GEODESIC WORK IN THE PROCESS OF DESIGN TO ENSURE TRAFFIC SAFETY ON ROADS

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Annotation*: This article deals with the role and importance of geodesy in the design of longitudinal profiles on highways and the design of cross-sections.*

Keywords*: Red line, black line, horizontals, working height, interpolation.*

Introduction

As far as we know, the most effective and safe roads are highways. But highways also have their drawbacks. Such deficiencies not only have a major impact on road safety, but can also pose a serious risk to the vehicles, drivers, passengers and pedestrians involved. We know that highways are not always smooth and smooth. In mountainous areas, there are problems such as passes, ravines, dams, snow and avalanches. In urban areas, there are problems such as congestion and pedestrian traffic. Geodetic work is a great help to road engineers in solving these problems and finding solutions to them [1].

Materials and methods

In the preparation of this article, the methods of project analysis, study and nationalization of foreign experience, study and orientation of technology opportunities, logic and generalization methods were used, and a proposal to implement measures based on the geography of the region. was given.

The main part

Road design is based on more complex calculations. The design process is divided into two parts. These are field work and chamber work. Field work is mainly a section of project exploration work, which is geodetic work. The projection of the road axis in the vertical plane in the plane of the drawing is called the longitudinal profile of the road. The longitudinal profile describes the verticality of some sections of the road, measured by the longitudinal slope, and its location relative to the ground. Longitudinal slope is one of the most important indicators of the transportability of roads. The natural slopes of the place often exceed the permissible values required for efficient use of cars. In such cases, the slope of the road is flatter than the slope of the ground, for which part of the soil is cut off on the ascents, or, conversely, the soil is poured into the passages from the lower parts of the relief. When designing a highway, it is first necessary to determine their horizontality through the levels. When counting using levels, the longest distance should not exceed 100 meters [2].

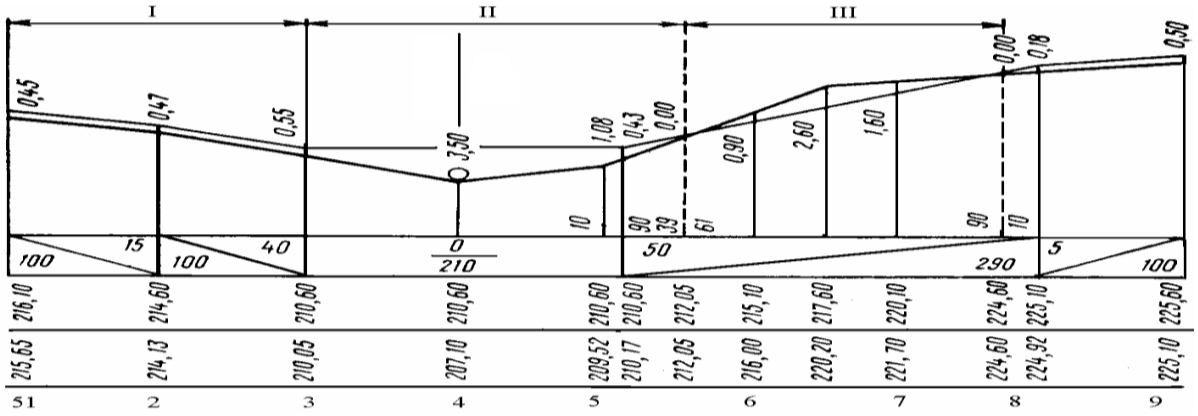

Figure 1. Location of the track in the longitudinal profile:

I - path in "zero" characters; II - in the lift; III - in the carving

Areas where the road surface is lower than the ground surface as a result of soil cutting are called carvings, and sections of the road that pass over the artificially poured soil above the ground are called elevations. called. These elevations and carvings determine soil consumption and road strength when designing a road cross-section. The difference between the road surface markings and the roadside markings, which determine the height of the lift or the depth of the carving, is called the working mark. Fracture areas of the longitudinal profile, which are

formed when the slope changes, cause some inconvenience for movement: convex areas on the road obscure the front part of the road, and large areas with a relatively small curvature radius of curvature. when driving at high speed, the front axle of the car becomes lighter and it becomes impossible to control it; Due to the sudden change of direction in the fractured areas, there is an impulse that disturbs the passengers and tightens the suspension. Therefore, the broken areas of the longitudinal profile are smoothed by inserting the connecting vertical curves, and the smoothed broken areas of the longitudinal profile are indicated by a dotted line. Numbers in parentheses represent working symbols in the absence of vertical curves, and numbers without parentheses represent real characters [3].

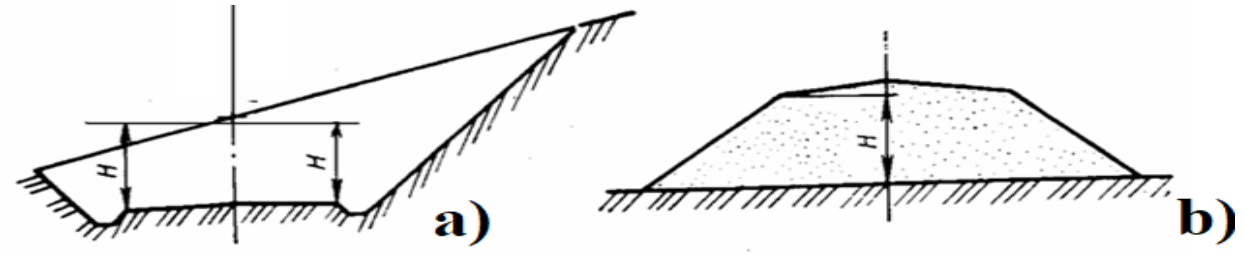

Figure 2. Working mark of the footpath: a - in the carving; b - in the lift

The profile is first made in a graphite maker, then manually filled in with information about soils, artificial structures, location details, and more. To make the longitudinal profile clearer, vertical distances (characters) are set on a larger scale than horizontal characters. For flat roads, the vertical scale is 1: 500 (5 m per 1 cm) and the horizontal scale is 1: 5000 (50 m per 1 cm).

Results

When designing roads, longitudinal slopes that do not exceed the allowable height, the height of the road surface above the sources of moisture (groundwater and in some places surface water ponds) to create a favorable water-heat regime for the ground foundation, as well as The height of the footing above the level of snow cover (ensures that the road is not covered with snow) should be considered. The arches work on compression, with the strength of the reinforced concrete giving good results [6]. Determining the position of the road surface relative to the ground

in a longitudinal profile is called designing a longitudinal profile or drawing a project line.

The following must be ensured during the project line:

- smoothness of the longitudinal profile, allowable longitudinal slope, sufficient visibility - these allow cars to travel at high speeds;
- drainage of water from the bottom of the road;
- the project line is not in the form of a saw; when the project line is in the form of a saw, the "lost ascents" lead to slopes, and then to the ascent of the road section, when passing, the car engines do useless work;
- roads must pass through the elevation signs indicated when passing through checkpoints, such as the elevation signs at the beginning and end of the route adjacent to the existing road.

Conclusion

There are many different ways to design a highway. However, regardless of the method used, geodetic work is performed when the designer performs the work. There are two ways to draw a project line: design methods can be as wrapping and cutting lines. In the design of the curve, the design line is drawn as parallel to the ground as possible, except for the rule of thumb in the low-lying areas of the terrain and in the vicinity of sharply curved areas of the longitudinal profile of the surface. Designing as a curb in flat and low-lying terrain allows for the creation of a well-drained footpath. The full use of geodesy in the design will make a significant contribution to safe traffic on highways and increase traffic speed.

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