USING MODERN PROGRAMS IN DIGITALIZING ROADS

Erkinov Sardor Baxodir ogli, Student at Namangan State Technical University,

Annotation. *This article discusses the design of a segment of the street between A. Navoiy and K. Otamirzayev streets in Namangan city based on digital technologies. The experience of designing highways using modern geoinformation systems, in particular the IndorCAD/Road program, is described. Also, existing problems - traffic jams, obstacles to stalls, disruption of traffic flow - are analyzed, and solutions are proposed using graphic programs.*

Keywords. *highway, digitization, IndorCAD/Road, design, transport infrastructure, traffic congestion, graphics program, longitudinal profile, cross section, road plan, feasibility study, road elements, engineering structures.*

ИСПОЛЬЗОВАНИЕ СОВРЕМЕННЫХ ПРОГРАММ В ЦИФРОВИЗАЦИИ ДОРОГ

Эркинов Сардор Баходир углы, студент Наманганского государственного технического университета

Аннотация. *В статье рассматривается проектирование участка улицы между улицами А. Навои и К. Отамирзаева в городе Наманган на основе цифровых технологий. Описан опыт проектирования автомобильных дорог с использованием современных геоинформационных систем, в частности программы IndorCAD/Road. Проанализированы существующие проблемы – пробки, препятствия для парковочных мест, нарушение транспортного потока – и предложены пути их решения с использованием графических программ.*

Ключевые слова. *автомобильная дорога, оцифровка, IndorCAD/Road, проектирование, транспортная инфраструктура, транспортные заторы, графическая программа, продольный профиль, поперечный профиль, план дороги, технико-экономическое обоснование, элементы дороги, инженерные сооружения.*

Introduction. Today, in every field, words such as digitization and automation often sound in our ears. Of course, as technology develops, human life also improves and becomes easier. In this case, digitization of the information we need in our daily activities and the information we receive from them, that is, converting data and documents into electronic form, leads to their more effective use. Over the past years, a number of measures have been taken to improve the road transport infrastructure in accordance with international standards, build modern roads, and increase the comfort and safety of road traffic.

The main part. The design and implementation of projects in digital form of highways is carried out on the example of the segment street between A. Navoiy and K. Otamirzayev streets in Namangan city. This road is one of the street networks adjacent to the central roads of the city, and its design is important for managing traffic flow and improving infrastructure.

Based on the above, further improvement of the road management system, development of road transport sectors, development of design, construction and operation methods using modern computer programs and GAT technologies is currently one of the urgent issues in the road sector. The relevance and necessity of the project work is that today, limiting the possibility of direct passage from A. Navoiy Street to K. Otamirzayev Street, cars are moving through Uychi Street. Limiting the possibility of movement through Kourgazmalililik Street and A. Navoiy Street. As a result, residents of this area are moving through Uychi Street at the entrance and K. Otamirzayev Street at the exit, which leads to an increase in the number of traffic participants on A. Navoiy, Uychi and K. Otamirzayev Streets and the emergence of traffic jams.

General description of the road. The segment street between A. Navoiy and K. Otamirzayev streets in Namangan is one of the central streets of the city, 519.5 meters long, located next to the Chorsu market. This segment street is located within the “A. Navoiy street” and is called “1st passage” (1st passage) or a small narrow street as a narrow road. This segment street is narrow, often with

one-way traffic. Only 186 meters of the street, starting from behind the Chorsu hotel, at the exit of Kuragazmalilik street to K. Otamirzayev street, is there car traffic (Figure 1).

Figure 1. Part of the street with car traffic.

Figure 2. A row of shopping malls.

The remaining part of this street is currently inaccessible due to its use as a general retail outlet (Figure 2) and parking lot (Figure 3).

The main problems. This parking lot creates convenience for buyers, allowing them to drive directly to the shopping area, facilitating the loading and unloading of goods at market stalls, and reducing the time and costs of visitors.

Figure 3. Parking lot section.

Figure 4. Schematic view of the street segment in the project for the transition from A.Navoiy Street to K.Otamirzayev Street.

However, at the same time, the restriction of the use of the segmental street by existing parking lots and stalls is causing serious problems for the city's transport system (Figure 4). In particular:

- parking of cars in a row in a narrow street limits the possibility of movement;

- restricts the possibility of direct passage from A. Navoiy Street to K. Otamirzayev Street, leading to movement through Uychi Street;

- restricts the possibility of movement through Ko'rgazmalililik Street and A. Navoiy Street. As a result, residents living in this area are forced to move through Uychi Street when entering and K. Otamirzayev Street when exiting;

- increases the number of traffic participants on A. Navoiy, Uychi and K. Otamirzayev Streets and causes traffic jams;

- pedestrian movement is limited, especially on busy shopping days, which leads to dangerous situations;

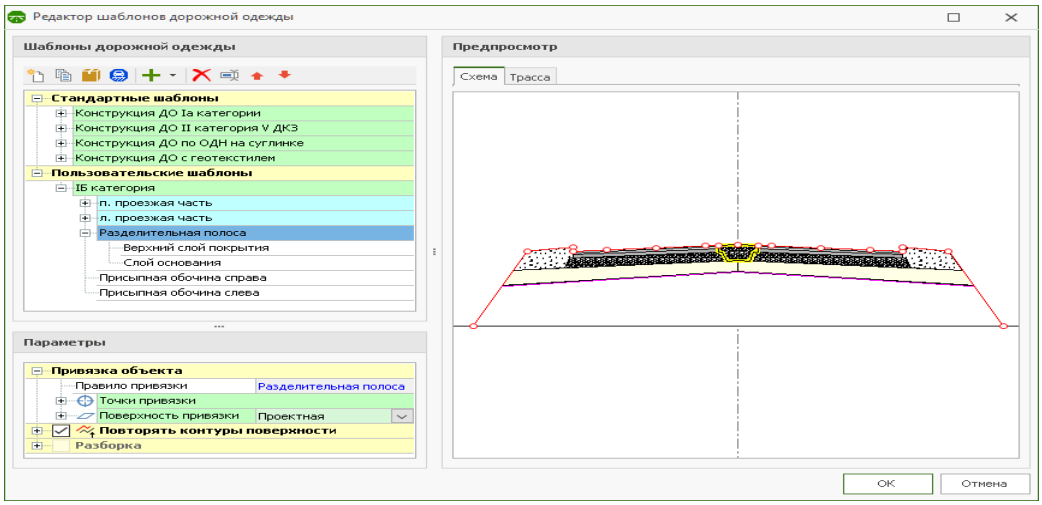
- fire, ambulance or emergency vehicles cannot pass through this area freely;

- will directly impede the flow of urban traffic, especially at the exits to nearby A. Navoi Street and central roads.

The mechanism. One of the programs that is convenient for us when designing highways using GIS technologies is the IndorCAD/Road program, in which we automatically perform highway design and calculation work. As in traditional design, for design in GIS, we also need a topographic map of the area where the highway is to be designed. A topographic map of the area where the highway is to be designed can be formed by taking aerial photographs, leveling, and surveying with a total station. The most modern method is a topographic map of survey data obtained from a GNSS receiver. In this case, the design process begins with downloading a relief model created based on survey data into the program, and a graphic model is created using the IndorCad/Road program (Figure 5).

Conclusion. In this project, the automated design of a segment of the street between A. Navoiy and K. Otamirzayev streets in Namangan was carried out. During the design process, high-precision geodetic measurements were carried out using a modern geodetic instrument - the Stec SV-1 GNSS receiver. The speed,

reliability and ability to determine coordinates in real time of this device were an important factor in accurately determining the location and relief data necessary for the project.



5-rasm. Ko‘ndalang kesim (Поперечные профили).

In general, the implementation of the project work on the basis of modern geodetic technologies and digital software tools ensured its scientific and practical relevance and efficiency. This approach can be recommended as the main methodological direction in the design of highways and the modernization of transport infrastructure in the future.

References:

1. S.N.Abduraxmonov, O‘.B.Muxtorov, O.S.Abdusamatov, A.Y.Jo‘rayev, A.N.Inamov. “Geoaxborot tizim va texnalogiyalar” o‘quv qo‘llanma, Toshkent, 2020-yil. 231b.

2. S.A.Toshpo‘latov, O‘.P.Islomov, A.N.Inamov, A.P.Pardaboyev. “Zamonaviy geodezik asboblar” Darslik, Toshkent, 2020-yil. 258b.

3. V.F. Babkov, O.V.Andreyev “Avtomobil yo‘Ilarini qidiruv va loyihalash” 1- qism. Toshkent, 2014 yil. 526 b.

4. IndorSoft kompaniyasi. IndorCAD/Road foydalanuvchi qo‘llanmasi. Moskva, IndorSoft nashriyoti, 2022-yil, 175 b.

5. Inamov, A., Ergashev, M., Nazirkulova, M., & Saydazimov, N. (2021). Geoaxborot texnologiyalari asosida avtomobil yullari kartalarini yaratish va davlat kadastrini yuritish. Общество и инновасии, 2(10), 84-90.

6. ShNQ 2.05.02-07 “Avtomobil yo‘llari”.

7. ShNQ 3.01.01-22 “Qurilishda ishlab chiqarishni tashkil qilish” shaharsozlik normalari va qoidalari (28.11.2022 yil).