

INFORMATION TECHNOLOGIES IN THE DESIGN OF HIGHWAYS

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***Annotatsion:** This article describes the design of highways, highway alignments, picketing, design of longitudinal sections, design of cross-sections, construction of roads on a digital map obtained in the Infracore software in the AutoCAD Civil 2019 program belonging to the GIS family. Issues such as the construction of a corridor are covered.*

***Keywords:** AutoCAD CIVIL, Infracore, electronic digital map, contours, highways, design, route, route plan, longitudinal profile, cross profile, road corridor, picket.*

Introduction

In order to create a modern road management system, a clear delineation of control and economic functions, demonopolization, attracting private sector enterprises and increasing investment attractiveness, creating a healthy competitive environment, widespread introduction of innovations in road construction, as well as in accordance with the goals of the Action Strategy for five priority directions of development of the Republic of Uzbekistan for 2017-2021, on December 9, 2019, the President of the Republic of Uzbekistan issued a decree "On measures to deeply reform the road industry. The Republic of Uzbekistan. The Resolution "On measures to improve the road sector management system" and the Resolution "On measures to further improve the road sector management system" were adopted. These laws focus on the design of highways in accordance with modern requirements using modern GIS technology. [1]

Main part

We know that road design is based on more complex calculations. Geographic information systems now exist that serve to facilitate the same design process. These systems allow you to collect, process and manage data. In particular, one of the greatest achievements of the information age is the ability to access information about places inaccessible to humans using the Internet and global systems. It is possible to automatically obtain and calculate the markings of the earth's surface along the axis of the road, necessary for the design of highways, from terrestrial applications. [2]

After clicking on the longitudinal profile menu, the add command is pressed to indicate which path we want to draw the longitudinal profile in Figure 1, and we are instructed to draw the profile on path 1 that we drew. After that, our window will change to Figure b, which will include the name of the profile and information about what standards to draw the profile by, and click on next several times. Finally, at the end of the window, the command for creating a profile becomes active, and not the command further, and we select this command. Then the window is closed and the left mouse button is clicked once at the desired place in the working window of the slide to create a longitudinal profile, as shown in Figure 1.

After we drew the longitudinal profile, it was our turn to draw the project line, the red line. To do this, select the New Profile tool command from the menu bar under the New Profile folder. In this case, the mouse will be square, in which case we will define a longitudinal profile to determine which longitudinal profile to draw the project line. Once we mark it, a new window will open. [3]

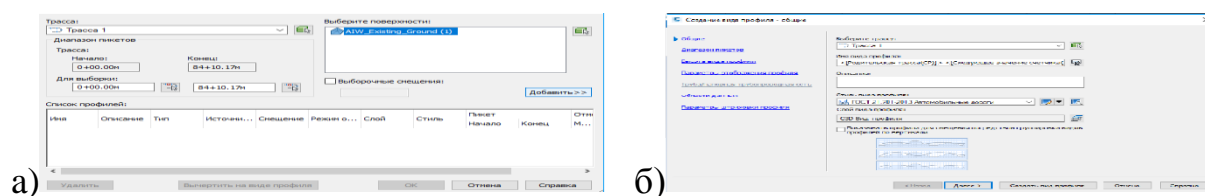


Figure 1. The sequence of drawing a longitudinal profile: add route a, select name b and guest.

In the Create Profile window, select a name and standards for the line and click OK at the end. We have a project line drawing menu, just like the menu items that open to draw a route. [4]

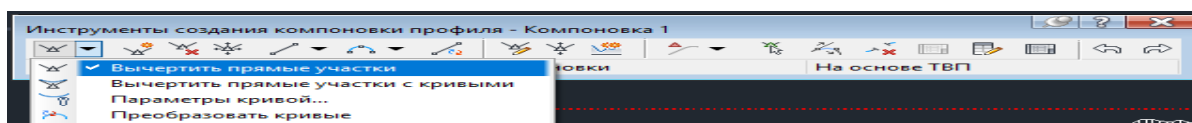


Figure 2. Draw a linear project menu.

The first of these menus on the left draws vertical lines to draw the design line. You can also draw vertical curves on the left side of the Free Vertical Curve menu item. [5]

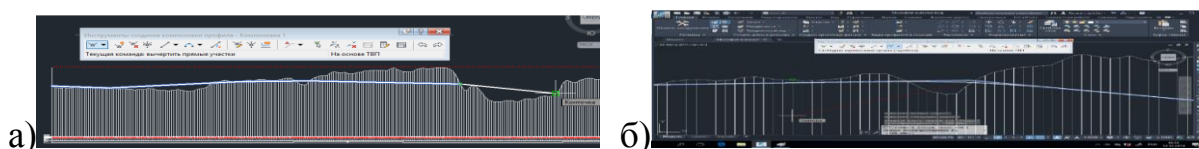


Figure 3. Draw the design line. a-draw vertical lines, b-draw vertical curves.

After we have designed the longitudinal profile, we need to design the cross section and floor structure. To do this, select the New Design menu from the Design menu in the menu bar. [6]

After selecting the "Create structure" menu, a window will open in which we can select the name of our building, the type of building, guests. When the arrow button is pressed, the left mouse button clicks anywhere on the civil work window to draw a path arrow line to draw the structure and cross section. [7]

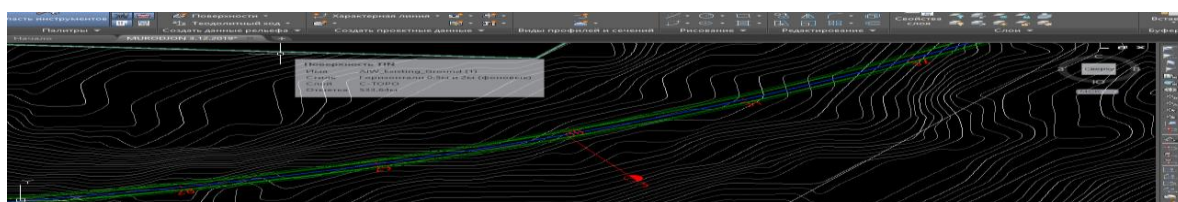


Figure 4. Corridor view of the route (along the width of the road).

Conclusion

There are many different ways to design a highway. However, regardless of the method used, geodetic works are performed when they are performed by the designer. There are two ways to draw a design line, design methods can be either wrapper or clipping. When designing a curve, the calculated line is drawn as parallel to the ground as possible, except as a rule of thumb in low-lying areas of

the terrain and near sharply curved sections of the longitudinal profile of the surface. Curb design in flat and low-lying terrain allows for a well-drained footpath.

Using GIS technologies in road design, we get the following advantages:

- Reducing the time spent on road design;
- When designing roads, modern equipment and technologies are used;
- An electronic form of data on road design works will be created;
- As a result of road design work, a road database will be formed.

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