AND TRADITIONAL TACHOMETER

Sattiev Y<sup>1</sup>

<sup>1</sup> Assistant, Andijan Institute of Agriculture and Agrotechnology, Uzbekistan

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**Introduction.** The tachometric survey method is widely used to create and update topographic plans of construction sites. Tachometry is the fastest, most efficient, and most promising method of large-scale surveying in urban areas. At present, all enterprises conducting surveys in the cities of the country have switched to the use of electronic tachometers.

With the advent of electronic tachometers, it has become possible to fully automate the tachometric survey.

In this case, the electronic tachometer is installed at the base point of the survey, the reflector is placed on the location details and relief points (picket points), horizontal and vertical angles and distances are determined automatically.

The mini-computer of the tachometer processes the measurement results and calculates the coordinate increments ( $\Delta x, \Delta y$ ) and relative heights ( $h$ ) and the coordinates

### ABSTRACT

*The method of tachometric shooting is widely used in order to make and renew the plan of topography of territories where constructions are fulfiller. In this research the methods of making bases of tachometric shooting and the matter of using an electronic shootings while doing a large-scale topographic shooting are studied widely.*

( $X, Y$ ) and heights ( $H$ ) of the picket points.

The use of electronic tachometers in topographic surveillance has limited the intermediate operations in the survey process, is the recording of horizontal and vertical angles and distances measured with a simple tachometer and their distances in logs, their development, manual drawing of a topographic plan.

**Methods.** In this work, the issues of establishing the basis of surveying for large-scale topographic surveys and the use of electronic tachometry in surveying were considered.

In the implementation of the technology of electronic-block tachometry of topographic surveys, the entire area of the survey object is divided into blocks as a separate plot. A survey base is not built on the boundary of a single block, this work is formed during the survey process.

Electronic tachometry can be performed in several ways:

- through serial stations (serial tachometry);
- through free stations (block block tachometry);
- from a combination of the above two methods (combined tachometry).

In all cases, the connection between the blocks is provided by means of connecting (point where the tool is located) points.

Free point tachometry is based on determining the position of a station using spatial angle-line and combined hinges. It is sufficient to use less dense geodetic base points to implement such surveying technology.

The minimum number of free stops is connected to the base points and its coordinates are determined by inverted line-angle brackets. With electronic tachometers, the height of the points of the station (the point where the instrument is located) is determined by trigonometric leveling, for which the height of the stations must be measured by the angle of inclination and distance to a particular point.

In this case, the points A, B and D (Figure 1) do not have to be visible from each other, the position of stations C1, C2, C3 is not determined on the spot during the survey.

Detailed sampling in free station tachometry is shown in Figure 1. According to him, the sequence of points K1, K2, K3 is determined twice for control during the shooting process from stations C1, C2, C3 taken in different blocks.

In the block-block tachometry method, beacon pickets can be used as base geodetic

base points to determine the coordinates and heights of stations.

This can be done by objects (teleminators, chimneys, buildings, etc.) in a certain place with coordinates and heights.

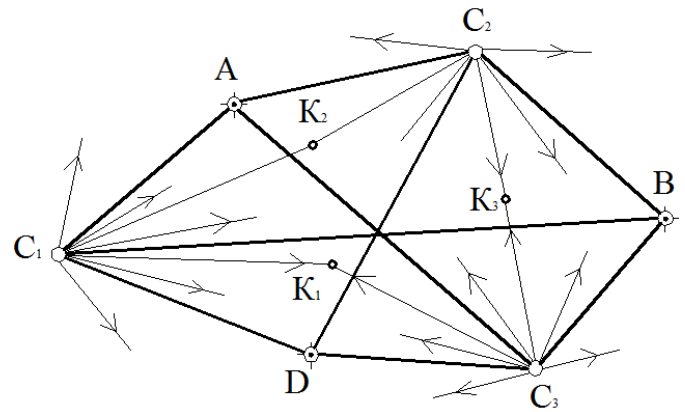


Figure 1. Schematic of free station tachometry

The following services can be used when surveying picket points in electronic-block tachometry (Figure 2).

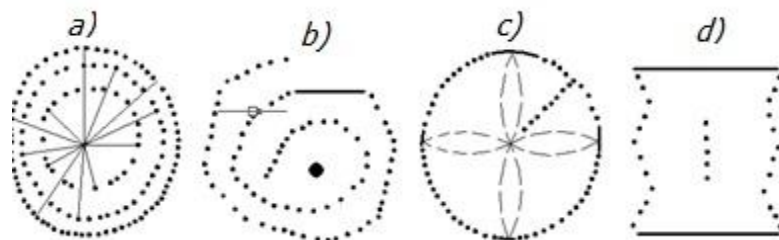


Figure 2. Drawings of the picket points

along the a-radius; along the b-spiral; c-bright; d-zigzag (broken line)

The drawings shown in the figure are selected depending on the conditions of the place to be photographed, the complexity of the relief, the openness of the place and the scale of the survey.

**Results and Discussion.** During the filming, a detailed outline is kept. Abris can also be done on plain paper or in a field graphics editor that performs this function today. This may include additional information that cannot be encoded with a



taximeter. Directly in the field itself, it is possible to know how to create a JRM, that is, how to combine linear symbols, add information about building material and other parameters, and so on.

In summary, when large-scale (1: 500) topographic surveys are performed using the

traditional trigonometric survey method, the theodolite path is first formed, the heights of which are determined by the geometric leveling method. This in turn requires extra work. The method of performing topographic surveys using an electronic.

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