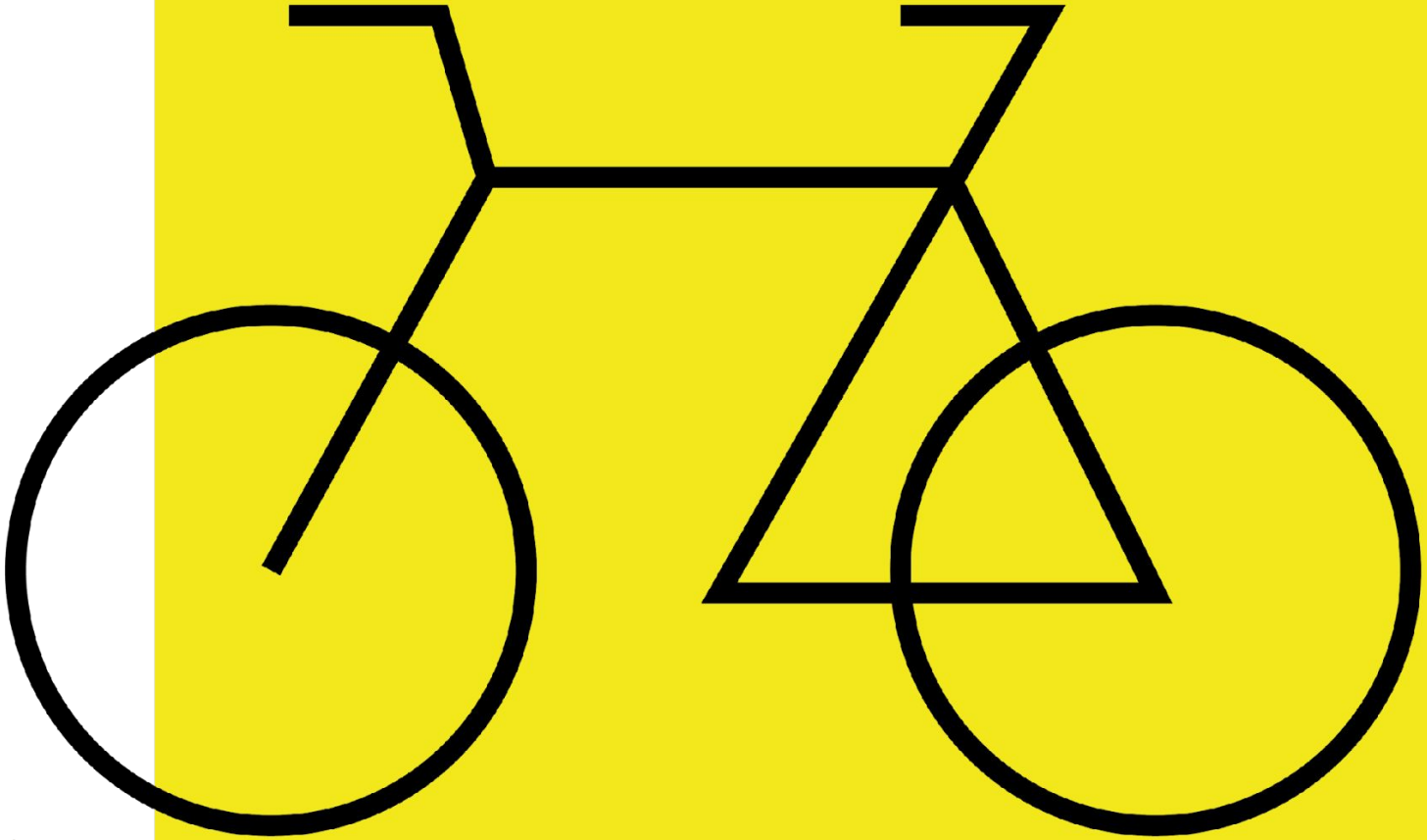
CONCEPT OF THE CYCLING INFRASTRUCTURE DEVELOPMENT OF THE IRPIN TERRITORIAL COMMUNITY



IRPIN
RECONSTRUCTION SUMMIT

CONCEPT OF THE CYCLING INFRASTRUCTURE DEVELOPMENT OF THE IRPIN TERRITORIAL COMMUNITY

Addendum to the decision of the Irpin City Council
No. XX dated XX.XX.202X

Irpin
2023
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Developed by:
"Bike city consulting" project team

Bike City consulting
www.bikecity.consulting

The document was developed within the framework of the "Irpin Reconstruction Summit" project and in the interests of the local authorities of the Irpin territorial community.

IRPIN
RECONSTRUCTION SUMMIT

This document was developed during the heroic resistance of the Ukrainian people to the Russian military invasion

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We sincerely thank everyone who took part in the survey, working meetings and provided their comments and suggestions for the development of this document.

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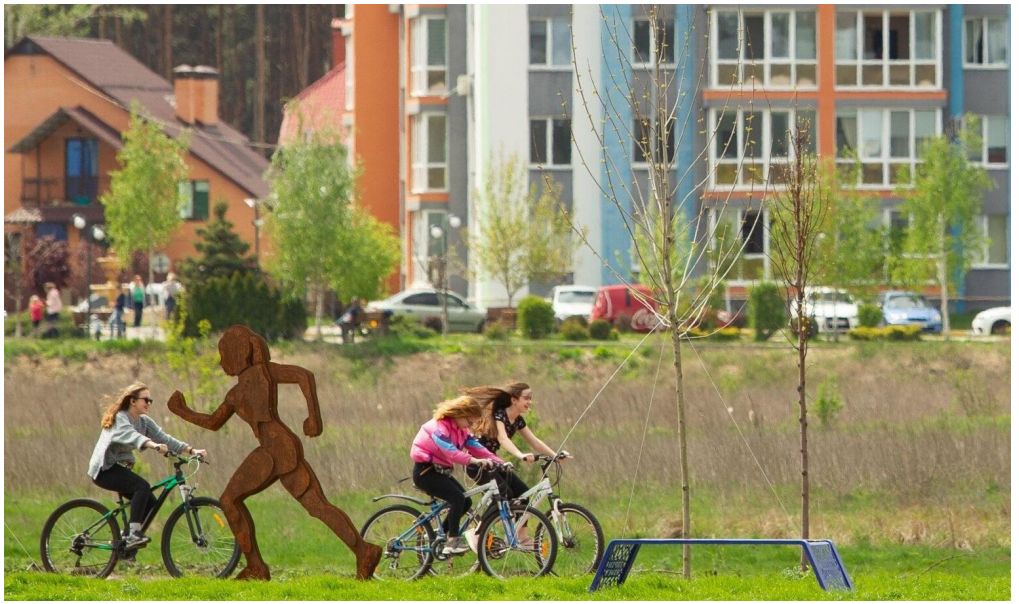
Addendum to the decision of the Irpin City Council No. XX dated XX.XX.202x year

Introduction

The bicycle has always played an important role in Irpen. Cycling infrastructure and cycling were actively developed in the city before the war. Moreover, the bicycle played a big role in evacuating people from the city and became their salvation during a full-scale invasion. Today, more and more citizens choose bicycles as an alternative form of transport, not only for leisure and sports, but also for mobile trips over short distances. Over the past six years, six parks and a city embankment have been built in the city bicycle paths. During the capital reconstruction of roads, it is also taken into account

there was a need to arrange bicycle infrastructure. So already in Irpin bicycle paths were built on some streets, and in 2020, a path separated from the P-30 highway to Kyiv was built, which is actively used by cyclists. Even before the full-scale invasion, Irpin's ambitious plans included the creation of the "Kyiv Oblast Bicycle Circle" project to connect other cities of Kyiv Oblast with a bicycle path and include the EuroVelo Central European bicycle route. Year after year, Irpin grew its ambitions as the cycling capital of Kyiv region. The city is the organizer and founder of about a dozen cycling competitions of the Kyiv region and Ukraine overall. The largest bicycle marathon in Ukraine, "TransUkraine" was founded in the city,the route of which is 1500 km which gathered hundreds of participants. Today, our team, together with European partners, is working on new marathon routes to connect the countries of the European Union, to among which Ukraine will soon be included. We see the potential development of our community through the development of cycling infrastructure. This is the direction which will literally and figuratively connect Irpin with the European world cities. We present the Concept of Bicycle Infrastructure Development of the Irpin Urban Territorial Community. During the development of this document, a balanced approach was used, which foresees future growth and changes in the demand for transport services, promotes economic development, increases the quality of life of the population and efficient use of resources.

It is also worth noting that in the global context, the bicycle is not only a means of transport, but also a powerful tool for positive change in cities. Bicycle transport helps to achieve 11 of the 17 Global Sustainable Development Goals of the UN, which emphasizes the strategic need for cities to invest in the development of bicycle infrastructure and promote the development of bicycle traffic.



Олег Гриб

Irpin has great potential to become the center of a modern European community. Despite all the horrors of the war, it became a "window of opportunity" to direct the development of territories in the right direction and get rid of the old approaches to planning cities and communities in Ukraine. The developed Concept of the development of bicycle infrastructure allows to adhere to modern criteria for long-term transport planning in a community where a significant part of the population already uses bicycles as a form of transport. Considering the important position of Irpen in the Kyiv agglomeration and the compact size of the community, it is important to arrange a proper network of bicycle paths and related infrastructure, which should set the trend for the entire region. The creation of recreational and tourist cycling routes will increase the competitiveness of the territory, stimulate the local economy and improve the investment climate. Along with increasing the safety of road traffic for all its participants, the development of bicycle infrastructure aims to improve the quality of life of the community's population, improve its ecological condition and economy.

Bike City consulting team

The Irpin Reconstruction Summit project team of the
Irpin Territorial community

PURPOSE AND CONCEPT OBJECTIVES

The purpose of developing and implementing the Concept of bicycle infrastructure development to create safe, accessible and comfortable conditions for movement by bicycle. The development of bicycle infrastructure is one of the operational goals of the Development Strategy of the Irpin Urban Territorial Community for 2022-2032. The introduction of new improvements to the existing infrastructure conditions will ensure the integrated development of the bicycle traffic system, and therefore will improve the quality of life of the population and increase the competitiveness of the territorial community. Creating better travel conditions for existing users of bicycle transport will help attract more people to cycling

The goals of the development concept of bicycle infrastructure in the Irpin area of the community are the following: GOAL 1. CREATION OF CONNECTED AND INTEGRATED CYCLE TRANSPORT NETWORKS Creation of an inseparable bicycle network using various forms of bicycle traffic and its integration into the general transport system. Arrangement of bicycle routes of urban, intercity, tourist and recreational importance; GOAL 2. INCREASE THE MOBILITY OF THE POPULATION Increasing the level of daily use of bicycle transport for short and medium distances trips due to the creation of appropriate comfortable ones infrastructure conditions; GOAL 3. IMPROVEMENT OF TRANSPORT ACCESSIBILITY ensuring equal rights of access to convenient and safe community movement. The expansion of the network of bicycle parking lots and the introduction of bicycle parking lots, and the conditions for parking bicycles in multi-story residential buildings and near them are intended to make the use of bicycles convenient for daily trips with various purposes; GOAL 4. IMPROVING ROAD TRAFFIC SAFETY Reducing the level of accidents and deaths of all road users in traffic accidents thanks to the creation of a safe bicycle infrastructure in the Irpin territorial community. Use of modern technical means of traffic management. Promotion and training in the basics of traffic rules;

OBJECTIVE 5. DEVELOPMENT OF BICYCLE AND LIGHT PERSONAL VEHICLE RENTAL SYSTEMS Expansion and development of the local network of bicycle rental and LPT rental, which will serve as an additional opportunity for movement by these types of transport within the boundaries of the Irpin territorial community, including for tourists; GOAL 6. PROMOTION OF CYCLING IN THE COMMUNITY Creation of conditions that increase the culture of bicycle use transportation for daily trips, as well as the organization of regular tourist, cultural, educational activities in the community using bicycles. Conducting information and educational campaigns 3 Use of bicycle transport and stimulation of respectful attitude between different road users; GOAL 7. IMPROVEMENT OF THE ECOLOGICAL STATE OF THE COMMUNITY by Reducing the level of environmental pollution, prioritizing and improving conditions for bicycle transport and reducing the intensity of motorized transport and its impact on the environment; GOAL 8. IMPROVEMENT OF THE PHYSICAL AND MENTAL HEALTH OF THE POPULATION Creating conditions that will promote daily physical activity at bicycle trips. Reducing the risk of developing heart and respiratory diseases in community residents due to an active lifestyle; GOAL 9. STIMULATION OF THE LOCAL ECONOMY Increasing the competitiveness of the territorial community for small and medium-sized businesses by ensuring the points of attraction are accessible by bicycle transport. Stimulation of the development of bicycle maintenance services and related bicycle services, in particular, bicycle rental and rental of light personal transport, courier systems bicycle deliveries; GOAL 10. DEVELOPMENT OF THE TOURIST POTENTIAL OF THE COMMUNITY. Increasing the tourist attractiveness of the territorial community due to the creation of tourist cycling routes between historical, cultural and natural attractions of the city and community, as well as recreational cycling routes for access to recreation facilities.

The concept of the development of bicycle infrastructure of the Irpin city-territorial

communities 7

METHODOLOGY

The concept of bicycle infrastructure development of the Irpin urban territorial community was developed within the framework of the Irpin Reconstruction Summit project - as the main strategic document that determines the planning and development of this type of transport for a 20-year period. The work on it included field and camera studies, conducting an online user survey and a strategy session, developing proposals for a project bicycle network and bicycle routes in accordance with predetermined principles, the current legal framework, the experience of developed countries and positive examples from other cities and communities. of Ukraine. The primary stage of the development of the Concept was the field research conducted by the developers on October 2 and 24, 2022. During them, the state of the street and road network and features of the planning structure of the community, the location and typology of existing bicycle parking lots, tourist and recreational facilities were inspected and recorded. In addition, a number of working meetings were held with representatives of the Irpin City Council. The cornerstones for the creation of a realistic and effective Concept for the development of bicycle infrastructure, which is based on the experience of community residents and objective realities, were the holding of a strategic session and a survey of bicycle and light personal transport users. The strategic session was held on March 20, 2023, its participants were 27 residents of the community of different ages, genders and types of employment. On the basis of their opinion and real life experience in the Irpin community, a SWOT analysis was conducted with the identification of strengths and weaknesses, opportunities and threats regarding the development of bicycle infrastructure. During the strategic session, participative mapping was carried out and together with the participants, the main directions of the future development of the bicycle network, the organization of bicycle routes, the arrangement of the accompanying bicycle infrastructure and the improvement of road safety were determined. In parallel with this, a survey of bicycle and light personal transport users was conducted the one in which 783 people took part. The collection of answers was carried out in two stages - from 3 7 to 28 November 2022 and from 15 to 31 March 2023 in online format. Based on the results of the survey, a modal portrait of the user of bicycles and light personal transport B in the Irpin city territorial community was compiled, which is presented in the corresponding section of the Concept. Chamber studies included various types of work. The city planning documentation of the Irpin Territorial Community and relevant strategic documents at the level of the community, region, and state were studied. Systematized information on the exceptional role of bicycle transport during crisis periods, in particular, war. Compiled on the basis of open and customer-provided sources geographical characteristics of the community, its natural and socio-economic conditions. The previous experience of the community regarding the development of bicycle traffic was analyzed. On the basis of the data provided by the responsible unit of the National Police of Ukraine regarding road accidents involving cyclists and pedestrians in the period 2019-2021, the places of their concentration on the street and road network of the community were determined, including in relation to the time of day and season. This analysis became the basis for the development of proposals for improving road traffic safety, which should ensure the safety of all its participants, the installation of traffic lights, roundabouts, traffic calming devices, as well as the arrangement of safe railroad crossings. For the development of the project bicycle network and routes in the Irpin territorial community, a number of criteria were formed, in particular, regarding its integrity and connectivity, safety and comfort of movement, high-quality arrangement and maintenance in different periods of the year. The characteristics and parameters of the bicycle network and routes are based on DBN B.2.2-12:2019 "Planning and development of territories", DBN B.2.3-5:2018 "Streets and roads of points", DBN B.2.3-4:2015 inhabited << Roads" and DSTU 8906:2019 "Planning and design bicycles educational infrastructure", as well as on the experience of developed countries and positive circumstances aspects of bicycle infrastructure organization in cities and communities of Ukraine. Therefore, a project bicycle network has been developed for the city of Irpen with a hierarchical division into city, district and quarter networks. as part of it, it is proposed to arrange city bicycle routes, and intercity bicycle routes to connect the community center and other settlements. Separately, recreational and tourist bicycle routes have been developed at OCHOBI based on the wishes of the residents and the objective location of the facilities. The use of special bicycle navigation is suggested for all routes. An assessment of the existing bicycle parking infrastructure was provided, and a unified standard for the "Sheffield stand" bicycle parking stand was recorded. Arrangement of various types of infrastructure for long-term storage of bicycles in bicycle parking lots, bicycle storage facilities, bicycle garages is proposed. The importance of setting up the associated bicycle infrastructure on the territory of the community, in particular bicycle service stations, drinking fountains and traffic meters, was noted. Particular attention is paid to the need to install bicycle bridges, in particular on intercity bicycle routes, the route of which runs outside the existing roads. The places of their prospective placement have been determined in accordance with the realities of the street and road network and the planning structure of the community. The prospects for the development of bicycle transport rental services in the community have been revealed. training and LPT, as well as conducting educational and promotional campaigns and events.

At the end of the document, there is a plan for its implementation and expected results for improving the competitiveness of the community and the quality of life in it.

CONNECTION OF THE CONCEPT WITH OTHER STRATEGIC DOCUMENTS

The concept of the development of the bicycle infrastructure of the Irpin urban territorial community was developed in accordance with local, regional, national and international strategic documents that emphasize the importance of the development of bicycle infrastructure: The development strategy of the Irpin urban territorial community for 2022-2032 operational goal C.4.4 provides for DEVELOPMENT cycling infrastructure. The following measures necessary for its implementation have been determined: arrangement of bicycle paths (including in rural settlements), organization of bicycle routes, arrangement of bicycle rental and parking spaces for bicycles, conducting bicycle quests, bicycle excursions and bicycle festivals, conducting trainings for young people "Safe operation bicycle". However, only one indicator of the number of bicycle parking spaces was introduced to monitor the results of the implementation of the Strategy. It is necessary to fully take into account this direction with clear indicators when developing a new version of the Strategy. - Development strategy of the Kyiv region for 2021-2027. Task 4.2.5 defines the introduction of environmentally friendly types of transport. The expected results in this area are an increase in the level of road traffic safety, an increase in the share of electric and ecologically clean types of transport and passenger transportation, and an improvement in the environmental condition of the environment. The National Transport Strategy of Ukraine for the period until 2030 defines the development of infrastructure for the movement of bicycles, the implementation of economic and other measures to stimulate the use of environmentally friendly types of transport in cities, in particular bicycle transport, the reduction of greenhouse gas emissions into the atmosphere from mobile sources by up to 60% the level of 1990, in particular thanks to the increase in the share of bicycle USE. Emphasis is placed on ensuring institutional support for the development of cycling, strengthening the safety of cycling. Priority is given to ensuring the development of socially and ecologically oriented short-distance mobility in accordance with the "City of Short Routes" model and implementing the principles of intermodality and ensuring optimal interaction of cycling with other modes of transport. The National Economic Strategy for the period until 2030 provides for the strategic goal of "Ensuring effective and fair regulation of price policy in the field of transport", the tasks of which are to ensure the increase of urban mobility (in particular, the creation of bicycle routes), the arrangement of safe bicycle and pedestrian paths and the construction of - city bicycle network. Strategy for increasing the level of road safety in Ukraine for the period until 2024 defines one of the main directions of ensuring compliance Priorities of the interests of road users during the development of the request

works on improving road traffic safety in accordance with the approaches of sustainable urban mobility, as well as setting up a bicycle network in settlements and on public roads, ensuring the development of bicycle infrastructure. By the decree of the President of Ukraine "On the Sustainable Development Goals of Ukraine for the period until 2030", supporting the United Nations General Assembly Resolution No. 70/1 of September 25, 2015 "Global Sustainable Development Goals until 2030" and the results of their adaptation, with taking into account the specifics of the development of Ukraine, it is established to ensure compliance with the goals of sustainable development of Ukraine for the period until 2030, in particular, such as the creation of sustainable infrastructure, ensuring the openness, safety, viability and environmental sustainability of cities and other populated areas
points The Sustainable Development Strategy of Ukraine until 2030 defines the following goals: by 2030, to halve the number of deaths and injuries due to traffic accidents; by 2030, provide everyone with the opportunity to use safe, inexpensive, accessible and ecologically balanced transport systems on the basis of improving road safety. National strategy for healthy physical activity in Ukraine for the period by 2025 "Physical activity, healthy lifestyle - healthy nation" emphasizes the tasks of arranging safe routes for bicycles bottom tourism, improvement of urban planning in terms of creation places of active recreation and the use of cycling as safe means of transportation, emphasizes the importance of arrangement safe bicycle and pedestrian paths. Resolution 74/299 of the UN General Assembly "Improving global road safety" declared a decade of actions to ensure road safety (2021-2030). In particular, in the process of land management planning, it is necessary to take into account the demand for transport services, the choice of a mode of movement, the need to ensure safe and ecological movement for everyone. Special attention is paid to the use of active and ecological transport, such as a bicycle. Emphasis is placed on the implementation of such a policy, under which the reduction of traffic speeds is ensured and primary attention is paid to the needs of pedestrians and cyclists. The financial agreement between Ukraine and the European Investment Bank (Project "Improving Road Safety in Ukrainian Cities") emphasizes reducing the number of dead and seriously injured in traffic accidents in urban areas, with special attention to two categories of victims - pedestrians and cyclists .

SUSTAINABLE DEVELOPMENT OF SETTLEMENTS

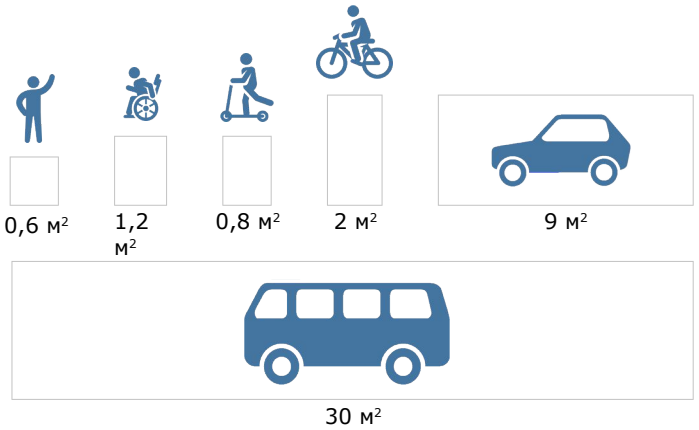
In 1983, the United Nations (UN) created the World Commission on Environment and Development, which called for a new era of economic development that is safe for the environment and defined the concept of sustainable development: "Humanity can make development sustainable to ensure the satisfaction of needs present, without jeopardizing the ability of future generations to meet their own needs."

The concept of sustainable development originates from two global problems that humanity faced in the 20th century: social inequality and depletion of non-renewable natural resources. In essence, sustainable development is the concept of increasing the effective use of the planet's resources and improving the quality of people's lives. For the first time, it acquired leading status in 1992 after the UN Conference on Environment and Development in Rio de Janeiro (Brazil) and was recorded in the document "Agenda for the XXI Century" of the program for achieving sustainable development from the social, economic and ecological points of view. .

In December 1999, the Resolution of the Verkhovna Rada of Ukraine No. 1359-XIV approved the <<Concept of Sustainable Development of Settlements>>, which defined one of the main directions of the state policy of improving the transport infrastructure, in particular the development of all types of public transport, providing urban and intercity connections, rural settlements 3 urban and among themselves. Among the measures for the implementation of the concept, the creation of lanes and paths for bicycle and pedestrian traffic during the design, construction and reconstruction of the street and road network, provision of conditions for the movement of low-mobility population groups, and promotion of the development of a modern street and road network in rural areas are indicated. In 2015, at the UN summit in New York, the "Agenda 2030>> was adopted, which includes 17 global goals and 169 tasks for sustainable development. In Ukraine, this document was adopted on September 30, 2019 by Decree of the President of Ukraine No. 722/2019 "On the goals of sustainable development of Ukraine for the period until 2030". Its objectives 9.1 and 11.2 are aimed at the development of quality, reliable, sustainable and sustainable infrastructure, including regional and cross-border infrastructure and equal access to safe, inexpensive, accessible and sustainable transport systems, as well as improving road safety. What, first of all, determines the main aspects of the sustainable development of transport infrastructure and mobility, giving priority to forms of movement with the least emissions and the most efficient use of space. The transport infrastructure should maximally ensure the availability of all social services for all persons, regardless of mobility resource or income level.

transportist.org

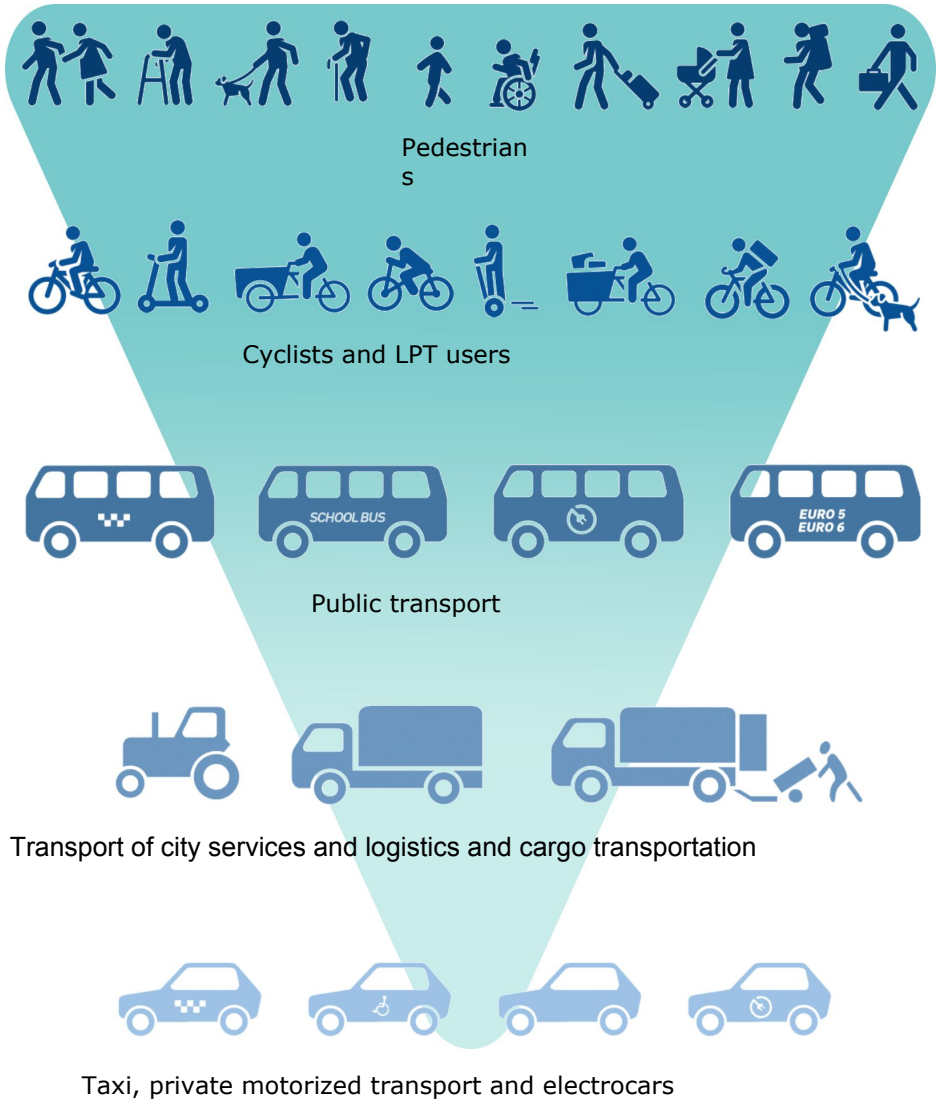
Efficiency of use of street space depending on the type of movement



9.1. Develop high-quality, reliable, sustainable and sustainable infrastructure, including regional and cross-border infrastructure, to support economic development and human well-being, paying particular attention to ensuring low-cost and equitable access for all

PYRAMID OF SUSTAINABLE MOBILITY

Mobility that corresponds to the concept of sustainable development is characterized by the value of safety and human life, respect for the environment, provision of material needs of society and guarantees equal access and opportunities in movement for everyone. The principles of sustainable mobility are reflected in the National Transport Strategy of Ukraine for the period until 2030, which was approved by the Decree of the Cabinet of Ministers of Ukraine No. 430-r dated May 30, 2018: implementation of economic and other measures to stimulate use in cities, more ecologically clean types of transport, in particular electric cars, urban electric transport of subways, trams, trolleybuses, electric buses, as well as bicycle (public bicycle rental systems) transport; reduction of greenhouse gas emissions into the atmosphere from mobile sources up to 60 percent of the 1990 level, in particular thanks to the increase in the share of public transport and electric transport, electric buses, bicycles; improvement of pedestrian infrastructure, parking areas, restrictions speed of movement of vehicles and development of infrastructure for bicycle movement; ensuring the development of socially and ecologically oriented mobility on short distances according to the "City of Short Routes" model, implementation of the principles of intermodality and ensuring optimal interaction of cycling with other modes of transport. The defined measures of sustainable mobility in transport planning make it possible to prioritize different types of movement in settlements (pedestrians, bicycles and light rail vehicles, public transport, transport of city services and logistics, motorized transport) according to the principle "the more the method of movement corresponds to the concept of sustainable development, the higher it is in the pyramid of sustainable mobility and has a higher priority, that is, it needs attention, investment and development." Accordingly, a pyramid of sustainable mobility was formed based on key factors: the area of used space, the volume of emissions, the cost of infrastructure, and social value.



11.2. By 2030, BCIM will be able to provide safe, affordable, accessible and environmentally sustainable transport systems on the basis of improving road safety, expanding the use of public transport, paying special attention to the needs of vulnerable groups of people, women, children, people with disabilities and elderly people.

Concept of bicycle infrastructure development of the Irpin urban territorial community

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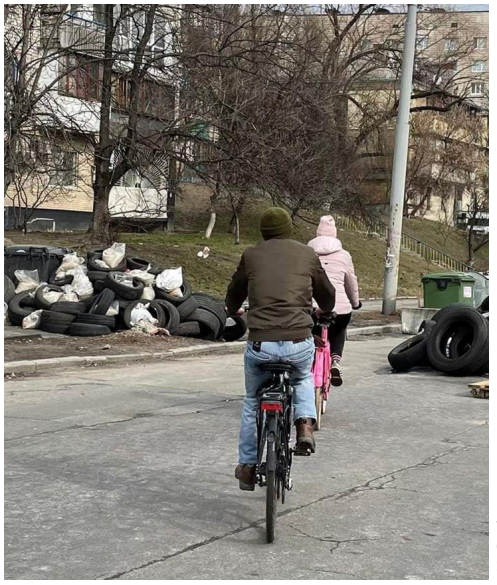
«Transport of life»

On February 24, 2022, the Russian Federation launched a full-scale INVASION into Ukraine, accompanied by active destruction of settlements and infrastructure. In this connection, millions of people were forced to leave their homes and migrate in search of safety. 3 with the onset of the fuel and later energy crisis, bicycles and light personal transport acquire a new meaning. In the occupied and front-line cities of Ukraine, Irpen, Mariupol, Kherson, Izyum, Bakhmut, and others, the bicycle has become almost the only mode of transportation, an opportunity to get to relatives or to bring water and food, as well as the "transportation of life" during evacuation from the occupied territories. A large number of stories of evacuees confirm this fact. After the de-occupation of the Irpin community, there was a significant need for bicycles to provide workers of critical infrastructure, volunteers and social services, for movement in conditions of partially destroyed infrastructure. This trend, with the support of foreign partners, led to the appearance of bicycle campaigns in Ukraine Bikes4Ukraine, BikesForUkraine#. First of all, they allowed people from different countries to donate bicycles to Ukrainian communities. A large number of bicycles come from Denmark and the Netherlands, two world leaders in the development of cycling. Also, these campaigns allowed Ukrainian cities to establish cooperation with European cities in the field of development bicycle infrastructure and reconstruction of the transport system. At the beginning of the war, for obvious reasons, the development of the bicycle was not a major concern. And yet, the bicycle proved to be a reliable means of transport in conditions of fuel shortage, destroyed infrastructure, damaged public transport system, as well as lack of electricity. A bicycle is an economical, practical and mobile means of transportation, which becomes irreplaceable in the conditions of war. Therefore, it is not advisable to postpone the development of bicycle infrastructure until after the victory, residents need safe and, as far as possible, safe movement now.

The war gave a huge impetus to the rethinking of people's mobility, its meaning and priorities, and also showed the vulnerability and weaknesses of traditional transport planning. When developing bicycle infrastructure, it is necessary to take into account this experience and consider it not only as a transport infrastructure for daily movement, but also as potential evacuation routes. The increase in the use of bicycles and light personal transport as modes of community movement during martial law should reinforce awareness of the importance of such transport and infrastructure for them in peacetime. The reconstruction of Ukraine should become a catalyst for the development of cycling.

Бабель

Дмитро Невеселий



U-Cycle

1. Concept of bicycle infrastructure development of the Irpin urban territorial community

Addendum to the decision of the Irpin City Council No. XX dated XX.XX.202X


ГО Еко місто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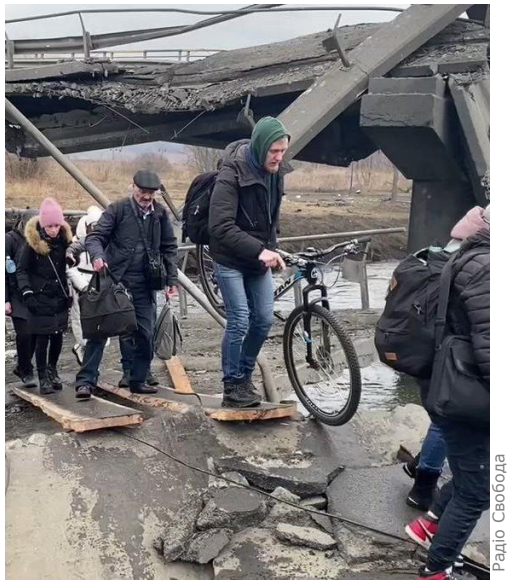
Радіо Свобода


Радіо Свобода


Костянтин Совва

Concept of bicycle infrastructure development of the Irpin urban territorial community

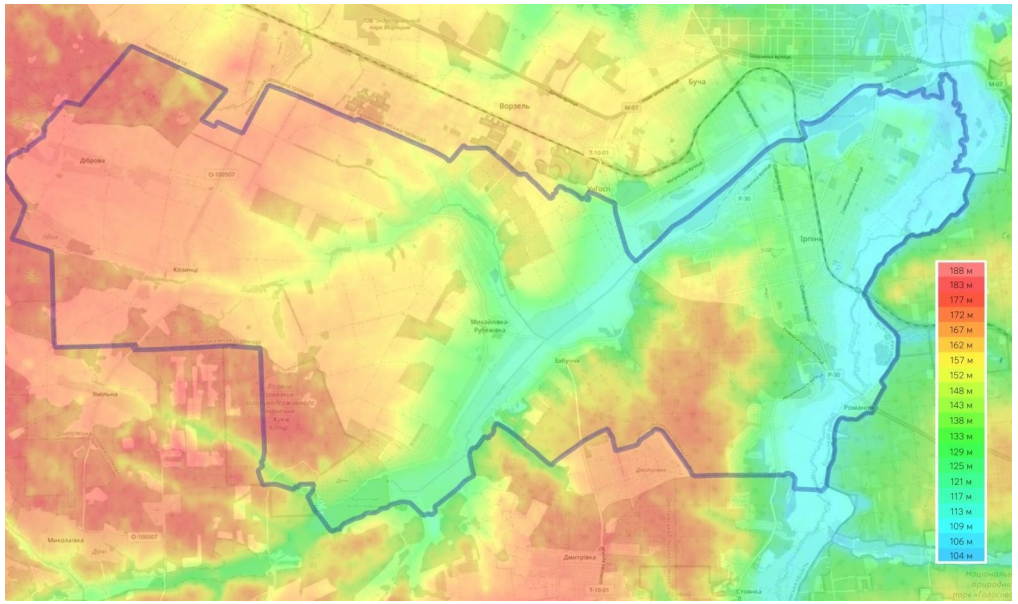
COMMUNITY INFORMATION GUIDE

Addendum to the decision of the Irpin City Council No. XX dated XX.XX.202X

Irpin urban territorial community is located in the Bucha district of Kyiv region, the center is the city of Irpin. The territory of the community includes 1 city and 4 villages. Mykhailivka-Rubezhivka settlements Zabuchcha obed - nani in Mykhailivsko-Rubezhivsky starostyn district, and Kozyntsi and Dibrova in the Kozyntsiv Starostyn district. The Irpin community is bordered on the east by the 3 Kyiv city community, on the north by the Bucha city and Gostomel settlement communities, on the west by the Nemyshaiv and Makariv settlement territorial communities, and on the south by the 3 Dmitrivska and Belogorod village communities. The area of the community is 117.2 km², 32% of which is occupied by the city of Irpin. The population is 77.6 thousand people, of which 65.3 thousand people (84%) live in Irpin. Construction and chemical industry enterprises, as well as agro-industrial complex, operate on the territory of the community. There are two institutions of higher education. The relief on the territory of the community is defined by the valleys of the Irpin River and its tributaries - Buchi. These are spurs of the Dnieper Highlands with heights above sea level from 104 m to 193 m. The climate is temperate continental with sufficient rainfall, warm summers and relatively mild winters. Three territories of the Nature Reserve Fund of Ukraine and 17 parks are located in the community. Highway P-30 runs through the town of Irpin, connecting the center of the community with the capital. The highway E373 (M-07) Kyiv-Kovel-Yagodin-Lublin passes north of the community. To the south of Irpen there is a connection with the European road E40 (M-06) Kale-Kyiv-Ridder. Highway T-10-01 connects the community center with the village. Zabuchya, it is joined by highway 0-101312 in the direction of the village. Mykhailivka-Rubezhivka. The connection between Irpen and the villages of Kozyntsi and Dibrova is possible only by highway E373 through the territories of Buchanska and Nemyshaiv communities. The Irpin intermediate railway station is located on the territory of the Irpin community. Kyiv-Korosten line. Passenger rail connections are provided by 14 pairs of suburban trains, while long-distance trains (as of spring 2023) do not stop at Irpin station. The street and road network of the community includes 226 km of roads, of which 111 km are paved. The central transport axis of the city of Irpenya is Soborna Street, and the street is also important. University. The eastern part of the city, separated from the center by the railway, is served by Severynivska and Kotlyarevskoho streets. Two railway crossings are arranged for transport at the same and different levels. The central square of Irpin and Shevchenko Street is a pedestrian zone. The bicycle network is represented by separate bicycle and pedestrian paths of different B in park zones. In recent years, a number of streets in Irpin have been repaired in parts of the city, mostly without bicycle infrastructure.

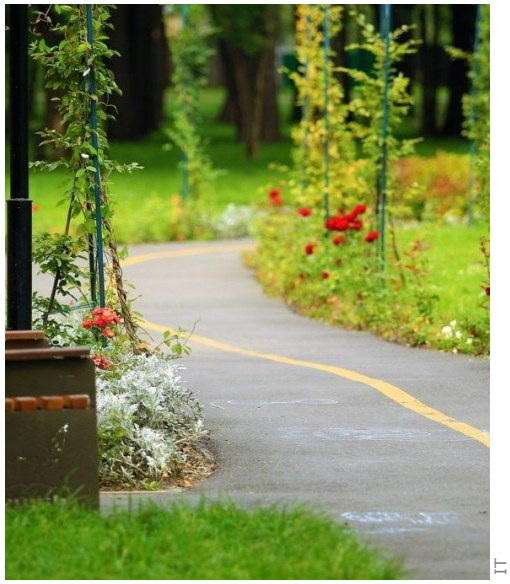
Станіслав Клименко

Facebook: Ірпінь, Буча, Гостомель, Ворзель



EXISTING COMMUNITY EXPERIENCE

The Irpin city-territorial community has an active cycling movement and a consolidated public demand for high-quality development of cycling infrastructure. Bicycle traffic is especially lively on Sobornii Street, the main transport artery of the city of Irpin. People also actively travel by bicycle to the capital - for this, the sidewalk along the P-30 highway is used, which, however, did not meet the regulatory parameters of a bicycle path. As of March 2023, 10.3 KM have been implemented in the community bicycle network bicycle paths, bicycle lanes, as well as adjacent and shared bicycle and pedestrian paths. All of them are arranged in the city of Irpen and are not connected to each other, and 2/3 of them are laid in park zones and are not used as transport routes. The most successfully implemented bicycle path 3.0 km long on the embankment of the Irpin River. Bicycle parking lots are represented by bicycle racks and are common for the most part in the center of Irpin, as well as along Cathedral and University streets. They are installed by various business entities and do not have a single standard of design and rack design. Currently, 30 bicycle parking lots have been installed on the territory of the community, only one of them is installed outside the city of Irpen near the head office in the village of Mykhailivka-Rubezhivka. For the most part, bicycle parking lots are installed by private businesses, near trade and public service establishments. In addition, bicycle parking lots are located near the city council building, 41% of secondary education institutions are provided with them, as well as the Irpin Economic College of the National Agrarian University. There are 6 bicycle parking lots near various establishments on Central Square and Shevchenka bicycle-pedestrian street. The eastern part of the city is the least equipped with bicycle parking infrastructure, and in the western part of Irpen and the villages of Zabuchchya, Kozyntsi and Dibrova there are bicycle there are no parking lots. Traffic calming measures are being actively implemented as part of street repairs in the Irpin Territorial Community. 65 elevated pedestrian crossings have been implemented transitions, as well as one of the first elevated intersections in Ukraine. 10 of them are located on Oleg Koshovoy Street, reconstructed in 2015-2016. The community also has 3 safety islands, as well as 5 roundabouts, 2 of which are located in the Mykhailivka-Rubezhivka village. Thanks to Irpen's railway transport, residents and guests of the community have the opportunity to transport bicycles by suburban trains in inside of Kyiv and Korosten, as well as between the settlements of Irpin-Bucha agglomeration. In the structure of the Irpin City Council, the position of adviser to the city mayor on the development of bicycle infrastructure has been created.



SWOT ANALYSIS

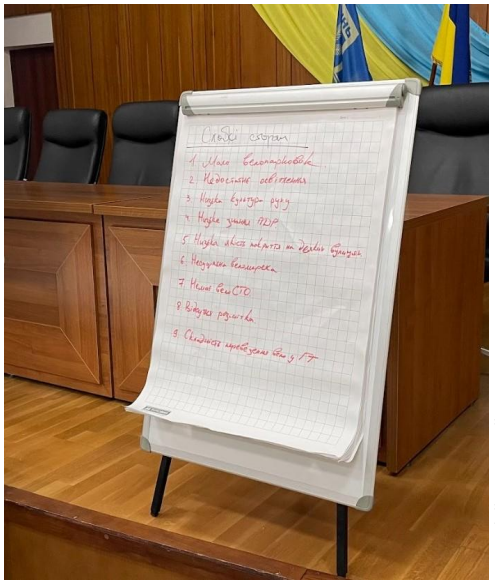
Addendum to the decision of the Irpin City Council No. XX dated XX.XX.202X

SWOT analysis is a method of strategic planning, which consists in identifying factors of the internal and external environment of the object under study and dividing them into four categories: Strengths, Weaknesses, Opportunities, Threats. Strong and weak SIDES are factors of the internal environment of the object of analysis (that is, those that can be influenced by the object itself); Opportunities and threats in the factors of the external environment (that is, those that can affect the object from the outside and at the same time are not controlled by the object). Such an analysis with a mandatory element of participatory planning for synergy between the authorities, specialists and local residents to capture the real picture of the city or community regarding the development of bicycle infrastructure.

Ірпінська міська рада

A SWOT analysis of the development of the cycling infrastructure of the Irpin urban territorial community was organized by local residents during a strategic session. The unequivocal advantage of Irpen is an active community and post-war reconstruction, and hence the public demand for the development of bicycle infrastructure. The city has a favorable geographical position between Kyiv and Bucha, as well as an initial bicycle network on the streets and in parks, which is currently not coordinated. However, the villages of the Irpin community are weakly connected to the Kozyntsiv Starostyn District, and there are no direct roads. Bicycle parking lots are common, however, their number and capacity are quite limited, and the design does not have a uniform standard. A characteristic feature is the existing theft of bicycles, a low level of traffic safety and driving culture. The invasion of Russia also had a negative impact on the situation in the community, the economic crisis and existing destruction, as well as the military-political situation threatening the sustainable development of Irpen. However, for the same reason, the community began to actively develop the direction of international cooperation.

Ірпінська міська рада



Тимофій Нагорний

The main potential for the development of cycling infrastructure lies in the promotion of a healthy lifestyle, improvement of the environmental condition and the road situation while attracting financial and institutional assistance from international organizations and partner states. Also, the DEVELOPMENT of bicycle infrastructure in the Irpin community is promising, both during street repairs and reconstructions, and when traffic organization is changed. Among the threats to the development of bicycle infrastructure, residents of the Irpa territorial community named potential military actions, insufficient budget funding for cycling, as well as the presence of other community budget priorities. It is worth noting that in the conducted SWOT analysis, the opportunities significantly outweigh the threats

Addendum to the decision of the Irpin City Council No. XX dated XX.XX.202X

Strengths

Drive community

Public request for the development of bicycle infrastructure

Preesence of an initial bicycle network

Availability of bicycle parking

The existing path to Kyiv potential bicycle users Children and youth

Advantageous geographical location

The climate is favorable for cycling. There is a bicycle rental system

Recreational and tourist attraction

A significant number of parks.

Economically capable community

Environmental awareness of the population

Active post-war reconstruction

Shevchenko pedestrian street is available

A significant number of young students

Active street repair work

It is possible to transport a bicycle by rail

A significant number of modern means of traffic calming Bridge markings with FEM

- OPPORTUNITIES
-
- Increasing the tourist potential of the community
- Promotion of a healthy lifestyle
- Strengthening environmental safety
- Improvement of investment potential
- Promotion of cycling
- Improvement of the existing infrastructure
- Increasing transport accessibility
- Improving the organization and safety of road traffic
- Expansion of the bicycle parking network
- Economic growth of the community
- Business development
- Cooperation with international organizations regarding the development of bicycle infrastructure
- Financial and institutional assistance from partner states
- Increasing the level of knowledge and compliance with traffic rules
- Consideration of bicycle infrastructure during repairs and reconstruction of streets
- Arrangement of bicycle infrastructure in case of changes in the organization of road traffic
- Reduction of traffic jams
- Development of cycling

- Weaknesses
- Insufficient street lighting
- Low driving culture
- Low level of knowledge among the population
- Traffic rules
- Low quality road surface on some streets
- Lack of a continuous bicycle network
- Lack of accompanying infrastructure
- There are no markings on some streets
- Failure to use modern road signs and markings
- The difficulty of transporting bicycles in public transport
- Theft of bicycles
- Remnants of outdated transport planning
- Some enterprises stopped working or were relocated due to the war
- Significant destruction after military actions
- Lack of sidewalks on some streets
- Irregular sidewalks on renovated streets
- Absence of storm drains
- The service sector is poorly developed
- Significant agglomeration dependence on Kyiv
- Weak infrastructural connection with the villages of the community

- THREATS
-
- Potential military actions
- Insufficient funding for the development of cycling infrastructure
- Other priorities of the community budget
- Unstable price policy for the development of bicycle infrastructure
- Vandalism on the accompanying cycling infrastructure
- Car parking on bicycle lanes and paths
- Increasing the level of car use
- Incorrect perception of the development of cycling infrastructure by the community
- Reduction of road safety
- Failure to provide bicycle parking spaces in new residential complexes
- Lack of legislative support for the development of cycling infrastructure
- The difficulty of setting up a separate bicycle network on some streets
- Low demand for bicycle infrastructure from users

USER'S PORTRAIT

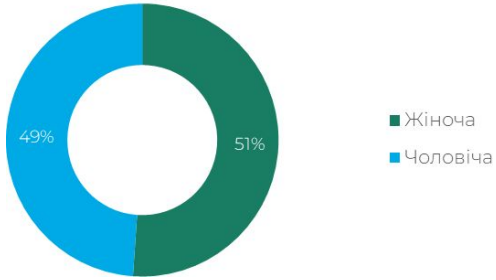
In order to identify the actual experience of using bicycle transport and the needs of users in the Irpin territorial community, a survey was conducted, in which 783 people took part. The survey was conducted in two stages from November 7 to 28, 2022 and from March 15 to 31, 2023 in an online format. Based on the results of the survey, it is possible to create a modal portrait of the user of bicycle transport and light personal transport in the Irpin territorial community.

Respondents are presented almost equally by gender. By age, the interviewees were distributed according to the demographic pyramid, which is typical for Ukraine in general, a significant share of answers falls on respondents of the middle age from 26 to 55 years, the largest - from 36 to 45 years. The largest share of respondents, 83%, live in Irpin, while 5% are residents of other settlements of the community. 12% of respondents live in neighboring communities and often visit Irpin. Most trips take place to the central part of Irpen, as well as to places along Soborna Street. Residents of the community are also actively moving to Kyiv. In addition to the capital, Buchansk and Nemyshaivsk communities account for a share of trips.

80% of respondents have at least one bicycle in their household, and almost a third of all have more than one bicycle. 8% of respondents own LPT means. Most trips are for leisure, as well as to shops for small purchases and services. The main part of trips takes no more than 20-30 minutes, based on the average speed of cyclists, which corresponds to the distance between the extreme points of Irpen. Half of the answers regarding the place of travel by bicycle related to the bicycle network, and in the absence of it, the roadway. Almost 1/5 of respondents choose a roadway or a sidewalk on different streets, depending on the intensity of car traffic. Only 3% of respondents admitted to cycling on sidewalks, and 16% choose sidewalks for safer movement only in the absence of bicycle infrastructure. 3/4 of the respondents consider this to be the biggest restraining factor regarding the use of bicycles and LPT in the community, and 2/3 of them also complain about unfavorable road traffic safety.

After the arrangement of convenient bicycle routes, 82% of respondents would actively use them at least several days a week in the warm period of the year, and more than half of the residents in the cold period of the year. - Almost a quarter of affirmative answers show that residents use public bicycle rental, and half of the respondents would use electric scooter rental if it were introduced. Almost 3/4 of the respondents have a driver's license, a significant proportion studied the Traffic Rules independently or at school. Only 4% of the population has no knowledge of the rules of the road for cyclists

СТАТЬ



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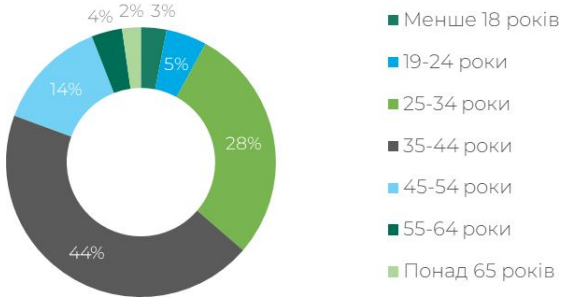

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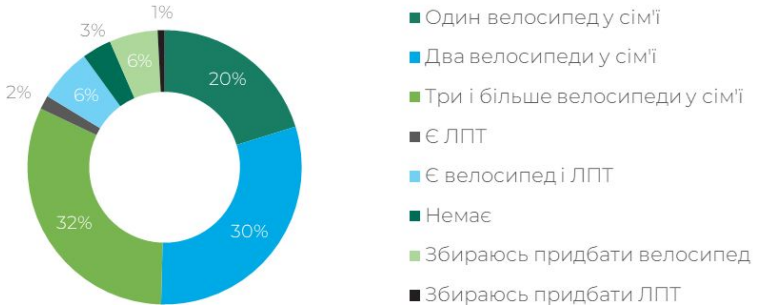

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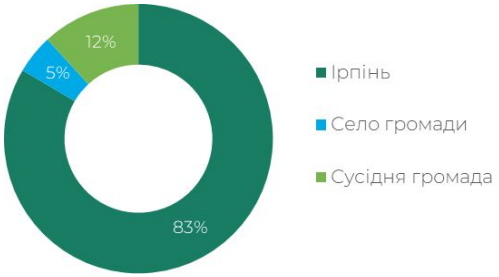

ПЕРСПЕКТИВА КОРИСТУВАННЯ ВЛІТКУ

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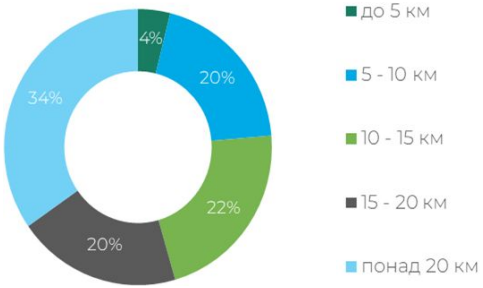

МІСЦЕ РОБОТИ АБО НАВЧАННЯ

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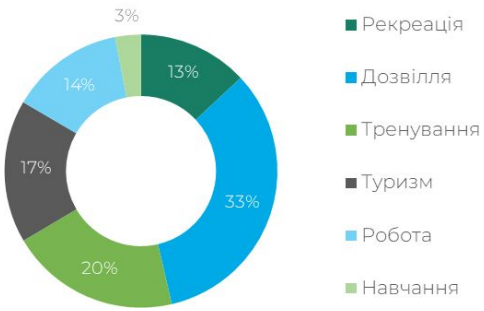
ОСНОВНА МЕТА ПОЇЗДОК



ЗНАННЯ ПДР ДЛЯ ВЕЛОСИПЕДИСТІВ

ВИКОРИСТАННЯ ПРОКАТНИХ СЕРВІСІВ

CYCLING POLICY OF THE COMMUNITY

COMPLEX ORGANIZATION OF ROAD TRAFFIC To coordinate the actions of all responsible executive bodies and communal enterprises of the community, it is necessary to establish a communal enterprise or conclude a memorandum of agreement with 3 specialized enterprises responsible for the organization of traffic. Implementation of such a unit should take place with an emphasis on the motivation of responsible employees in the development of bicycle infrastructure and implementation of the Concept. The range of powers of such an enterprise for effective management in this area should include the development and implementation of complex road traffic organization schemes, including taking into account the implementation of bicycle infrastructure. ACCOUNTING OF BICYCLE INFRASTRUCTURE IN ALL PROJECTS For efficient and timely organization of the bicycle network and related infrastructure structures, they must be taken into account in all projects of streets, roads, squares and artificial structures located on them, including during reconstructions, capital and medium repairs, changes in the organization of traffic. CONDUCT OF ARCHITECTURAL COMPETITIONS AND PUBLIC DISCUSSIONS OF PLANNING AND DESIGN DECISIONS During the development of projects for reconstruction and capital repairs of streets and areas in the community, open architectural competitions should be held to determine by the optimal planning solution, including one which to the ideas and requirements of the Concept. Planning and project decisions should be general fight with the residents of the community using various tools participatory planning. ANNUAL FINANCING FOR THE IMPLEMENTATION OF THE BIKE NETWOR Implementation of bicycle infrastructure requires significantly less funds than infrastructure for vehicles. At the same time, a significant part of the population of the community already uses a bicycle as a means of transportation for daily use. Therefore, it is fair to annually allocate funding from the community budget for the design and installation of a bicycle network in accordance with the Concept implementation plan. ATTRACTING INVESTMENTS FOR THE DEVELOPMENT OF CYCLING INFRASTRUCTURE As part of increasing the community's investment attractiveness, there is a need to attract investments and grants, in particular, from international organizations, for the design and implementation of a bicycle network and related infrastructure. ROAD SAFETY ENHANCEMENT PROGRAM For the optimal implementation of the community's transport policy, together with the implementation of the concept, it is necessary to develop and implement a comprehensive Road Traffic Safety Improvement Program based on an audit of existing road traffic conditions and its safety for all road users.

APPROVED SINGLE SAMPLE OF BICYCLE PARKING The uniform standard of bicycle parking must be integrated into the Rules for the improvement of the territory of the city of Irpen and be used in all purchases of bicycle parking, including as part of reconstructions and capital repairs of the objects of the community's street and road network. In accordance with the requirements of the Concept and Rules of improvement of the city territory PROVIDING BY ENTREPRENEURS OF BICYCLE PARKING NEAR INSTITUTIONS in Irpin, entrepreneurs must install bicycle parking and coordinate their location with the balance keeper for placement on of the approved unified standard near institutions. At the same time, it is necessary pedestrian sidewalks. Proper maintenance of cycle paths at different times of the year is key to ensuring. QUALITY MAINTENANCE OF THE BIKE NETWORK ensuring convenient and safe daily use of bicycle transport by residents and guests of the community. SURVEY OF SATISFACTION WITH THE QUALITY OF BICYCLE INFRASTRUCTURE an annual survey should become important for monitoring the implementation of the Concept of users of bicycle transport and LPT in the community regarding satisfaction with the quality development and maintenance of bicycle infrastructure. MOTIVATION OF THE USE OF CYCLE TRANSPORT AMONG COOPERATIVE NAMES OF THE EXECUTIVE COMMITTEE AND UTILITY ENTERPRISES For a correct understanding of the importance and aspects of the development of bicycle infrastructure, it is promising to encourage the deputies of the city council, employees of the executive committee and municipal enterprises to use the bicycle as a means of transport. And the leadership of the community can submit the correct one in this way example and declare the European vector of community development. COOPERATION WITH THE OPERATORS OF RENTAL SERVICES For the comprehensive development of cycling in the community, it is worth actively Implement municipal-private partnership mechanisms. This is necessary for the development of existing and the introduction of new rental services, the involvement of interested parties in the financing of bicycle infrastructure, the holding of joint events and campaigns, etc. PARTNERSHIP FOR THE DEVELOPMENT OF CYCLING INFRASTRUCTURE WITH NEIGHBORING COMMUNITIES AND ROAD BALANCE KEEPERS In the implementation of intercity and recreational bicycle routes, the cooperation of the Irpin community with neighboring communities and the Highway Service in the Kyiv region is key. This should become the basis and trend for the organization of a regional bicycle network.

PROJECT BICYCLE NETWORK

The creation of a bicycle network in the Irpin territorial community will take place on the basis of already arranged bicycle lanes and tracks, or connect them into a single network. This should apply to both transport bicycle routes — city and intercity routes, as well as recreational and tourist CYCLE routes. In accordance with the current regulatory documents, the bicycle network should be arranged on the territories of residential and industrial areas, communal and warehouse areas, on main roads and streets, streets and roads of local importance, village and village, as well as those that provide access of cyclists to residential and public buildings, industrial enterprises, mass-visited objects, other objects and infrastructure. The project bicycle network must be integrated into the general plans of the community's settlements, the comprehensive transport scheme and detailed plans of the territories, as well as into the projects of the organization of road traffic.

Among the main principles of organizing a bicycle network is its arrangement near residential buildings, as well as near places of demand and attraction. It is always necessary to ensure bicycle traffic in both directions, even on one-way streets (using the oncoming bicycle lane). If it is objectively impossible to organize two-way bicycle traffic on a specific street, it is necessary to provide for the opposite direction on the nearest parallel street. The bicycle network must be continuous, combined with bicycle crossings, 30N bicycle traffic lights on the left with the help of turning cyclists, adjustable intersections, etc. yci bicycle paths must be barrier-free, curbs between the carriageway and the sidewalk at intersections must be made on the same level (lowering the curb or setting up an elevated bicycle crossing), and stairs in such areas must be duplicated by ramps with a standard slope. Tracks for the joint movement of pedestrians and cyclists should be arranged in the organization of another form of velomere - in exceptional cases, when it is impossible due to the geometric parameters of the street. In the event that certain streets are closed for motorized traffic, it is impractical to allocate separate bicycle paths, it is necessary to arrange bicycle and pedestrian zones with sufficient street width for conflict-free traffic. Bicycle lanes must be located between the roadway and the pedestrian area sidewalk If there are no buildings on the street, their arrangement is allowed behind the pedestrian sidewalk or the arrangement of shared bicycle-pedestrian paths, provided that pedestrian traffic is not intense. Bicycle lanes are designed for one-way traffic only. Arrangement of two-way traffic with a bicycle lane is possible only if it is structurally separated within the roadway. The project bicycle network of Irpen includes 137.4 km of paths, including 110.0 km of bicycle routes between settlements of the community. 92.2 km of recreational and 41.1 km of tourist bicycles are organized on this OCHO

routes

Тимофій Нагорний

Станіслав Клименко

Ірпінська міська рада

CITY CYCLE NETWORK

Addendum to the decision of the Irpin City Council No. XX dated XX.XX.202x

The bicycle network of Irpen should cover most of the streets of the city, including all main streets of city-wide and regional importance, and in the outskirts of the city it should be combined with intercity bicycle routes, and within Irpen it should become the basis for laying urban, recreational tourist bicycle routes. It is customary to divide the bicycle network of the settlement into three levels: city district and KM quarter. The city bicycle network is "the framework of the city's bicycle network, which provides bicycle transport connections between residential, business and industrial areas, as well as to the city center, the railway station and other objects of city-wide importance. It is characterized by large transit flows, which determines the creation of the most comfortable continuous White Network with a minimum number of intersections with other traffic participants. As. as a rule, the city bicycle network is arranged according to the main radial directions from various districts of the city to its center, providing the most direct routes in the entire city. Taking into account the rectangular scheme of the street and road network of Irpen, the city bicycle network will have a route along the P-30 highway, as well as the streets of Soborna, Shevchenko, Universitetskaya, Severnaya, Central, Tyshchenko, Lychak, Mechnikov, Grigory Skovoroda, Severinivskaya, Kotlyarevsky and Gostomelsky highways. It is also important to take bicycle networks into account when laying the ring road in the western part of the city. The following forms of bicycle traffic are used to build the city bicycle network: two-way bicycle lanes on both sides of the street, one-way bicycle lanes on both sides of the street, bicycle lanes on both sides of the street. The district bicycle network provides internal district connections, as well as connecting districts with each other and with the city bicycle network. It should quickly and safely connect residential and business areas with the city bicycle network, providing convenient and comfortable bicycle traffic. The main function of this layer of the network is to enable people to cycle to destinations in their own neighborhood or nearby parts of the city (schools, work, shops, etc.). The following forms of cycling are recommended for the district bicycle network: one-way bicycle lanes on both sides of the street, bicycle lanes on both sides of the street, shared movement of cyclists and motor vehicles, and oncoming bicycle lanes.
The quarterly bicycle network is intended for local bicycle traffic. Its main function is to provide safe and convenient cycling directly to homes and destinations, and to enable children to cycle to primary school and friends. As a rule, these are short trips by bicycle, as well as trips to the city and district bicycle network. to ensure with the help of the simplest forms: joint movement of cyclists and motor vehicles, oncoming bicycle lanes, bicycle and pedestrian zones, residential zones,

137,4 KM **Irpin Cycling network**

37,7 KM **CITY CYCLE NETWORK**

District cycle network

38,7 KM

Neighborhood cycle network

61,0 KM

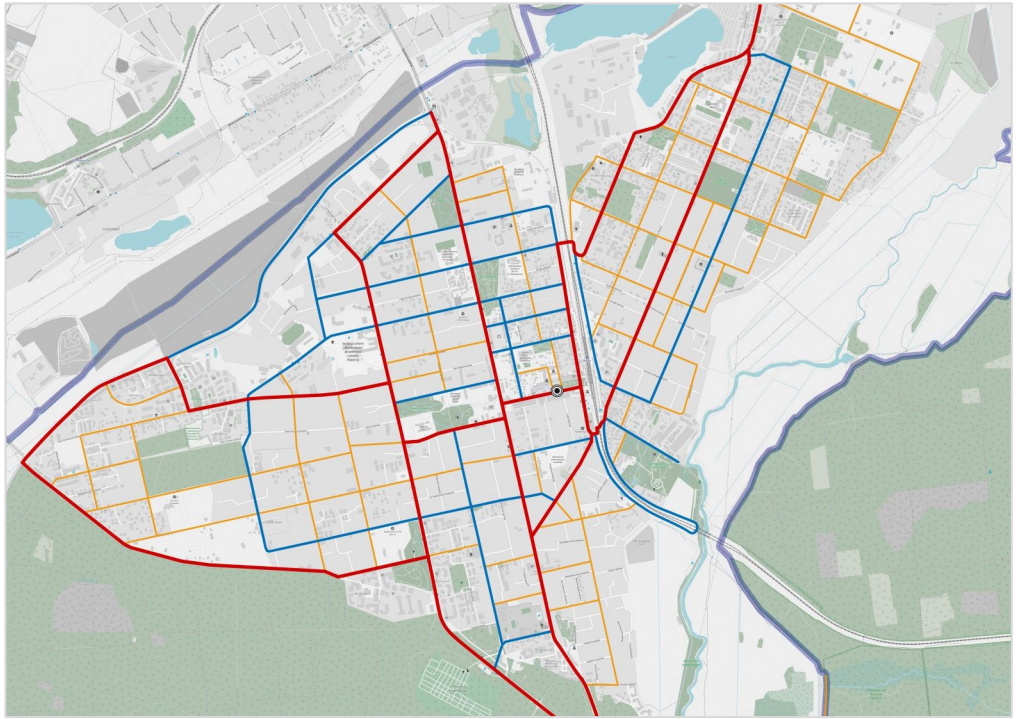
Recommended types of coverage:

Asphalt concrete

Concrete

paving stones

The bicycle network can be organized in a fairly flexible and adaptive method, differing on sections of streets and roads in the way of arrangement within the framework of various works: New construction, construction of linear objects of engineering and transport infrastructure, which is carried out with the aim of creating new objects, as well as completion of objects of unfinished construction; Reconstruction - reconstruction of an existing street or road, associated with a change in its functional purpose, an increase in category and/or an increase in the number of traffic lanes (widening or narrowing of the carriageway); Capital repair - comprehensive restoration or improvement of the transport and operational condition of the street or road or bringing the geometric parameters and technical characteristics of individual elements to normative Requirements 3, taking into account the prospective traffic intensity and loads without raising her category. To the nomenclature of works from overhaul includes the installation of new bicycle lanes and resurfacing or widening existing sidewalks and bike lanes track; Current repair or maintenance of restoration of the necessary transport and operational indicators of part of the elements of the street or road, bringing the elements of arrangement to regulatory requirements. The nomenclature of current repair works includes the elimination of damage to the coatings on bicycle paths, the installation of new bicycle paths no longer than 100 m. Changing the organization of road traffic in the event of a change in regulator legal acts and regulatory documents in the field of construction and repair streets and highways, as well as, if necessary, improving road safety, arranging bicycle lanes and arranging traffic calming devices. and tracks. On streets and roads that are not part of the cycle network scheme, it is also necessary to organize conditions for safe and comfortable cycling in the case of the above-mentioned types of work. The bicycle network indicated on the diagrams defines the streets and roads that have the highest potential for arranging a complete and comfortable bicycle network in the Irpin territorial community.



The diagram of the city bicycle network is given in the Graphical Appendices

CITY CYCLE ROUTES

Addendum to the decision of the Irpin City Council No. XX dated XX.XX.202x

The bicycle network of the city of Irpin should be created in stages, taking into account the already arranged bicycle paths. Each stage is the creation of a complete bicycle route that will connect one of the radial directions of the city with its center or city districts with each other and with important objects of city-wide significance. From each route, it is necessary to expand the bicycle network deep into the districts. City cycle routes are the main routes of daily cycling in the city. They are created in order to organize the bicycle network and facilitate orientation in space and time. Such routes are laid mostly by the city bicycle network. populated by the main streets of the point to connect the largest residential areas with important objects of city-wide importance and the city center. They are designed for bicycle trips up to 10 km or up to 40-50 minutes in terms of time. In Irpin, the city bicycle routes should connect the main arterial streets of St. Sobornu, str. University and St. Oleg Koshovoy, str. Severynivska and St. Kotlyarevsky. The western part of the city will be connected to its central part by a bicycle route along St. Hryhoriya Skovorody, str. Dzherelniy and St. Mechnikova, as well as along the promising Ring Road. These paths should be arranged with the use of bicycle lanes on both sides of the street, as well as mostly bicycle lanes on both sides of the street, which can be organized by bringing the current traffic lanes to the standard width. At the same time, bicycle traffic on such streets must be provided in both directions, which can be achieved including by using bicycle lanes in the opposite direction on one-way streets. Bicycle routes must be inseparable bicycle lanes - paths and lanes must be combined with the help of bicycle crossings and the use of bicycle traffic lights at regulated intersections. When creating city bicycle routes, it is especially important to take into account the construction of bicycle paths or the reserve of the width of the carriageway for bicycle lanes within the framework of capital repairs and reconstruction of streets and squares.

36,7 **км** **Urban cycle routes**

The necessity of routing the bicycle network lies in the convenience of orienting users in it. For the introduction of a bicycle route for
it is developing bicycle navigation, similar to route orientation for motor vehicles. Promising urban cycling routes in Irpen are developed on the basis of community proposals, they are represented by 7 directions with a total length of 36.7 km. Most of the city bicycle routes will cross on the street. Shevchenko in the heart of the city. Instead, city bicycle route #7 connects bicycle routes #3 No. 6 on the outskirts of the city along the project section of the Bypass Road to ensure bicycle access between the western part of Irpin and the community of St. University, as well as an exit towards the capital.

Recommended types of coverage

Asphalt concrete

Concrete

Paving stones

1 Romanivka — Central Square (6.1 km)

2 St. Shevchenko — Victory (2.9 km)

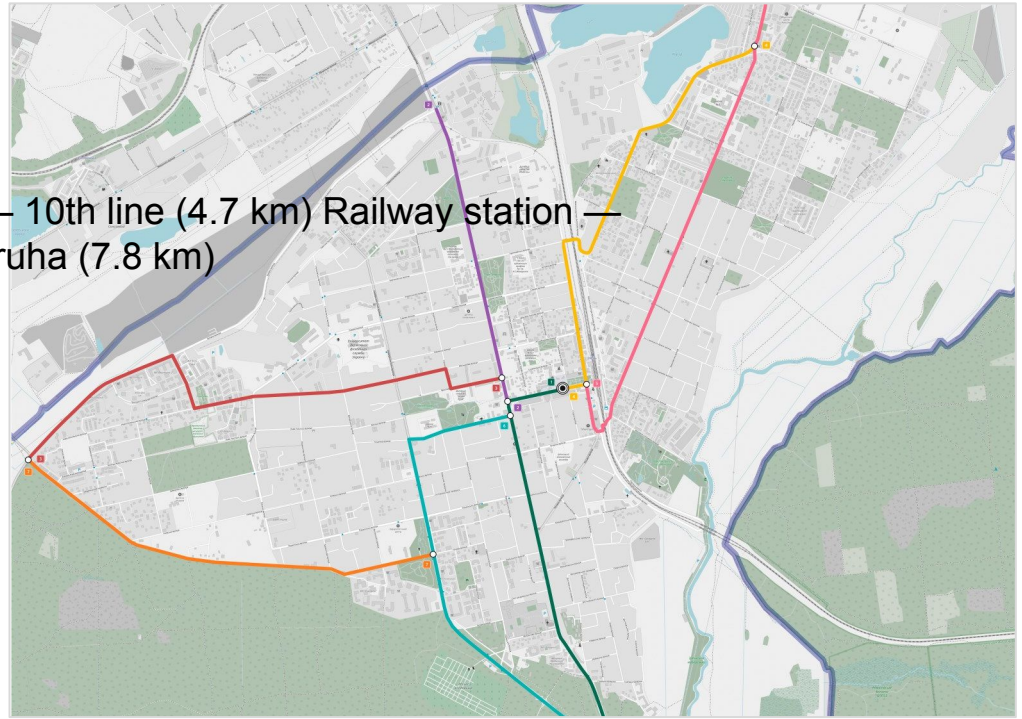
3 St. Soborna - st. G. Skovorody (5.5 km) Central square — 10th line (4.7 km) Railway station — Gostomelske shose (5.4 km) St. Soborna — Stoyanka-Druha (7.8 km)

4 St. Universitetska - str. Skovorody town (4.3 km)

5

6

7



The scheme of city cycling routes is given in the Graphical Appendices

INTERCITY CYCLE ROUTES

Intercity bicycle routes in the intermediate link between the city and regional bicycle network. They are arranged between settlements that are objectively connected to each other by close connections in the agglomeration, as well as for longer bicycle trips, in particular tourist ones. Such cycling routes are usually designed for a distance that can be covered in 1-2 hours. They are laid, as a rule, along public roads, or, to shorten the distance between cities, they can be routed through economic, landscape and nature reserve zones. Implementation of intercity bicycle routes should be organically integrated into urban bicycle networks. Some of them will run parallel to recreational or tourist cycling routes. Around Irpin, it is proposed to create bicycle routes both to populated areas of the Irpin territorial community, and to lay the foundation for connecting with neighboring communities. Irpin is a part of the Kyiv agglomeration and is closely connected with neighboring settlements, therefore it is objective to arrange bicycle routes to the capital and the centers of neighboring communities: Buchi, Gostomel, Nemishaevo, Dmytrivka, Bilogorodka and Makarov, as well as to rural settlements nearby . The importance of such connections was emphasized by the community during the strategic session. INTERCITY White Routes will connect with the Irpen city bicycle network on Sobornii, Popovycha, Oleg Koshoboho, Hryhoriy Skovoroda and Gostomelskyi Shose streets. The Trpinsk territorial community should set the trend for the formation of a regional cycling network of Kyiv region, therefore it is proposed to form the perspective of creating bicycle paths in the direction of the main transport arteries of the region - the Barshavskaya highway (M-07) and the Zhytomyr highway (M-06). Bicycle routes along public roads of state importance should be laid with the arrangement of separated bicycle lanes, or, in compressed conditions, bicycle lanes. Along the roads of local importance, as well as on roads without a hard surface, it is allowed to arrange the joint movement of cyclists and motor vehicles with a reduction of the permitted speed. Theproposed 17 intercity bicycle routes have a total length of 110 km, of which 34.9 km are between settlements of the Irpin Territorial Community -the city of Irpin and the villages of Mykhailivka-Rubezhivka, Zabuchchia, Kozyntsi and Dibrova. Not only the connection of villages with the center of the community is foreseen, but also arranged crreation of separate cycle routes between them to ensure fast and convenient Velorukh within Starosty districts. At the same time, half of the bicycle routes in the community (17.6 km) will connect the settlements on unpaved roads or on their own track, separate from the scurrying transport arteries of the community. In the implementation of intercity bicycle routes, the cooperation of the Irpin Territorial Community with the Service for Reconstruction and Development of Infrastructure in the Kyiv Region (as a balance-keeper of the roads) and neighboring communities is key.

110,0 км **Intercity cycling routes:**

34,9 км **within the boundaries of Irpin city**

75,1 км **outside the community**

Recommended types of coverage:

Asphalt concrete

Concrete

Paving

Asphalt crumb

Gravel-sand mixture

Gravel

1 **Irpin - village Mykhailivka-Rubezhivka (6.6 km)**

2 **Mykhailivka-Rubezhivka — Krasne hutir (3.7 km)**

3 **Mykhailivka-Rubezhivka — village. Dibrova (10.9 km)**

4 **village. Mykhailivka-Rubezhivka — village. Kozyntsi (6.6**

5 **km) village. Kozyntsi — village. Dibrova (4.9 km)**

6 **Bicycle route 1 — Bicycle route 4 (2.2 km) Irpin — Kyiv**

7 **(5.3km)**

8 **Irpin - Bucha - Gostomel village (10.1 km) Irpin - village**

9 **Gorenka — Kyiv (10.9 km)**

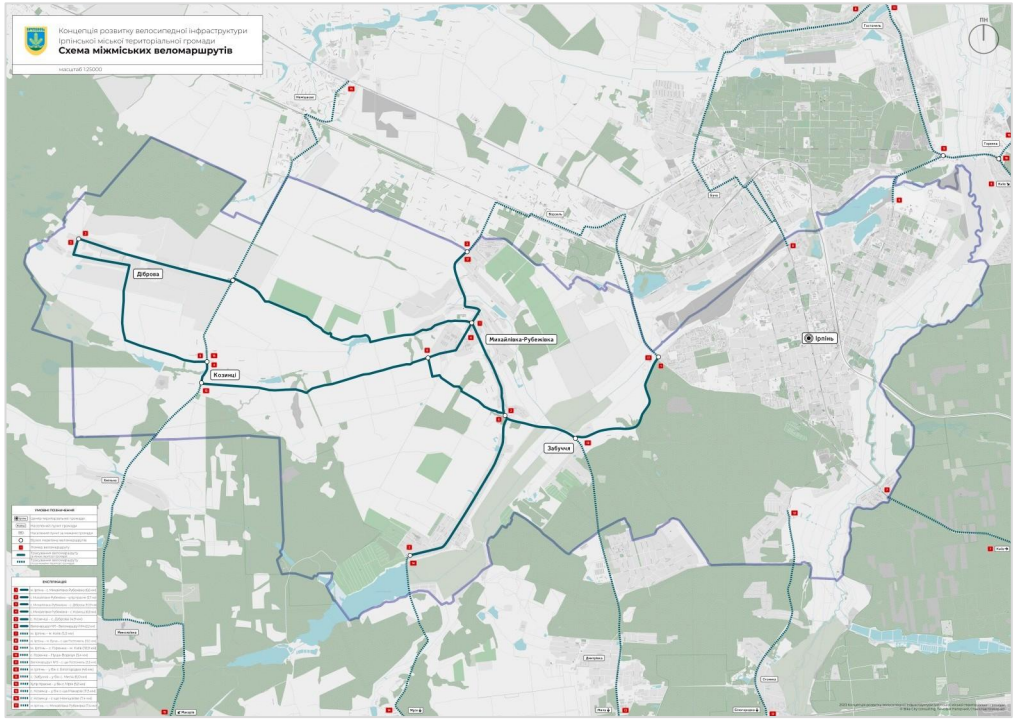
10 **. Gorenka — Pushcha-Vodytsia (3.4 km)**

11 **Bicycle route 9 — the village of Gostomel (3.5 km)**

12 **Irpin - village Stoyanka is in the direction of the village. Bilohorodka(4.6 km)**

13 **Zabuchya — village. Dmytrivka — towards the village. Myla (6.0 km)**

14 **Khutir Krasne — towards the village. Mriya(5.0 km)**



The scheme of intercity cycling routes is given in the Graphical Appendices

15 **. Kozyntsi — village. Buzova — in the direction of the village of Makariv (11.5 км)**

16 **. Kozyntsi — the village of Nemishaeve (7.4 km)**

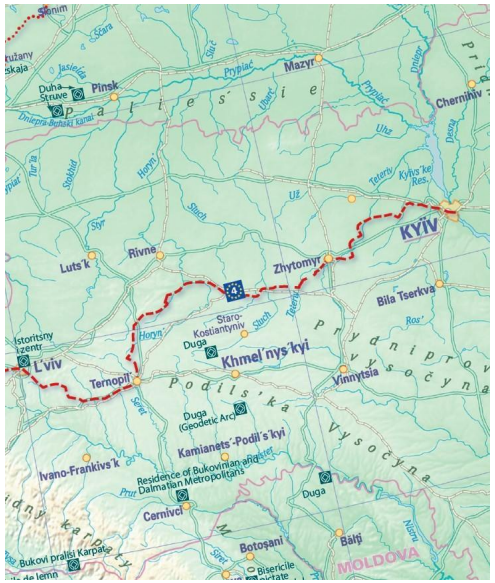
17 **the city of Irpin — the village of Vorzel — the village Mykhailivka-Rubezhivka (7.4 km)**

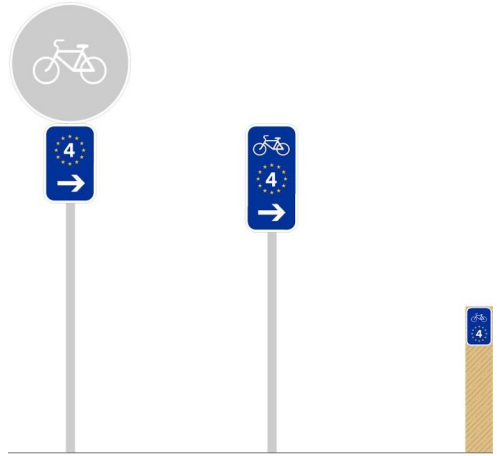
EUROVELO CYCLE ROUTE

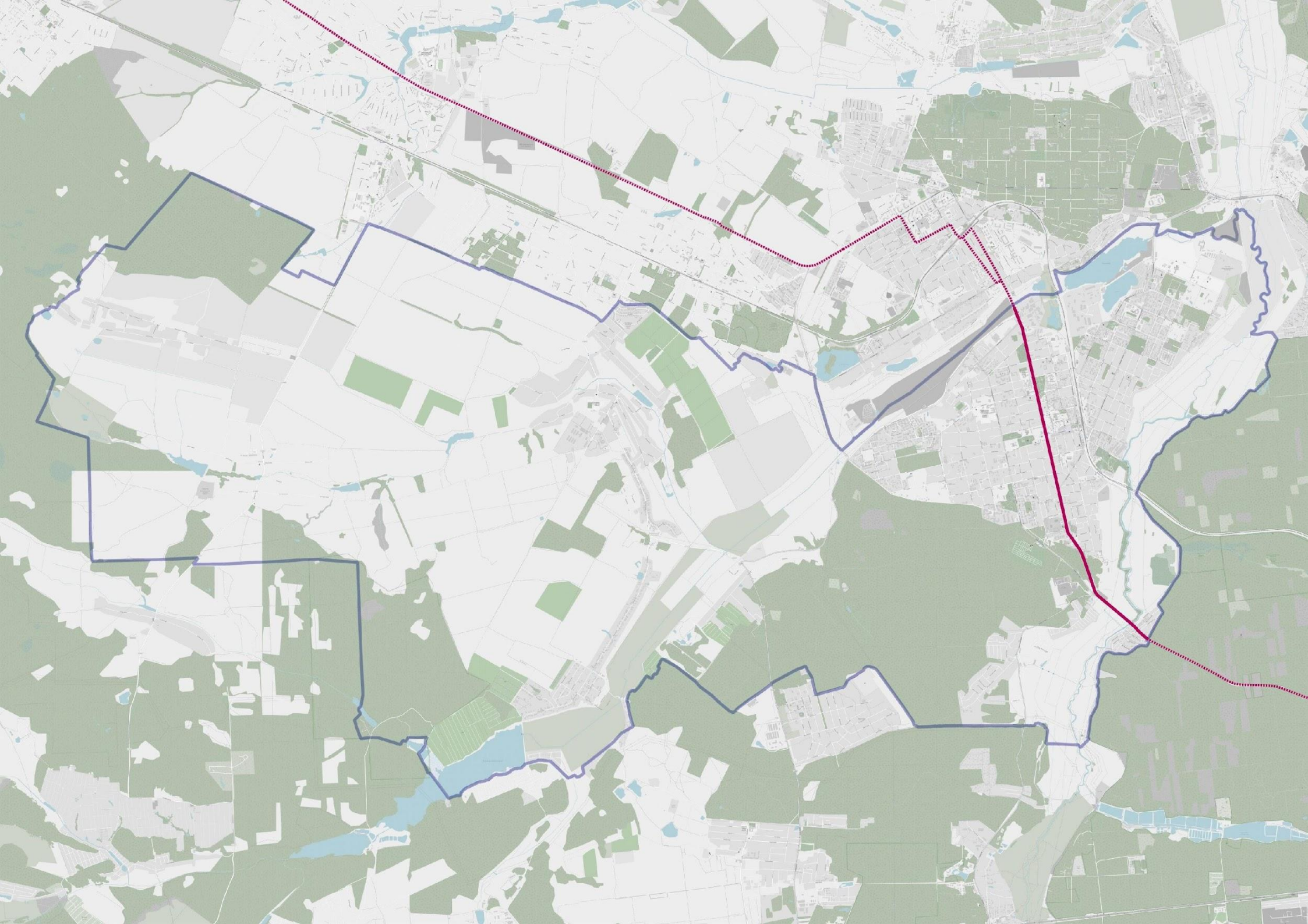
The creation of a network of Eurovelo international bicycle routes, which MUST cover ALL of Europe, began in 1995 under the auspices of the European Federation of Cyclists. Fully. the implemented Network of 17 routes will comprise 93,000 km, of which, as of November 2022, 56,000 km have already been implemented. Each bicycle route consists of sections of already existing bicycle paths or bicycle lanes, as well as local roads with the joint movement of motor vehicles and cyclists. The main requirements for the functioning of the bicycle route are the provision of two-way traffic and the intuitive recognition of the marking of the route, unified markings and navigation signs. The EuroVelo 4 route, which passes through the territory of Ukraine, has one of its end points in Kyiv at the European Square. According to preliminary plans, the cycling route runs from Kyiv through Irpin, Bucha and Zhytomyr, Ternopil, Lviv 1 and further to the border with Poland. It then continues in Poland through Krakow, in the Czech Republic through Prague and Karlovy Vary, in Germany through Frankfurt am Main and Dusseldorf, through the Netherlands to the Atlantic coast of France, where it ends in the city of Roscoff. The total project length of the route reaches 5,066 km, according to the results of 2022, it has been implemented by 76%. Currently, the Eurovelo 4 cycling route is just beginning to be integrated into urban planning and planning documents for the development of Ukrainian cities and territories. It is provided in Kyiv by the project of the General Plan of the city until 2040 and the project comprehensive scheme of transport, in Lviv - Program for the development of bicycle infrastructure structure of the Lviv MTG until 2030. Some parts of bicycle routes in the boundaries of Kyiv have already been created in the form of bicycle lanes and lanes, however

there is no complete bicycle route from the city limits to the European Square at the moment. Each community and city through which the EuroVelo route passes, when laying its route, I independently equip it with signs and markings, using the existing bicycle network. During the creation of the EuroVela network, each city and country integrated its markings into their bicycle navigation system. In cities where bicycle navigation was already established, the EuroVelo icon was added to the existing signposts. Thus, the route of the bicycle route is implemented in each community in a fragmented manner, the forms of bicycle traffic and their route are chosen individually. The main goal of this process is to unify the paths by marking them into a single inseparable bicycle route. The main similar signs of navigation on EuroVelo routes are the use of rectangular plates with vertical placement of information, which contain the brand designation of the number of the EuroVelo bicycle route, framed by the logo of the European Union. Since in Ukraine road signs and their plates are regulated by DSTU 4100:2021 Road signs, the background color, font, image of the bicycle icon and ARROWS are defined. EuroVelo road signs. already with It is on their basis that development, IP, divination of individual design for marking the route is possible

Addendum to the decision of the Irpin City Council No. XX dated XX.XX.202x







RECREATIONAL CYCLING ROUTES

Рекреаційні велосипедні маршрути влаштовуються для зручних, безпечних та екологічно орієнтованих поїздок у ландшафтних, рекреаційних, курортно-оздоровчих та природно-заповідних зонах. Зазвичай вони пролягають у міських та приміських зелених зонах, окремо від вулиць та доріг. При цьому, на них допускається використання не лише твердого покриття, а й гравійно-піщаної суміші, а також прокладення ґрунтовими дорогами за неможливості влашту- вання виділеного шляху. На дорогах з низькою інтенсивністю руху влаштову- ються окремі, зазвичай двосторонні, велодоріжки, можливий спільний рух вело- та автотранспорту. Такі маршрути влаштовуються не лише для туристич- них поїздок та рекреації, але й для повсякденного велосипедного руху, якщо вони поєднують райони міста або населені пункти між собою та слугують коротшим шляхом сполучення між ними. З іншого боку, деякі ділянки вони можуть проходити паралельно міським або міжміським велосипедним марш- рутам. Реалізація рекреаційних маршрутів доцільна лише у випадку, коли до них можна доїхати міською або міжміською велосипедною мережею. Усе це повинно супроводжуватися відповідною велосипедною навігацією, яка для рекреаційних маршрутів створюється у відтінках зеленого кольору.

Ірпінська територіальна громада має значний потенціал та велику кількість різних об’єктів рекреації та зон для відпочинку. Створення рекреаційних вело-

сипедних маршрутів покликане підвищити активність відпочинку населення і гостей громади, а також підвищити її конкурентоспроможність у сфері зеленого і велосипедного туризму.

Головними вузлами рекреаційних веломаршрутів є центр Ірпеня та Ірпінська набережна, деякі маршрути прилучаються до них в інших частинах міста і громади. Рекреаційні веломаршрути сполучатимуть об’єкти природно-заповідного фонду України (лісовий заказник загальнодержавного значення «Жуків Хутір», гідрологічний заказник «Криничка» та пам’ятка природи «Прадуб»), Ірпінський і Святошинський ліси, водні об’єкти (озера і ставки у се-

лах Михайлівка-Рубежівка, Козинці та Діброва; Ірпінська набережна; два пляжі; затоплені кар’єри БЦЗ і СМУ), 17 парків та скверів громади, місця для риболов- лі, а також об’єкти активного дозвілля — стадіон Національного університету державної фіскальної служби України і вейк-парк. Крім об’єктів рекреації на території Ірпінської громади пропонується передбачити прокладення марш- рутів до таких у сусідніх громадах, куди часто їздять мешканці та гості Ірпеня — національного природного парку «Голосіївський», заказників «Ворзельський», «Гореницький» і «Річка Любка», пам’ятки природи «Романівське болото», Свя- тошинських ставків а також треку BMX у Святошинському лісі.

Загальна протяжність 11 проєктних рекреаційних велосипедних маршрутів становить 92,2 км, з них 7 маршрутів довжиною 72,0 км — на адміністративній території Ірпінської громади.

92,2 км **Рекреаційні веломаршрути:**

72,0 км **у межах Ірпінської міської територіальної громади**

20,2 км **поза межами громади**

Рекомендовані типи покриття:


Асфальтобетон


ФЕМ

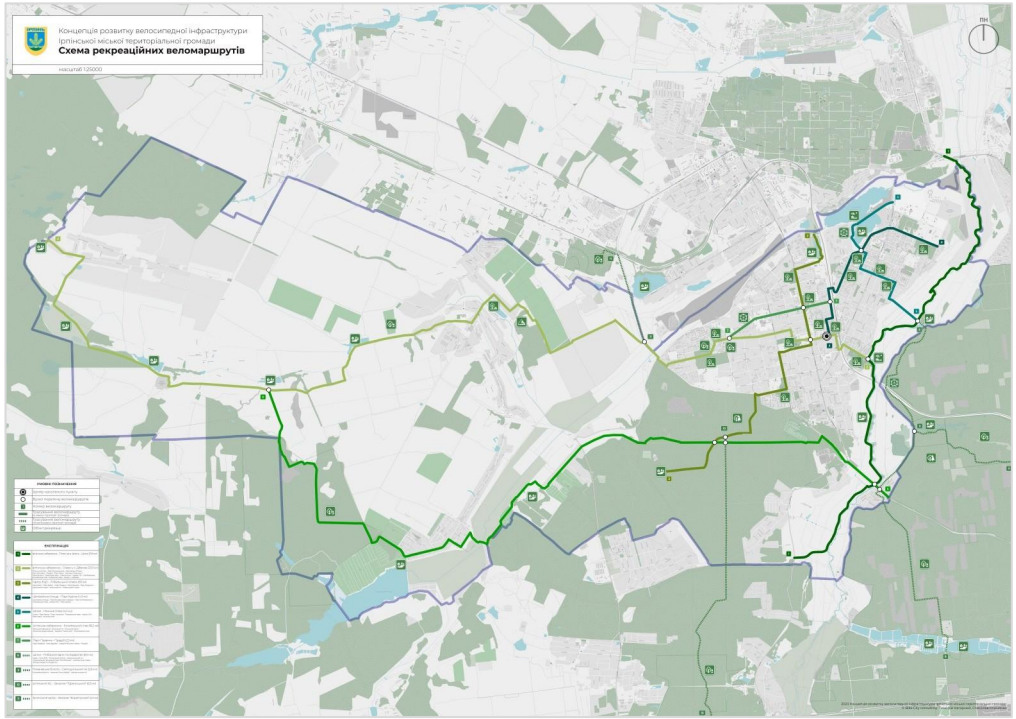

Асфальтова крихта


Щебенево-піщана суміш


Гравій


Ґрунт

1. **Irpin Embankment - Lock on the Irpin River (11.8 km)**
2. **Irpin Embankment - Lake in the village of Dibrova (23.3 km)**
3. **BCZ Quarry - Fishing Pond (8.1 km)**
4. **Central Square - Kurgan Park (4.3 km)**
5. **Lock on the Irpin River - City Beach (4.0 km)**
6. **Irpin Embankment - Kyselivskyi Pond (18.2 km)**
7. **Park Pravyka - Pradub (2.3 km)**
8. **Lock on the Irpin River - Sviatoshyns'kyi ponds (8.9 km)**
9. **Romanivske Swamp - Sviatoshynskyi Forest (2.6 km)**
10. **Irpin Forest - Horenytskyi Reserve (6.3 km)**
11. **Buchanskyi quarry - Vorzelskyi reserve (2.4 km)**



Схему рекреаційних велосипедних маршрутів наведено у Графічних додатках

TOURIST BICYCLE ROUTES

Tourist bike routes are arranged between landmarks, tourist attractions, and monuments, as well as transportation hubs for convenient and safe bike travel between them. They can run parallel to the city's bike network or intercity bike routes, or they can exist separately while connecting to another bike network. Tourist bike routes are accompanied by navigation elements in shades of brown.

Irpin has unique tourist potential due to its geographical location near the capital, active development as a resort town on the border of the 19th and 20th centuries, and the legacy of the Second World War and the Russo-Ukrainian War. Irpin has examples of dacha construction from the first half of the 20th century and the early post-war decades that have historical significance as places of residence and work for many representatives of creative professions. Considering that Irpin is a relatively young city founded during the construction of the Kyiv-Kovel railway in 1899, several architectural monuments from the beginning of the 20th century have been preserved here, including the railway station built in 1904, the Holy Trinity Church built in 1911, and the dacha of Kyiv industrialist Mykola Chokolov built in 1910 (House of Writers). The wooden St. Michael's Church from 1905 in the village of Mykhailivka-Rubezhivka has also been preserved. The monumental architecture of the mid-20th century is represented by the Irpin Sanatorium and the Central House of Culture.

Along the Irpin River and in the Svyatoshynsky forest, there are DVTs (long-lasting firing points) - defensive structures from the time of World War II. After demining the area, their development as a tourist attraction and the creation of tourist cycling routes between them would be appropriate. For this, cooperation between the Irpin and Kyiv city councils is necessary, considering the placement of DVTs on the administrative territory of the capital.

The Russian-Ukrainian war has changed Irpin and all of Ukraine. After the de-occupation of the Kyiv region in March 2022, the scars left by the Russians in Irpin are gradually turning into objects of military tourism, which is intended to draw attention to the horrors of war in the center of modern Europe and convey to foreigners and future generations the significance of these events for Ukrainians. Therefore, it is critical to combine the tourist cycling routes with the "Road of Life" memorial project on the Romanivsky Bridge, ruined architecture (in particular, on Soborna Street and Hostomel Highway), the Heroes Alley on Kotlyarevskoho Street, as well as the graffiti mural "Gymnast Girl" by anonymous British street artist Banksy on the damaged residential building at 15 Hostomel Highway.

The 7 planned tourist cycling routes have a total length of 41.1 km, of which 4 routes (24.9 km) are located on the administrative territory of the Irpin community.

41,1 km Tourist bike routes:

24,9 km Within the Irpin city territorial community

16,2 km Outside the community boundaries

Recommended types of coverage:


Asphalt concrete


FEM tiles

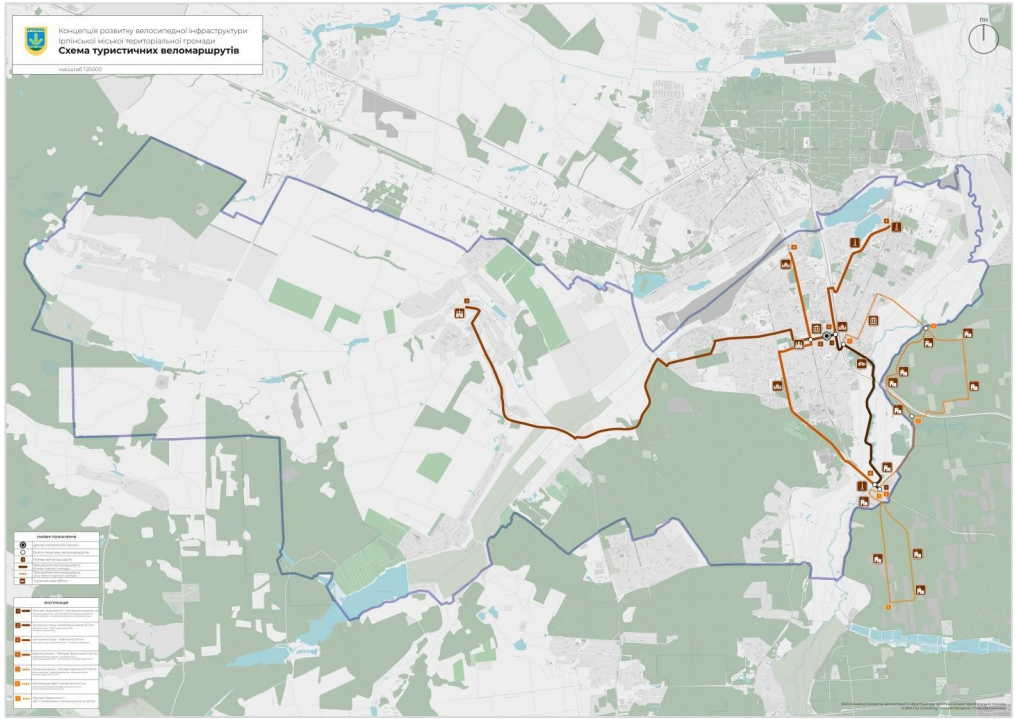

Asphalt chippings


Gravel-sand mixture


Gravel


Soil

1. **Memorial "Road of Life" - Central Square (4.4 km)**
2. **Central Square - St. Michael's Church 1905 (11.2 km)**
3. **Railway station - Graffiti Banksy (3.1 km)**
4. **House of Culture - Memorial "Road of Life" (6.2 km)**
5. **Railway station - DVT along the Irpin River (7.0 km)**
6. **Bike route 5 - DVT in the Sviatoshynskyi Forest (3.7 km)**
7. **Memorial "Road of Life" - DVT in the Sviatoshynskyi Forest (5.5 km)**



The tourist bicycle route map is provided in the Graphic Appendices

FORMS OF CYCLING MOVEMENT

The choice of the form of bicycle traffic depends on the type of street network and the speed of traffic on it. The main requirement is to minimize the points of conflict between cyclists and other road users by separation. In urban areas, it is sometimes difficult to distinguish one form of bicycle traffic, so depending on the situation, it may be a combination of several, which change quarterly or even vary on both sides of the street. It is very important to clearly delineate the movement of cyclists and the priorities of road users at intersections, continuing one form of cycling with another, informing cyclists about the allowed directions of movement.

In cases where it is impossible to determine the form of bicycle traffic on a segment, it should be chosen based on the parameters of street and road types with higher speeds, taking into account the actual speed regime, the intensity of motor vehicle and pedestrian traffic, parking, the complexity of intersections, and the number of adjacent exits.

In pedestrian streets and squares, as well as residential streets where the intensity of motor vehicle traffic is relatively low and episodic, recommended forms of cycling that do not require separate space for cyclists include bicycle-pedestrian zones, bicycle corridors, and shared streets. Here, limiting the speed of movement, installing traffic calming devices, and acceptable road surface quality are sufficient.

On regulated district and arterial roads, where the speed and intensity of traffic is much higher, and heavy-duty vehicles are present, it is desirable to use forms of cycling that separate space for cyclists. The bike network can be located within the roadway or outside it. In urban areas, shared bicycle-pedestrian paths are not recommended without a justified necessity.

On uninterrupted arterial roads that are a continuation or part of highways, as well as on highways themselves where allowed, bicycle paths separated from the roadway must be provided. It is recommended to provide bicycle lanes with physical separation or to create bicycle paths in separate rights-of-way, especially in high-speed, high-intensity traffic areas.

	Type	Speed	Form of cycling movement
Streets and squares of settlements	Pedestrian streets, squares	20	• Bicycle-pedestrian zone.
	Residential streets	30	• Bicycle corridor; • Shared street.
	District streets	50	• Bicycle lane; • Counterflow bicycle lane; • Separated bicycle lane; • One-way cycle track (on both sides of the street); • Two-way cycle track (on one or both sides of the street).
	Controlled-access arterial streets		
	Uninterrupted arterial streets		• One-way bike lane (on both sides of the street); • Two-way cycle track (on one or both sides of the street); • Bicycle and pedestrian path (on one or both sides of the street).
Roads outside populated areas	Highway	90	• One-way bicycle lane (on both sides of the street); • Two-way cycle track (on one or both sides of the street); • Pedestrian and bicycle path (on one or both sides of the street).
	Divided highway (with median)	110	
	Motorway	130	

Станіслав Клименко

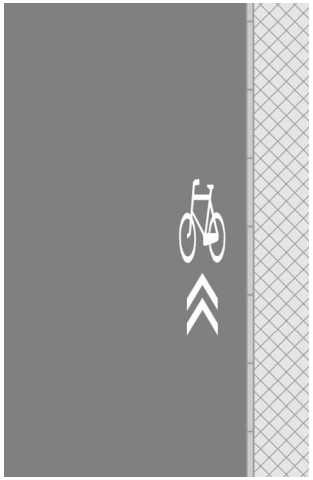
BICYCLE CORRIDOR
minimum width — 3.0 m direction of movement — one-way placement — carriageway organization — change of ODR
means — road markings and signs

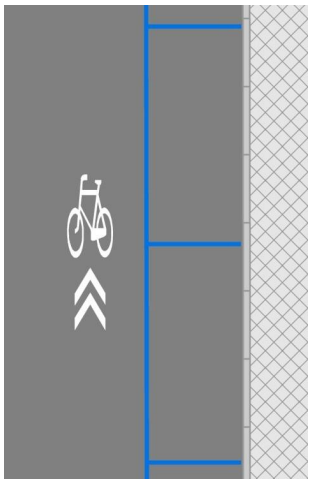
Станіслав Клименко

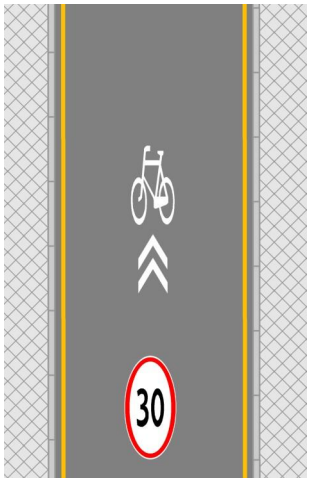
COMMON TRAFFIC STREET
minimum width — 3.0 m direction of movement — one-way placement — carriageway organization — change of ODR
means — road markings and signs

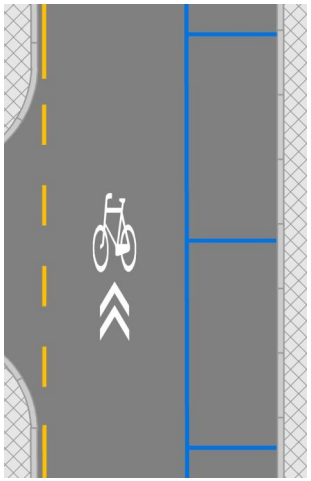
Станіслав Клименко

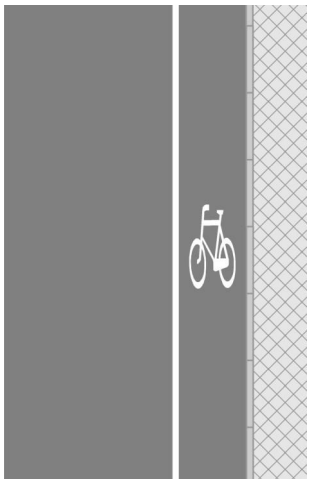
BICYCLE LANE
minimum width — 1.5 m direction of movement — one-way placement — carriageway organization — change of ODR
means — road markings and signs

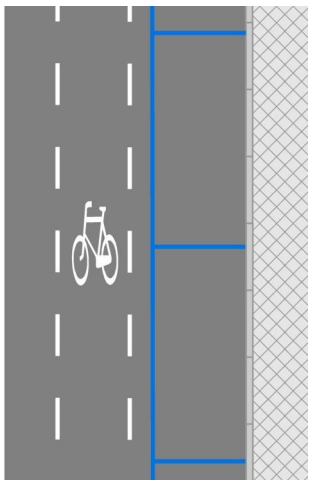












Станіслав Клименко

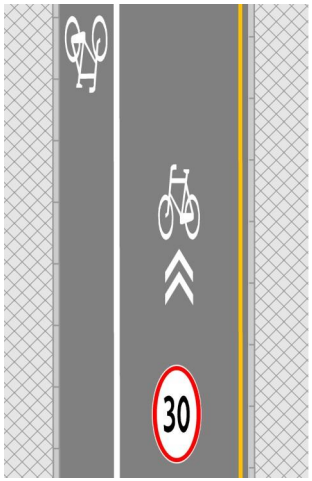
ONCOMING TRAFFIC CYCLE LANE
minimum width — 1.5 m direction of movement — one-way placement — carriageway organization — change of ODR
means — road markings and signs

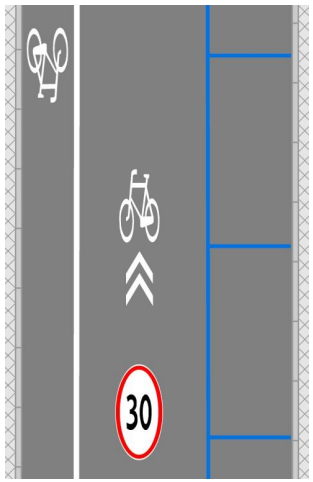
Павло Ботвиновський

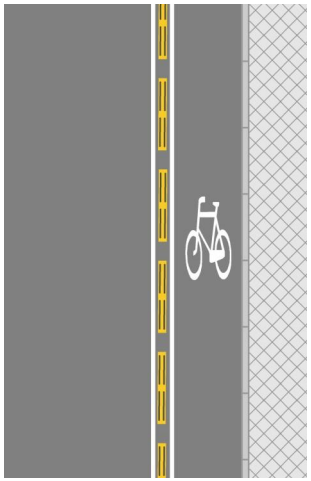
SEPARATED CYCLE LANE
the minimum width is 1.5 m
direction of movement — one-/two-way placement — carriageway organization — change of ODR
means — road markings and signs, restrictive fencing

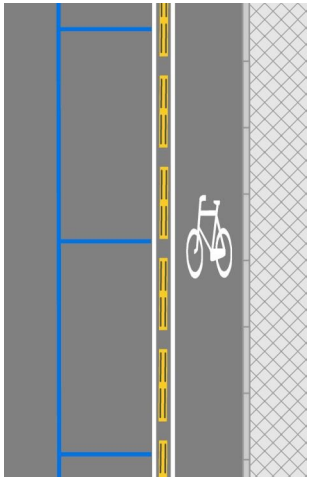
Тимофій Нагорний

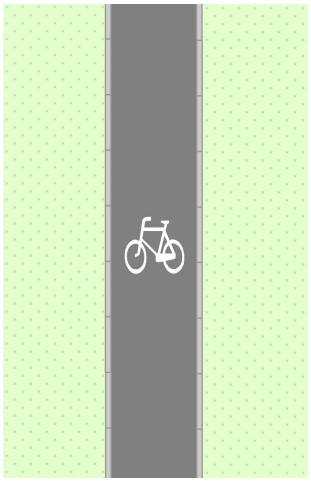
ONE-WAY CYCLE PATH
the minimum width is 1.5 m, the direction of movement is one-way location — outside the carriageway organization — overhaul/ construction means — suitable road surface, road markings and signs

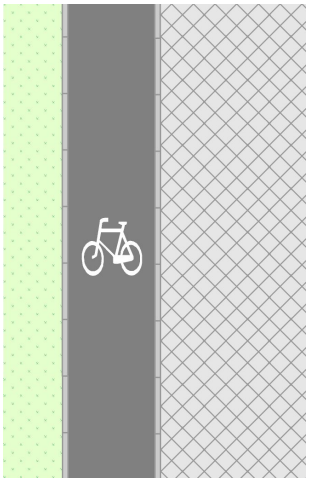












Станіслав Клименко

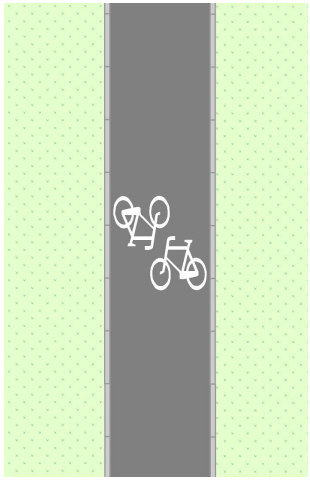
DOUBLE-SIDED CYCLE PATH
the minimum width is 2.0 m, the direction of movement is two-way
location — outside the carriageway
organization — overhaul/ construction
means — suitable road surface, road markings and signs

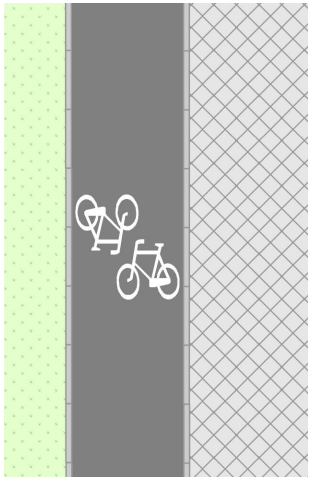
Вадим Січкарук

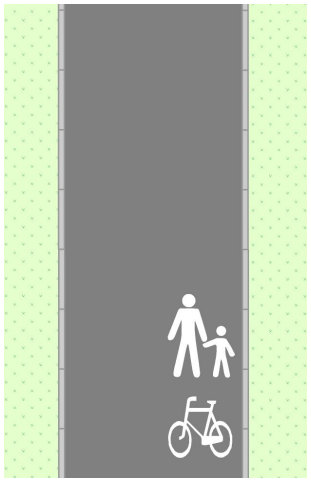
PEDESTRIAN CYCLE PATH
the minimum width is 2.5 m, the direction of movement is two-way
location — outside the carriageway
organization — overhaul/ construction
means — suitable road surface, road markings and signs

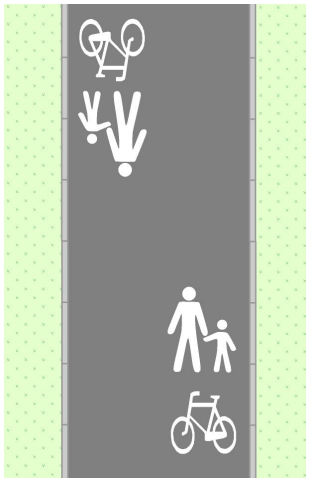
Станіслав Клименко

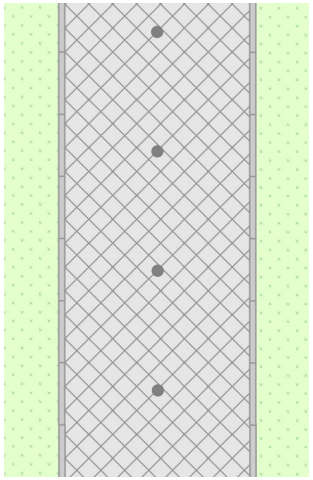
PEDESTRIAN ZONE
the minimum width is 3.0 m, the direction of movement is two-way
accommodation — outside the carriageway
organization — change of ODR/overhaul
means — appropriate road surface and road signs

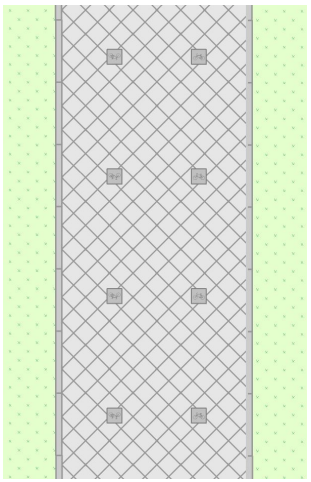












REQUIREMENTS FOR THE BIKE NETWORK

The primary requirements for a bicycle network are the organization of a comprehensive transportation system for the use of bicycles and other forms of low-carbon transportation that meet key criteria:

CRITERION 1. CONNECTIVITY AND INTEGRITY
The connectivity of bike network segments, solving the problem of "gaps" in the network, connecting adjacent links into a unified and integrated network. The integration of separated bike routes into each other and their organic integration into the overall transportation system. The ability to easily find a way or choose the appropriate bike route.

CRITERION 2. SYSTEMATIZATION
The creation of a systematic and dense micro-network within residential areas and settlements and the encouragement of bike trips up to 5 km (commuting between home and commercial, trade, and public establishments located in the area). The consolidation of bike micro-networks in residential areas and settlements into a community-wide macro-network, creating a district and city bike network that connects residential areas with their various commercial, trade, and public establishments.

CRITERION 3. STRAIGHTNESS
The priority of minimizing the time spent on the road, creating the most "straight" arterial bike routes. Minimizing and eliminating delays and rush-hour traffic, solving the problem of sections where it is impossible to cycle without rushing, minimizing detours and uphill climbs.

CRITERION 4. SAFETY
Ensuring safe use of bicycles for their owners and other road users. The reasoned minimization of unorganized intersections or combinations of bike and motorized traffic, increasing the number of separated bike infrastructure and bike crossings. Minimizing conflicts and the risk of road accidents between road users.

CRITERION 5. COMFORT

Minimizing and eliminating shared bicycle and pedestrian paths on main bicycle routes, minimizing unregulated bicycle crossings, reducing travel delays, and prioritizing the layout of bike routes on gentle streets.

CRITERION 6. ATTRACTIVENESS

The bike network should densely cover key centers of gravity in the city and community and provide easy, comfortable, and fast access from residential areas to centers of gravity (education, work, leisure, etc.). Meeting the needs of users means creating a convenient network that people will be willing to use and that is placed on the street network according to the principle of "from every house to the maximum number of destinations," rather than the residual principle of "fitting in wherever possible."

CRITERION 7. CONSTRUCTIVE QUALITY

The bike network should meet high quality construction and technical parameters in design and construction. Compliance with state construction norms and standards. Priority for safety and comfort when developing the bike network.

CRITERION 8. QUALITY MAINTENANCE

To ensure that the bike network serves as long as possible and its functionality motivates users to continue using it, it is necessary to carefully maintain it - care, cleaning, and repair. Regardless of the time of day or season, the bicycle infrastructure should remain practical, safe, and functional, motivating users to use it every day.

КОНСТРУКТИВНІ ВИМОГИ

Станіслав Клименко

TYPE OF COVERAGE

According to DBN V.2.3-5:2018, the typical types of pavement for bicycle networks are asphalt concrete or patterned wall elements (PWE). However, depending on the context and type of bicycle network, the pavement may also be concrete or gravel-soil.

Asphalt concrete is recommended for its comfort, durability, and quality of execution. Bicycle paths made of asphalt concrete should be constructed only by mechanized means, and it is strictly prohibited to lay asphalt pavement manually, even on small sections.

Sections of the bicycle network may also be made of PWE, provided that professional, level, and high-quality installation and use of seamless wall elements are ensured.

Gravel-soil pavements, when constructed and maintained with high-quality technology, are suitable for intercity, tourist, and recreational cycling routes. However, it should be noted that complex or cheap types of pavement will lead to additional costs for operation and ongoing maintenance over time.

Rowerowy Poznań

UNDERSTATEMENT

When designing individual or adjacent bicycle lanes and pedestrian-bicycle paths, it is important to properly organize their connection to the roads. At the point where the bicycle lane connects to the roadway, it is mandatory to lower the curb to the level of the roadway. If asphalt concrete pavement is used at the connection point, it is recommended to avoid using curbs and to connect the bicycle lane using a joining method.

The connection of the bicycle lane to the roadway should be organized with a ramp with a slope of 4-5%, but not less than 2.0 meters in length. For comfortable movement of cyclists and pedestrians on the entrances and exits from adjacent areas, it is recommended to keep the bicycle lane and sidewalk at the same level without any lowerings, and to provide a 0.5-meter long ramp for motorized transport using the technical sidewalk. This ramp should be made of curbstones with a sloping surface.

In places where there are lowerings and connections, it is necessary to carefully organize the drainage system to prevent the formation of puddles.

schreder.com

LIGHTING

Lighting of the bicycle network is one of the main factors for road safety. Areas of the bicycle network that pass through intersections with motorized or rail transport require particularly good lighting during dark hours. According to the DBN V.2.3-5:2018 standard, a contrast lighting of pedestrian crossings and bike crossings is a requirement. The forms of bicycle traffic that are located outside of the roadway and settlements must also be illuminated. Such lighting can be provided by independent, autonomous lamps powered by solar panels. They can be supplemented with motion sensors and only turn on when cyclists and pedestrians approach.

Installation of lighting is a costly infrastructure project, so temporary solutions such as road marking installations (VRD) with light-reflecting effects can be used. On streets and roads where organized bicycle traffic is present within the roadway, but artificial lighting is absent or insufficient, it is necessary to use roadside marking with light-reflecting elements to indicate the road boundaries.

MAINTAINING THE BIKE NETWORK

The main goal of creating a bicycle network is to provide a comfortable and efficient way to move around the city and community. Regardless of the time of day or season, the bicycle infrastructure must be practical, safe, and functional, encouraging its use every day. Creating a connected bicycle network that covers the territory is not enough; it must be carefully maintained and cared for to serve for as long as possible, and its functionality should motivate its continued use. For example, in Copenhagen, Denmark, 75% of cyclists use the bicycle network even in rain and snow (these weather conditions are quite typical there). The secret to the popularity of cycling is that the city administration adheres to a strict policy of prioritizing winter maintenance of the bicycle network, so after a snowfall, all bike paths in the city must be cleared by 8 am. This is dictated by fairly simple but common aspects that apply to any community:

- If a cyclist is injured due to an unmaintained bicycle network or if it becomes the cause of a traffic accident, the city administration will lose a percentage of the trust of the citizens and will face criticism, and at worst, may be held criminally responsible through a lawsuit.
- If all bicycle transport users switch to private motorized or public transport the next morning, the city will be in traffic jams, and there will not be enough space on public transport for everyone, and the demand for private car parking will exceed the supply, causing most people to be late for work and school.
- One day of an unmaintained bicycle network can create chronic prejudice among users, who may perceive cycling as unsuitable in bad weather. This can change the perception of the bicycle from an everyday means of transport to an exceptional leisure activity.

The condition of the bicycle network must be constantly maintained by balance holders or service companies in impeccable condition, and the maintenance and cleaning process must be monitored by the executive body or its relevant department. The quality of maintenance of the bicycle network should be evaluated by two parameters - annual satisfaction surveys of bike users and the report of the balance holder or service company. The "quality of seasonal maintenance of the bike network" parameter should become a key indicator of the effectiveness of assessing officials responsible for transportation infrastructure or for the development and maintenance of the bicycle infrastructure.

The key components of bicycle network maintenance and highlighted recommendations that need to be considered are listed. Unacceptable examples of bicycle network maintenance are shown in the illustrations.

Станіслав Клименко

WINTER STORAGE

According to DSTU 3587, snow clearing of streets and roads in populated areas must be carried out within 4-6 hours after the end of snowfall. Formation of snowdrifts is not allowed on bicycle lanes, bicycle and pedestrian paths. Works to remove winter slipperiness must be carried out from the moment of detection until complete elimination by treating the road surface with anti-slip materials and mixtures. After thawing, sand and gravel mixtures must be immediately removed from bicycle network areas.

Given limited snow removal and slipperiness removal capabilities, it is recommended to prioritize cleaning only the main bicycle routes, with other categories of the bicycle network being cleaned later. First priority should be given to routes leading to educational institutions and critical infrastructure facilities.

Bicycle infrastructure located within the roadway must be maintained and cleaned simultaneously with the entire roadway. These areas should be taken into account in the schedules and diagrams for winter maintenance of populated areas.


bicyclecoalition.org


richmond.com

SPRING-AUTUMN KEEPING

Cleaning of streets and roads in the post-winter period at temperatures above zero degrees Celsius is carried out immediately in order to collect the remnants of snowdrifts, technological materials (sand and gravel mixtures) that were used to combat winter slipperiness, small debris and fallen leaves. Cleaning of the bicycle network during the spring thaw is important to ensure optimal water drainage and prevent the formation of ice during the night when temperatures are below zero degrees Celsius.
In the fall, streets and roads, which include the bicycle network, may be covered with fallen leaves (especially on the shoulders), which reduces the level of grip with the surface, hinders water drainage and creates slipperiness, which can cause accidents, injuries or damage to bicycles or other vehicles. Leaves are removed using vacuum cleaning equipment, and in hard-to-reach areas, manual cleaning is carried out. When creating a bicycle network, it is recommended to take into account its cleaning schedule and scheme, especially for those forms of cycling that are located outside the roadway and are cleaned manually.

SUMMER KEEPING

During the summer, the bicycle network can quickly become dusty and littered with sand and small debris, which can lead to accidents, injuries, or damage to bicycles or other vehicles. The littering of the bicycle network located along roads or at the same level as them can cause unexpected maneuvers for cyclists passing through littered areas. According to DSTU 3587, the road surface of streets and roads should be cleaned of litter within 1-3 days. The permissible norm of littering of the road surface in settlements is 30-50 g/m².
The bicycle infrastructure located within the roadway must be maintained and cleaned simultaneously with the entire roadway. Dustiness and sand coverage on the road shoulders, where bicycle lanes are located or where cyclists and motor vehicles share the road, cannot be allowed. Such areas of the bicycle network should be cleaned more intensively with sweeping and cleaning machines, and it is recommended to clean them during off-peak hours of bicycle and other vehicle traffic.

Станіслав Клименко

Michaela Charlé

RENEWAL OF MARKINGS

Road markings are one of the main elements of organizing traffic, providing information and warning about danger and traffic conditions, especially at intersections with other types of transport. According to DSTU 3587, road markings should be visible at any time of day or year, and in the absence or inadequacy of artificial lighting, they should have a reflective effect. Road markings are renewed annually, and in areas with heavy wear and loss of reflective properties, they are renewed again.

When setting up a bicycle network, particular attention needs to be paid to the renewal of markings at bicycle crossings and intersections with other types of transport, which according to DSTU 2587, should be marked in red (marking 1.15). In addition, on streets where forms of bicycle traffic are organized during traffic hours, it is necessary to renew longitudinal dividing markings and pictograms. For safety reasons, such areas need to be renewed as a priority since they inform other road users of the presence of bicycle traffic.

RENEWAL OF ROAD SIGNS

Road signs should be placed in such a way that they are clearly visible to road users at any time of day. On streets without artificial lighting, signs with retroreflective properties must be used to ensure contrast, differentiation, and readability of the sign images. The surface of the signs should be clean and free of damage that could complicate the perception of information.
According to DSTU 3587, if the retroreflective effect is reduced, the color fades, or the film is peeling off the signs, they should be replaced within 1-3 days.
Missing road signs that are included in the current approved ODR scheme must be restored immediately.
The distance from the edge of the roadway, which includes bicycle infrastructure, to the edge of the sign should be at least 0.5 meters, and the installation height from the bottom of the sign to the road surface should take into account the minimum vertical clearance for approaching cyclists, which, according to DSTU 8906, is 2.50 meters.

Тимофій Нагорний

stevegalloway.mycouncillor.org.uk

WATER DISTRIBUTION

Puddles and slow drainage from streets and roads that include bike networks or separate bike paths reduce the comfort and attractiveness of daily bicycle use and can cause accidents, injuries, or damage to bicycles or other vehicles. Poor drainage from bike paths located alongside car roads or at the same level as them can also cause unexpected maneuvers by cyclists to avoid flooded areas or being splashed by passing cars.

Rainwater catch basins should have grids with slots perpendicular to the direction of movement and be flush with the road surface. On streets, roads, bike paths, and pedestrian paths with no curb, drainage or drainage ditches (channels) should be installed to drain water from the road. These ditches can be either earthen or concrete, including in the form of gutters. Regular and systematic cleaning and inspection of drainage systems are essential for effective drainage.

MAINTENANCE OF GREEN PLANTS

Greenery along streets and roads, including bike paths, can be represented by trees, shrubs, and lawns (perennial or wild plants). They should not obstruct bicycle traffic or hinder visibility for road users, block the road or traffic management equipment.
The crowns of trees located next to the road and bike lanes should be pruned within the limits of the movement dimensions. According to DSTU 8906, the minimum vertical clearance for approaching cyclists is 2.5 m. According to DSTU 3587, the distance between the edge of the roadway or bike path and the tree crown should be at least 0.5 m. It is not allowed to place trees or shrubs higher than 0.5 m within the visibility triangle (the area where roads, driveways, and intersections meet).
Lawns, perennial or wild plants should not cause allergic reactions, tick bites, etc. They should be mowed in a 1.0 m strip along the bike network, and the edges of the roads should be cleared of overgrowth.

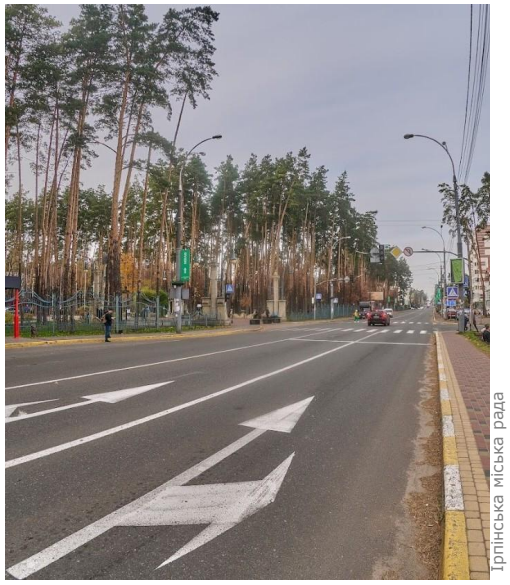
ROAD TRAFFIC SAFETY

For widespread use of bicycles as transportation, in addition to organizing a convenient and connected network of bike routes, critical to ensuring road safety is systematic and comprehensive improvement. Availability of safe streets and roads in a community is achieved through both the objective state of infrastructure and the subjective sense of safety among users.

Objective factors for improving road safety include introducing regulated intersections and pedestrian/bicycle crossings, implementing traffic calming measures, bringing the width of lanes and turning radii to standard values, maintaining and developing street lighting systems, and imposing speed limits. Subjective perception of safety for the most vulnerable road users, including cyclists, is achieved by adhering to and monitoring speed limits, proper design of bike routes (sufficient width of bike lanes, maintaining an interval between cyclists and motorized traffic), limiting passing or left turns on certain sections of streets and intersections. Riding a bike is perceived as safer on streets with fewer cyclists. Therefore, promoting cycling itself can be considered a way to improve road safety.

From 2019-2021, there were 182 road accidents involving cyclists and pedestrians in the Irpin community, 7 of which resulted in the death of a vulnerable road user. The majority of the accidents (91%) occurred in Irpin. The most dangerous streets for cyclists in Irpin were Soborna Street (19% of accidents), Universytetska Street (14%), and Sadova Street (10%), with a significant number of accidents also occurring on Hostomelske Highway and Pushkinska Street (3% each). Additionally, accidents involving cyclists occurred on Lisova Street, Varshavska Street, 74th Strelkovoi Divizii Street, and Heroiv Street. In the village of Mykhailivka-Rubezhivka, 5% of all accidents in the community occurred. Hutirska Street is particularly dangerous for traffic, with almost half of all accidents happening there, all of which had severe consequences, including the only fatal incident in the rural part of the community. Most accidents happen during the warm months, especially in June and September (14% and 13%, respectively), which may be influenced by the higher percentage of walking and cycling traffic and irresponsible driving. However, 36% of accidents involving cyclists and pedestrians happen during nighttime, with the main causes being violations of intersection rules (31%) and pedestrian crossings (18%), maneuvering rules (12%), and failure to maintain a safe distance (11%). This is due to the fact that the streets and roads in the community were built according to outdated standards that do not take into account modern road safety requirements, especially for the most vulnerable road users.

Ірпінська міська рада



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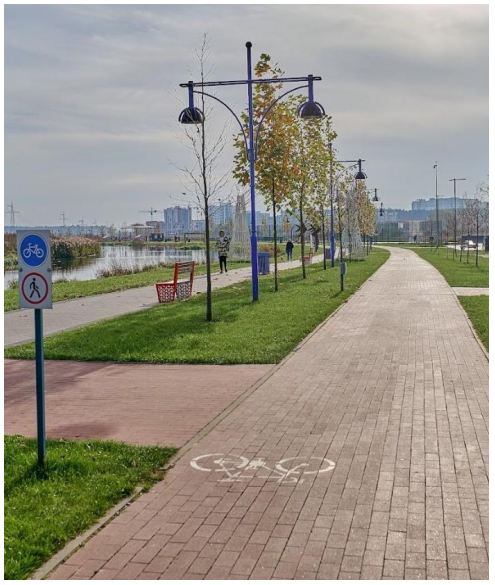

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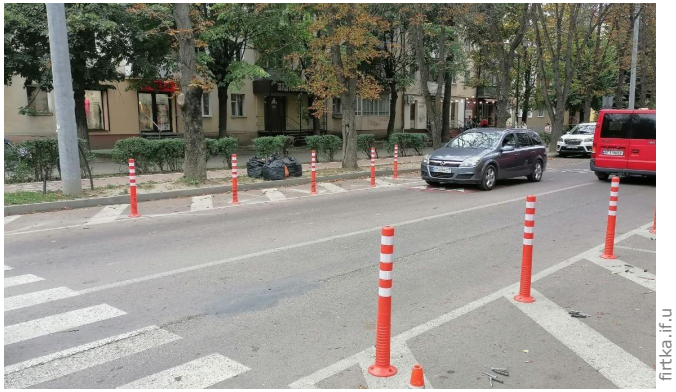


firtka.if.ua

NARROWING OF TRAFFIC LANES

Most of the streets in populated areas in Ukraine were designed during the Soviet era, when the parameters of the roadway were calculated based on military equipment. Accordingly, the necessary width of traffic lanes of 3.5-4.5 meters was adopted in the general regulatory acts. Often, even these norms were ignored, and only a center line marking was applied to the streets without observing separate lanes. This excess space in the roadway is perceived less cautiously by drivers and stimulates traffic at higher speeds, significantly reducing the safety of all road users. Currently, the modern version of the State Building Norms "Streets and Roads of Settlements" (DBN V.2.3-5:2018) is in effect, which regulates the width of traffic lanes to 2.75 meters on residential streets, 3.0 meters on district arterial roads, and 3.0-3.5 meters on city arterial roads. The State Building Norms "Automobile Roads" (DBN V.2.3-4:2015) allows for the construction of shared-use lanes with widths between 3.0 and 3.75 meters on public roads between settlements. Compliance with these parameters on existing streets and roads frees up space for the installation of bicycle infrastructure.

Альбертас Тамашаускас

REDUCTION OF RADIUS

Similar to the width of the roadway and traffic lanes, turn radii, particularly at intersections, are a determining factor for road safety and vehicle speed, exceeding which is the main cause of road accidents in Ukraine according to the data of the National Police. Very often, especially on major urban roads, turn radii are excessive and require adjustment to the normative values presented in the State Building Codes "Transport Interchanges on One Level" for various types of vehicles. For example, for streets without heavy traffic, including residential streets, a turn radius of 8.0 meters should be used. For the directions of public transport, turn radii of 12.0-15.0 meters should be provided. The minimum allowable turn radius for bicycle lanes and paths is 1.0 meter, and the recommended radius is 3.0 meters. To maintain the recommended vehicle speed at intersections, corresponding trajectories should be provided by constructing curb islands and/or directional islands or applying edge markings 1.2/marked islands and 1.16 markings.

Укравтодор

PROHIBITION OF OVERTAKING AND TURNS

Careless driving of vehicles, especially during maneuvers, is often the cause of accidents, including those involving cyclists. According to the rules of the road, drivers are required to be especially attentive to such categories of road users as cyclists, wheelchair users, and pedestrians. All road users should be particularly cautious of children, elderly people, and persons with obvious signs of disability. On streets with only one lane of traffic in each direction where cyclists share the road with other vehicles, a ban on passing using solid markings 1.1 and road signs 3.25 "No Passing" should be anticipated, especially on winding sections of the road. Additionally, at accident-prone intersections, it is worth considering the feasibility of limiting left turns (while providing access for traffic from adjacent streets). At locations where cycling infrastructure is installed at regulated intersections, the possibility of unrestricted turning of vehicles (green arrow) should be limited.

Станіслав Клименко

LIGHT FORCE ADJUSTMENT

Traffic lights are one of the main means of regulating traffic on major roads. In streets with regulated traffic, the flow of traffic is more evenly distributed, which allows avoiding traffic jams and maintaining the recommended speed of transport. The traffic light system should be synchronized along the main transport corridors of the city in "green waves". Such a mode of operation allows drivers to move with the allowed speed for consecutive passage of intersections without stopping or with minimal delays. A traffic light is introduced at an intersection if more than 600 vehicles per hour move in both directions. At pedestrian crossings, according to the current regulations, traffic lights are introduced based on the intensity of 150 pedestrians per hour in the most heavily loaded direction. For the introduction of bicycle lanes through regulated intersections, bicycle traffic lights are installed. The presence of such traffic lights increases the safety of cyclists and also contributes to the continuity of the bicycle network.

4vlada.com

STREET LIGHTING

A working system of street lighting is a crucial factor for the safety of cyclists during dark hours. Even with the presence of lights and reflective elements on bicycles, the importance of street lighting cannot be overlooked for timely detection of each other's movement, providing advantages in movement, and subjective feeling of safety on city streets. Even cautious driving without lighting can lead to an emergency situation. The problem has become even more pressing during times of war, after attacks by Russian occupiers on energy infrastructure. To avoid a sharp increase in injuries and deaths on the roads, it is critical for communities to provide autonomous power supply for street lighting, at least at intersections, pedestrian crossings, and bicycle crossings, as well as ensure uninterrupted operation of traffic lights. Considering the energy crisis, this direction should become a priority for ensuring road safety in the Irpin territorial community, and it is worth engaging the support of foreign partners for this purpose.

Житомирська міська рада

SPEED CONTROL PANEL

Despite the presence of speedometers in every vehicle, drivers often exceed the speed limit, which is the main cause of road accidents, especially involving cyclists. Unfortunately, the rule of exceeding the limit by less than 19 km/h is often abused, as it is not subject to a fine. Considering the European experience, it is appropriate to draw drivers' attention to their speed by using electronic displays that record the speed of vehicles using cameras. Such devices are installed along the main urban highways, as well as at the entrances to residential areas. Displays are also promising on streets where schools and kindergartens are located. Typically, an emotional element such as color (green-yellow-red), emoticons (smiling or sad), or other incentives for complying with the safe speed limit are added to the objective indicator. The most relevant approach is to combine speed control displays with photo and video cameras that allow automatic fines for further violations of traffic rules.

Олег Шмід

CHICANES

Chicanes are constructions that force drivers to change direction on straight road segments by creating a narrowing on one side of the street that requires turning away from the straight path. A series of such turns increases efficiency if they are arranged along the entire length. The combination of a narrowed street width and a winding path slows down traffic. On existing streets, chicanes are arranged through the expansion of the sidewalk or the construction of islands, and in the case of reconstruction or new construction, the street itself is made winding. Chicanes have several advantages, including slow traffic, the possibility of landscape design, and usually no effect on adjacent streets. Changing the trajectory of movement in plan can also be achieved by rearranging parking spaces or methods of placing cars in parking lots. Slowing down traffic has a very positive effect on road safety, as lower speeds result in better reaction times, driver attention, perception, and fewer consequences in case of accidents. Such solutions are only used on residential streets.

САД у Львівській області

CURVING THE TRAJECTORY OF MOTION

Horizontal deflections are used to reduce the speed of traffic by altering its trajectory, which is an important measure for calming traffic. Deflecting traffic is achieved by installing a physical element - a central island between the directions of travel. It is important to install such deflections at the entrances to populated areas where the traffic conditions change from intercity to urban, and where there is a need to reduce speed, and where there is heavy pedestrian and bicycle traffic. Typically, the shape of such an island has a deflection for vehicles moving towards the populated area, but there is no change in the trajectory of vehicles leaving the populated area. Deflections can be installed along straight stretches of road within a city. Motor vehicle drivers are forced to drive more carefully, and they are unable to exceed the permitted speed limit. Traffic deflection is an effective method for calming traffic, thus allowing cyclists to travel safely and enabling the construction of bicycle infrastructure near the roadway, directly adjacent to the boundary of the populated area.

КМДА

ROUNDBALL INTERSECTIONS

Roundabouts regulate traffic flow at intersections according to the principle of "the ring is main". The characteristic features of roundabouts are the central and directional islands. Circular traffic, organized around the central island, requires all directions to change their trajectory. The distortions provided by the directional islands force drivers approaching the intersection to slow down, thus increasing their attention and reducing reaction time. Within the roundabout, the radius of the central island reduces the speed of traffic, increasing safety for other users crossing the street. Roundabouts come in different radii depending on local conditions and traffic intensity. Central islands of roundabouts can be constructed using curbs and paving or temporary blocks, or solely with road markings. In roundabouts with small radii, the entire surface of the central island has a hard covering and is accessible to traffic, including public and commercial transportation.

Тимофій Нагорний

INSERTS ALONG THE AXIS OF THE ROAD

According to current regulatory documents, a strip without pavement of 0.5-1.0 meters wide can be arranged along the axis of the roadway, on which directional islands, safety islands, dividing islands, etc. can be installed. In practice, columns are a more effective example of roadway inserts. Roadway inserts are intended to limit the actions of motor vehicle users or to physically separate traffic flow in different directions. They are used on residential streets and do not affect traffic on major routes. Installing physical barriers along the axis of the road prevents illegal parking, ensuring free passage of the street. Axis columns do not allow passing on the opposing lane or making left turns where prohibited, thereby increasing the safety of traffic, particularly for cyclists. There are different variations of axis inserts, but usually the columns are 1.0 meter tall. The material of the inserts can vary, with plastic columns becoming increasingly popular in recent years due to their ease of installation and low cost.

Станіслав Клименко

MEANS OF SEPARATION OF CYCLE LANES

An indispensable solution for ensuring road safety on sections of urban streets where pedestrian zones, bike paths, or public transport lanes are located next to the roadway is the separation of different traffic flows using physical barriers such as rubber delineators or curbstones. In Ukrainian cities, there is a widespread problem of disregarding signs and markings related to cycling infrastructure, which leads to cars stopping and parking on bike lanes, or vehicles driving on them. To improve the safety of cycling, physically separated bike infrastructure is created. Common means of separation include rubber curbs or regular curbstones. Usually, such curbs are installed between the parking zone and bike lanes and provide a buffer zone to protect against open doors or wheels hitting them. All separation means have different configurations but serve the same function - to prevent prohibited crossing of vehicle traffic from one lane to another.

acc.cv.ua

ROAD BLOCK

Movement restrictions make it impossible to travel on the streets and force drivers to use alternative routes. The best use of movement restrictions is on a long street with low traffic. Wherever they are used, it is important to provide the possibility of continuing pedestrian and bicycle routes around or through the restricted area. Restrictions apply to motor vehicles and do not affect the movement of cyclists, which creates fast, comfortable, and safe conditions for vulnerable road users. There are four types of movement restrictions: diagonal, star, forced turn, and partial closure. Complete closure of a street should not be considered as a means of traffic management. It can only be considered in cases where such closure is vital for public places of mass gathering (e.g., parks, government institutions, etc.), provided that other streets can be used as an alternative route. Restrictions on vehicle traffic on streets are not allowed without the consent of the population living there.

КК «Київавтодор»

ISLANDS OF SECURITY

Safety islands are a basic means of calming traffic, they are located on the dividing strip between the directions of traffic when crossing bicycle paths and lanes of the roadway. They not only reduce the distance that pedestrians and cyclists travel when crossing the roadway, but also narrow the lanes of traffic, forcing drivers to move more cautiously and at lower speeds. Such a device is usually constructed with curbs. Safety islands are mandatory for installation at unregulated pedestrian crossings and bicycle crossings across the roadway, which have two or more lanes of traffic in one direction. They are also recommended for installation at regulated intersections. The width of the safety island should be at least 2.0 m. The width of the area for pedestrians and cyclists to move on the safety island should be no less than the width of the pedestrian crossing and bicycle crossing adjacent to it. The minimum length of a safety island on a pedestrian crossing and bicycle crossing is 10.0 m.

КМДА

SIDEWALK ISLANDS

One way to reduce the width of the roadway is by using safety islands. They allow for the regulation of the width of the roadway at pedestrian crossings and bicycle crossings where parking of vehicles in the outermost lane is prohibited by the Rules of the Road. Safety islands also provide an optimal visibility triangle, which is one of the determining factors in reducing the likelihood of accidents at intersections between different road users. This traffic calming measure helps to prevent unauthorized parking in pedestrian and bicycle crossing zones and visually separates the area for parking vehicles from the purely transit roadway. The minimum length of a safety island at a pedestrian crossing or bicycle crossing is 11.0 m, taking into account the width of the pedestrian and bicycle path of 6.0 m. The minimum width of the safety island is usually determined by the width of the vehicle parking area and varies from 2.3-2.5 m (for parallel parking) to 5.5-6.0 m (for perpendicular parking).

vlasno.info

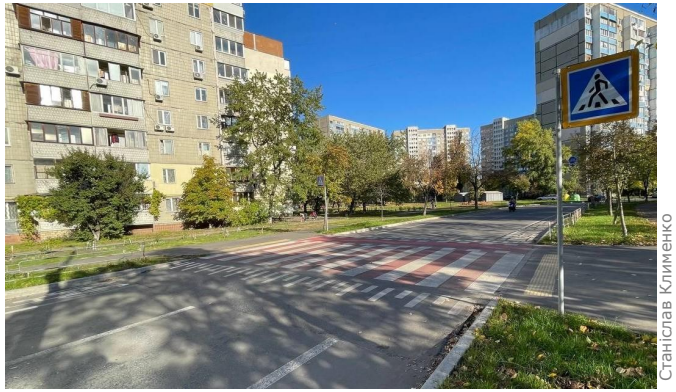
DIRECT ISLANDS

Directional islands are used to regulate traffic flow on stretches of road and at intersections. They can narrow the lanes of traffic and reduce turning radii to ensure that vehicles travel more cautiously at reduced speeds. They can be implemented using road markings (1.16) or with physical barriers such as curbs. Directional islands can be used to separate bike lanes at conflict intersections by limiting the turning radius for motorized vehicles turning right. By using directional islands, traffic flows at intersections can be channelized, clear trajectories for different directions of travel can be established, and excess space on the roadway can be minimized. Directional islands can also serve as safety islands if pedestrian crossings or bike lanes cross through them. To ensure optimal visibility of directional islands, particularly during nighttime hours, they should be marked with signs 4.7-4.9 "Obstacle bypass" and vertical markings.

tvoemisto.tv

ROAD HILLS

Various types of road humps have become a more modern interpretation of the former speed reduction devices (SPRD, also known as "speed bumps") in accordance with DSTU 4123:2020 "Traffic calming devices". Since then, rubber SPRDs are no longer used, and old designs are replaced by road humps, raised pedestrian crossings (including bicycle crossings) and elevated intersections. Road humps can be constructed using asphalt concrete or FEM. As a temporary solution or with appropriate justification, road humps made of modular rubber elements may be installed. Such a traffic calming device can be installed across the entire width of the roadway or on individual traffic lanes. The height of road humps is usually 8.0 cm. Among them, for the convenience of cycling, the use of "Berlin pillows" - humps in the middle of the traffic lane, which cyclists (moving at a speed 2-4 times lower than motor vehicles) can bypass, is the most appropriate.



Станіслав Клименко

INCREASED TRANSITIONS

The installation of pedestrian crossings and bicycle crossings on the ground should be carried out with consideration for accessibility, including the use of level crossings with a raised roadway to the level of the sidewalk. This measure helps to create a continuous bicycle network and also ensures the safety of cyclists and pedestrians by maintaining an optimal speed of movement. Raised pedestrian crossings and bicycle crossings are used on streets in populated areas near preschool and secondary education facilities, near areas and places of mass recreation, and in residential areas. In addition, raised pedestrian crossings can be used on bicycle paths with different levels of pedestrian sidewalks. Raised pedestrian crossings are arranged in accordance with the requirements of the DBN V.2.3-5:2018 "Streets and Roads of Settlements" and DSTU 4123:2020 "Traffic Calming Measures." Their length depends on the width of the adjacent bicycle path.

Тимофій Нагорний

RAISED INTERSECTIONS

Similar to raised pedestrian crossings adjacent to bike crossings, raised intersections can be installed to reduce the speed of traffic and give priority to cyclists and pedestrians. They are used on residential streets with low traffic intensity, as well as at pedestrian (bike-pedestrian) zones and streets with traffic flow. To create a level roadway at the intersection with the sidewalk, ramps with a length of 2.0-2.5 meters are constructed. The boundary of the pedestrian space is outlined with barrier posts or markings. Raised pedestrian crossings and intersections can visually differ from the surface of the roadway by material, structure, or color of the covering to increase drivers' attention. Raised pedestrian crossings and intersections must have contrasting exterior lighting. Raised intersections must comply with the requirements of DBN V.2.3-5:2018 "Streets and Roads of Settlements" and DSTU 4123:2020 "Traffic Calming Devices." Irpin is one of the first cities in Ukraine to implement raised intersections.

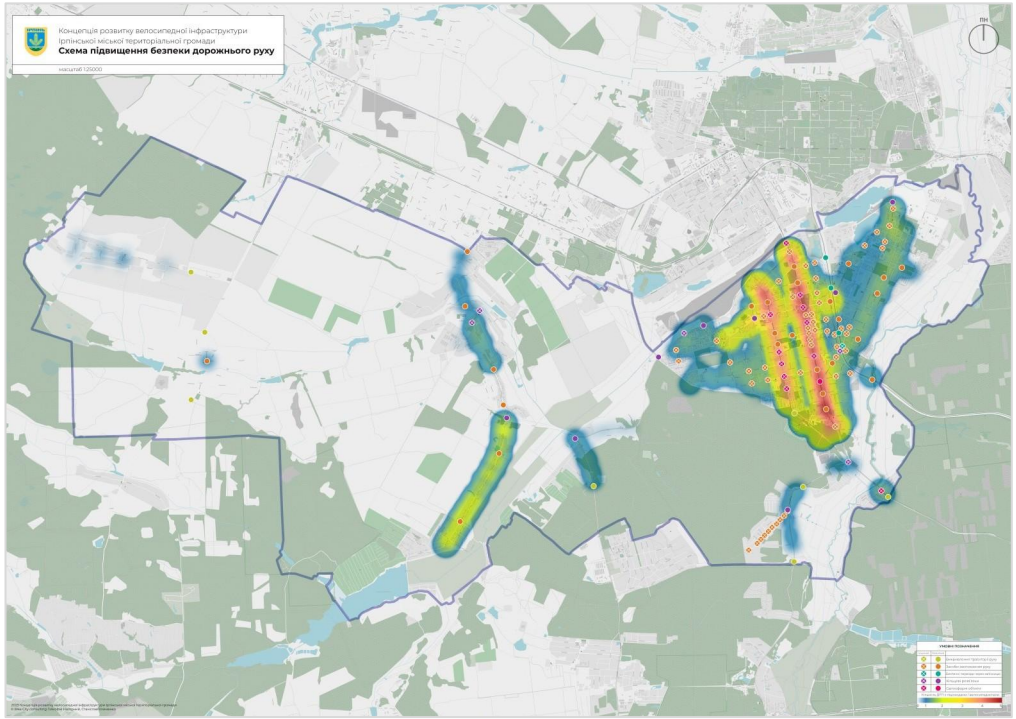
1 **Traffic light object**

8 **Roundabouts**

26 **Means of traffic calming**

3 **Crossings by railway**

8 **Distortion of the movement trajectory**



The road safety improvement scheme is provided in the Graphic Appendices

3.6 To halve the number of deaths and injuries resulting from traffic accidents (traffic accidents).

BIKE NAVIGATION

The bicycle navigation system is designed to provide convenient information to cyclists about the direction of the chosen bike route and the distance to towns or other objects, as well as their location on the bike network in relation to established navigation markers. For the system to function effectively, which will be used by both locals and visitors to the community, a number of requirements must be met:

1. Conciseness and simplicity of information, so that every user, regardless of their language skills, can understand it.
2. Recognizability and uniformity of navigation throughout the entire route.
3. Observance of the interval between navigation elements. An optimal interval for placing signs confirming the direction of travel must be maintained throughout the entire route to avoid giving the user a sense of being "lost."
4. Predictability and appropriateness of navigation placement, so that each user can read the information in advance and make appropriate decisions.
5. Navigation should complement, rather than contradict, existing bicycle and other road signs.

As route road signs and plates in Ukraine are regulated by current regulatory documents DSTU 4100, DSTU 9114, and DSTU 7450, the background color, font, image of the bicycle pictogram, and arrow have already been established. Compliance with the specified requirements is necessary for the unified design of bicycle navigation.

First of all, the navigation plates must be uniform and simple to manufacture, since each community must order, install, and maintain them independently within their own territories. The size of the markers should be compact and not bulky, particularly to reduce their cost, highlight them in the architectural and landscape environment, and improve visual perception.

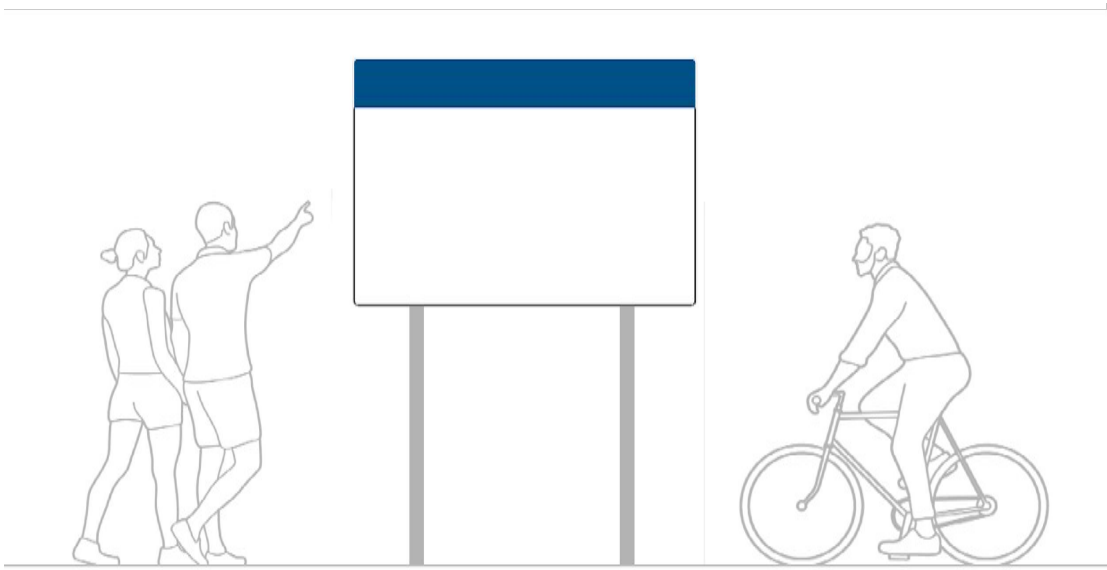
It is recommended that all bicycle navigation markers be depicted with a bicycle pictogram on a blue background for logical identification with road signs regulating the movement of cyclists. For bicycle traffic lights, green and red colors should be used for the appropriate signalization of safe or unsafe cycling conditions.

BICYCLE ROUTE MAP

A map-scheme is the best way to inform cyclists and drivers in the LPT (Local Territorial Community) about the available cycling infrastructure, which helps users plan their trips and learn about the development of the community's cycling network. Usually, a stand with a map-scheme is installed in the city center and near parking areas. It is also appropriate to install it at the beginning and end of long cycling routes. The map-scheme can depict both the general cycling network of the area and individual or several cycling routes.

The information on the map-scheme should consist of a legend (mandatory in Ukrainian and duplicated in English) of urban, intercity, recreational, and tourist cycling routes with their numbers, length, and time required to travel the distance. Additionally, pictograms can be included to indicate related bicycle services and facilities located nearby cycling routes. For user convenience, a QR code can be displayed on the stand that provides access to an interactive version of the map when scanned.

The key technical parameters should be the quality of the image and the ease of information perception on the map. It is recommended to update the information annually, as well as in cases of vandalism, damage, or fire.



INDICATION OF START AND CONFIRMATION OF MOVEMENT

Indicators for starting and confirming movement are installed to inform cyclists about the start or continuation of movement along a designated bike route.

Usually, indicators are used as the primary signage for a bike route in combination with signs indicating bicycle infrastructure (bike lanes, bike paths, bike-pedestrian paths, shared streets, etc.), or separately from these road signs. It is recommended to install such indicators after each intersection, at places where the direction of the bike route changes, and on long stretches of the bike route that do not have intersections.

Indicators that confirm movement along a bike route without changing the direction of travel can be made in the form of printed stickers and attached to stands or poles, individual polymer or composite plates. In some cases, it is permissible to apply the indicator image with paint in a stencil manner on poles, lighting supports, posts, etc.

The information on the indicators should include the route number, direction arrow, and a bicycle pictogram, which is only depicted on indicators that are installed separately from road signs.

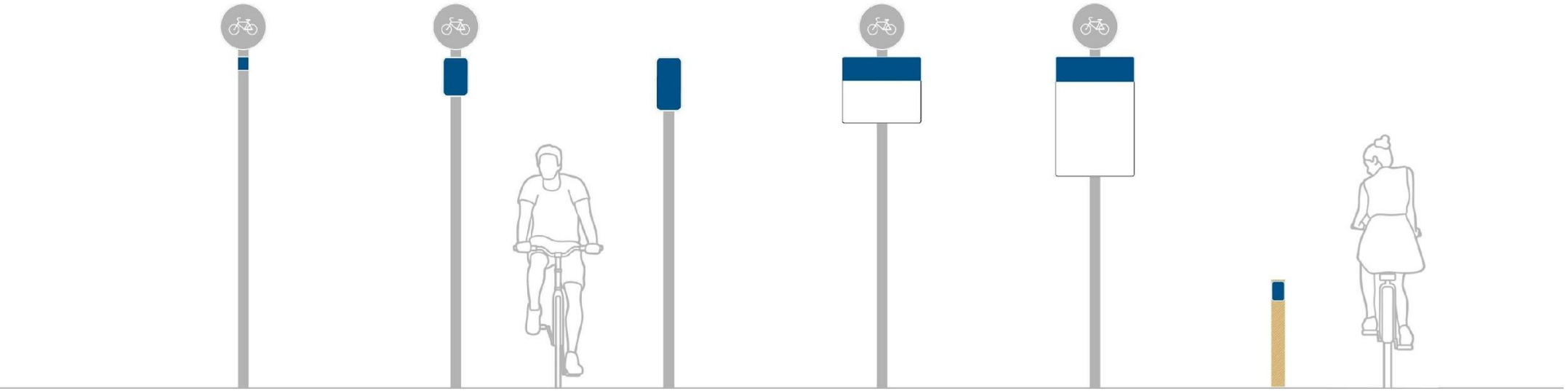
DIRECTIONAL INDICATORS

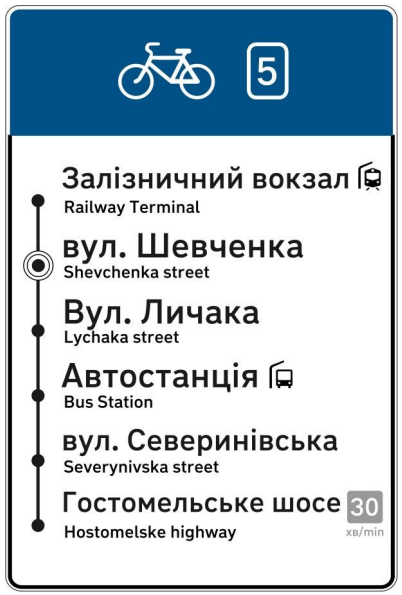
Directional signs along the bicycle route are installed to inform cyclists about the order of movement through the indicated geographical objects, as well as to indicate the progress of the bike ride. The signs show the main places where the direction of the bicycle route changes, intersections, merging or branching of bike paths, and indicate the continuation of the ride towards the "center."

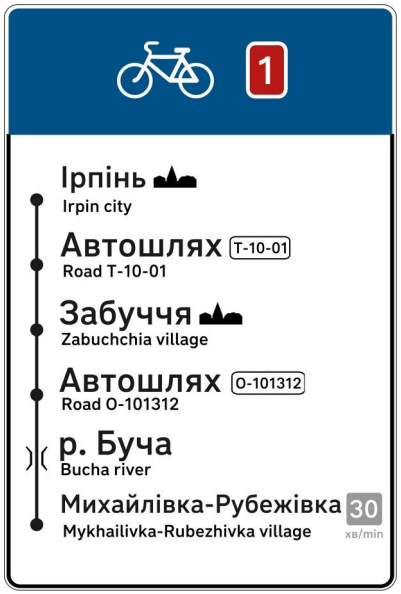
Directional signs are used as additional marking of the bike route in combination with road signs marking the bicycle infrastructure (bike lanes, bike paths, bike-pedestrian paths, shared roads, etc.) or separately from these road signs.

The information on directional signs should include the route number, the direction arrow, the names of the objects or places (mandatory in Ukrainian and duplicated in English), and the bicycle pictogram. Additionally, pictograms of accompanying bicycle services and facilities located near bike routes may be displayed.

It is recommended to install directional signs at the beginning of the bike route, at places where the direction changes, at intersections, merging or branching of bike paths.







CITY BIKE ROUTES

On urban bike navigation, it is necessary to indicate objects of urban significance (railway station, bus station, bridge, etc.) and elements of the street-road network and planning structure of the city (streets, squares, residential areas, etc.) that the bike route passes through and which serve as landmarks for cyclists. It is recommended not to indicate the names of insignificant objects on the navigation. The center of the settlement (square or street) to which the bike routes are directed should be indicated as mandatory.
An important component of urban navigation may be the indication of accompanying services, intercept parking lots, bike service stations, medical points, etc.
Bicycle route numbers are depicted as single- and double-digit numbers from 1 to 99, which are inserted in rectangular boxes with rounded corners. The background color for them should be blue.
For visual marking and quick identification of urban bike navigation, a bicycle pictogram depicted on a blue background is used on the signposts, and an insert with the bike route number is placed next to it.

URBAN BIKE ROUTES

It is recommended to assign your own names to settlements (cities, towns, villages) and infrastructure objects (roads, railway stations, etc.), which serve as landmarks for cyclists, during intercity bike navigation. In the case when a bike route passes through the center of a settlement, it is allowed to separately name the central street or square. An important component of intercity navigation is the designation of related services: bike rental stations, repair shops, medical facilities, etc.

Bike route numbers are depicted as single-digit and two-digit numbers from 1 to 99, placed in rectangular inserts with rounded corners. The background color for intercity bike routes should be red.

To visually mark and quickly identify intercity bike navigation, a bike pictogram is used on signs, depicted on a blue background and located next to the insert with the bike route number.

TOURIST BIKE ROUTES

On tourist bike routes, it is necessary to indicate the names of objects (castles, water parks, museums, etc.), complexes of objects (historical city center, historical industrial buildings), or notable locations (places of historical events, gardens, etc.) that serve as landmarks for cyclists. In case the bike route passes through a populated area, it is recommended to indicate its name for orientation. An important component of tourist navigation is the designation of accompanying services, such as bike parking, bike repair stations, medical centers, etc.

Bicycle route numbers are represented by single and double digits from 1 to 99, inscribed in rectangular inserts with rounded corners. The background of the inserts for tourist bike routes, according to DSTU 4100, should be brown.

To visually mark and quickly identify the tourist bike navigation, a bicycle pictogram is used on the signs, depicted on a blue background and placed next to the insert with the bike route number.

RECREATIONAL ZITZLING ROUTES

Recreational bike routes should include the names of landmarks (such as parks, lakes, nature reserves, etc.) or places of leisure (such as beaches, fishing spots, camping sites, etc.) that serve as landmarks for cyclists. When the bike route passes through a populated area, a river, or an infrastructure object, it is recommended to indicate the name of the object with the corresponding pictogram according to DSTU 4100, to help orientate the cyclists along the route. An important component of recreational navigation is the marking of accompanying services such as bike repair shops, medical stations, water fountains, etc.
Bike route numbers are depicted as single or double digits from 1 to 99, which are inscribed in rectangular inserts with rounded corners. According to DSTU 7450, the background color of the insert for recreational bike routes should be green.
To visually mark and quickly identify recreational bike routes on signs, a pictogram of a bicycle is used, which is depicted on a blue background and placed next to the insert with the bike route number.

BICYCLE PARKING

Cyclists, like motorists, pay attention first and foremost to convenient and safe parking near places of trade, education, and service provision. Unfortunately, they often have no choice where to leave their bike and end up locking it to the nearest stationary object. Trees, fences, posts, and the like usually become such "bike parks". This parking practice creates a lot of inconvenience for both pedestrians and cyclists. The threat of bike theft is one of the most influential factors that discourages people from choosing a bike as their daily mode of transportation. Each store, educational institution, or service provider that installs a reliable and safe bike parking area informs its guests that their bikes are always welcome here.

As of spring 2023, there are 30 locations equipped with bike parking in the Irpin territorial community - these are currently only separate and connected bike parking racks. The vast majority of them are located in Irpin, while only one bike parking space near the starosta's office in the village of Mykhailivka-Rubezhivka has been recorded in the community's villages. 59% of secondary education institutions, as well as the University of the State Fiscal Service of Ukraine, currently do not have bike parking. There is no infrastructure for bike parking in the vast majority of modern residential complexes in Irpin.

Everywhere where there is already or expected to be a large number of parked bikes, it is necessary to take care of organized, convenient, and safe parking. Only in this way can cycling become more attractive.

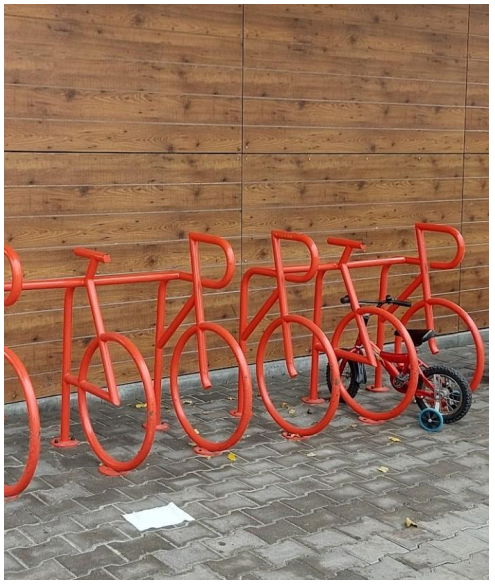
By the location of the bike, parking types are divided into:

- Bike parking racks;
- Bike parking lots;
- Bike garages;
- Bike storage facilities.

The installation of small bike parking areas, such as bike parking racks, allows cyclists to park their bikes for a short period of time near their destination. More complex facilities for safe storage, such as bike garages and bike parking lots, provide the possibility of reliable storage of bikes for a longer period.

Станіслав Клименко

Тимофій Нагорний

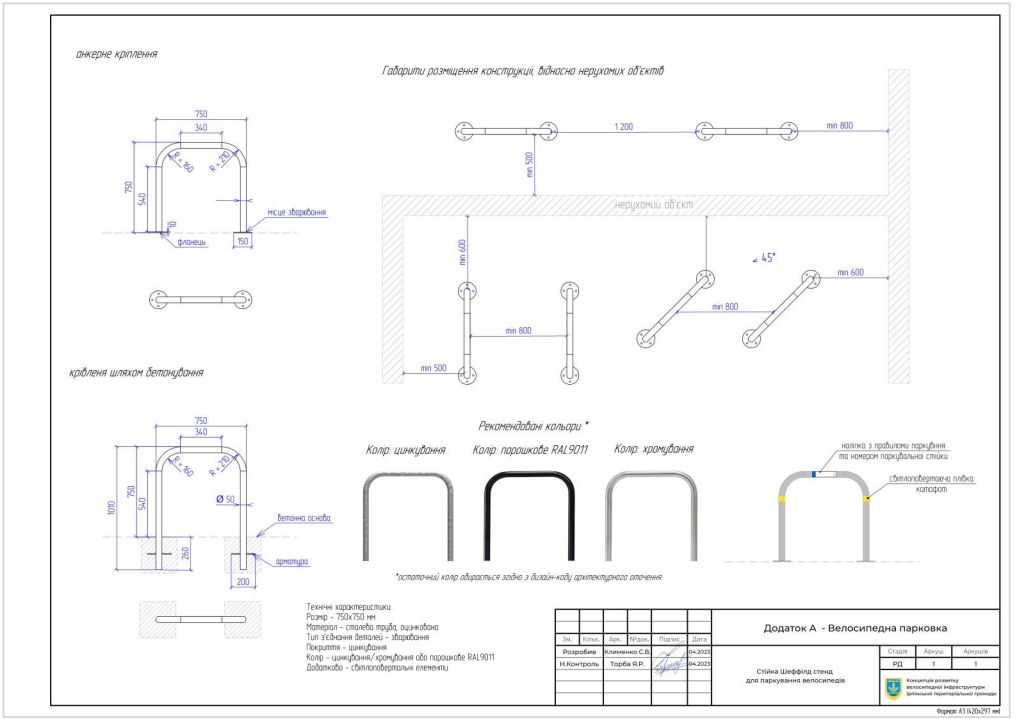


Тимофій Нагорний

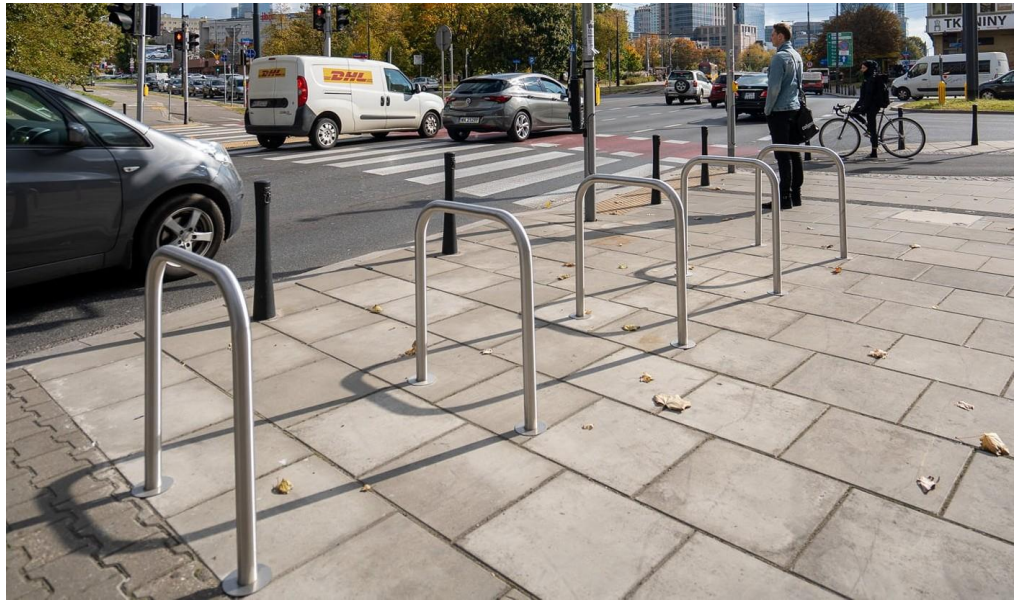
Bicycle parking lots come in various constructions, and each manufacturer aims to produce their unique bicycle parking, choosing color, size, and material. Similarly, every owner, upon installing a bicycle parking, wants to stand out from others by its uniqueness and distinctiveness. In practice, self-made bike parks are encountered when owners do not want to spend money on buying a ready-made stand and create it themselves (ignoring world experience). Unfortunately, as practice shows, not all bike rack designs meet the criteria of reliable and convenient bike parking. In pursuit of uniqueness, design, and cost savings, bike parking designs lose their intended purpose.

A reliable bike parking should keep the bike in an upright position, allow the frame and wheel to be secured in two places, prevent accidental bike falls, and prevent bike wheel deformation. The bike parking stand's construction should be made of strong materials to resist intentional cutting or damage by hand tools (metal saw, wrenches, assembly pry bar). Also, there should be no seams or sharp corners on the stand that could accidentally damage the bike frame. The bike parking stand should be made easily recognizable, as well as marked with a special sticker or sign that indicates that it is a bike parking, not a fence element or a designer solution for street arrangement. The parking should be designed to accommodate bikes of different types (sports, mountain, road) and sizes (children, teenagers, adults).

To meet these requirements, the classic English stand "Sheffield Stand" is most suitable, which allows parking two bikes on both sides at once. Its design and placement options are regulated by the DSTU 8906 "Planning and Designing Bicycle Infrastructure." It can be equipped with a horizontal stand to which a smaller bike can be attached. Parking should be located in well-lit and visible areas to prevent theft and vandalism. Additionally, parking should be located near public transportation or other public places, making it convenient for users to park their bikes and continue their journey.



A drawing of the bicycle parking is provided in Appendix A



fb.com/PelnomocnikRowerowyWarszawa

www.cyklos.s

PARKING STACKS

For short-term bicycle parking, special spaces should be provided on streets and squares near trade establishments, services, cultural institutions, sports and recreational facilities, and open spaces. The placement of new bicycle parking in the community requires prior analysis. Bicycle parking racks are suitable for parking bicycles for up to 2 hours when visiting establishments. For employees of the same establishment, it is more prudent to provide bicycle storage for reliable long-term parking throughout the workday. Separate parking racks located in residential areas may not be in demand, so bicycle garages or storage rooms should be provided instead. In cottage areas, there is no need to provide bicycle parking near residential buildings, given the greater possibility of storing bicycles in the yard or at home.

If possible, bicycle parking racks should be provided with a roof and walls to avoid damage to bicycles from precipitation.

BICYCLE PARKING

For long-term bicycle parking (long-term or 24-hour parking), bicycle parking facilities are used. These are enclosed bicycle parking structures designed for a large number of parking spaces using horizontal or vertical bicycle racks. Usually, bicycle parking facilities are located at railway stations, near educational institutions, in the city center or in areas with a high concentration of jobs. Inside the bicycle parking facility, there may also be accompanying infrastructure such as a bike repair shop, pump, and locker room, etc. To prevent vandalism or theft of bicycles, parking facilities have the maximum possible range of advantages:

- Closed or covered structure or room;
- A structure made of durable materials and resistant to mechanical damage;
- The doors are locked;
- Presence of video surveillance or security.

cycle-works.com

www.cpp.edu

BICYCLE GARAGES

If the level of bicycle demand is too low for the installation of a bicycle parking facility, and the threat of vandalism and theft is high, a personal bicycle garage may be a possible solution. This is a closed container-parking for bicycles, which only the owner of the bicycle has access to. Typically, these boxes are provided for daily or monthly rent, but there is an increasing demand for individual and collective purchases of such boxes. The thing is, most high-rise residential buildings are not designed to store bicycles - there is simply no space designated for them in the apartments. Therefore, it is very relevant to provide such personal storage facilities in areas of high-rise residential development. Thus, a bicycle garage is a closed structure made of durable materials and resistant to mechanical damage, which provides reliable mounting of the bicycle, preventing it from falling or deforming. Ideally, a bicycle garage requires an alarm or video surveillance.

BICYCLE STORAGE

When constructing new residential or office buildings, as well as in existing buildings where technically possible, it is necessary to provide for the installation of bicycle storage facilities. This type of bicycle parking is a separate room inside the building at the level of the ground floor or in a basement space, where people who live or work in the building can park their bicycles for a long period of time. Typically, only residents or workers of the building have access to the storage facility. When locating such a room not on ground level, a ramp should be provided for convenient movement of the bicycle from the entrance to the building to the bicycle storage facility. Usually, auxiliary infrastructure such as a bike repair station or a set of tools for bicycle maintenance, a pump, etc. is immediately arranged in such a storage facility. If the residential or office building is not secured, a video surveillance system should be installed in the bicycle storage facility.

SUPPORTING BICYCLE INFRASTRUCTURE

We Love Cycling

BICYCLE WAITING RACKS

At controlled intersections, while waiting for the green light, cyclists usually balance on one foot or put it on the curb. This means that they need additional time to regain their balance on the bicycle when they start moving again. A special waiting stand is designed to allow cyclists to place their foot without having to lower it to ground level while waiting for the green light. These stands are usually located near the bicycle lane or in front of the stop line at a controlled intersection. This design allows cyclists to start moving as quickly as possible when the green light comes on, while also ensuring their safety and preventing conflicts with other road users. When combined with a stop line that is positioned ahead of the bicycle lane or bicycle path, this solution gives cyclists priority over cars, allowing them to cross the intersection before other vehicles. The stand should be positioned so that the place for the foot is at the level of the bicycle pedal (0.15-0.20 m above the level of the road surface or bicycle path), and the handrail for support is at a height of 1.0-1.3 m.

Rowerowy Poznań

SELF-SERVICE BICYCLE REPAIR STATIONS

Self-service bicycle repair stations (VeloSTO) allow for quick maintenance of bicycles right in the middle of a bike route. They are usually equipped with a pump, screwdriver, wrench, spoke key, oil can, and a place to secure the bike. They are set up on bike routes, as well as on transportation and tourist hubs. Special attention should be paid to the exits from populated areas to intercity bike routes when setting up repair stations. In small towns, VeloSTO can replace a full-fledged bicycle workshop. Unfortunately, such constructions are often subject to vandalism and theft of tools. Therefore, constant monitoring and maintenance (replacement of tools) by responsible services is necessary, as well as the installation of a video surveillance system if possible. The repair station should have an anti-vandal construction, and tools and equipment should be securely fastened. VeloSTO is usually part of bike parking and bike storage facilities.

www.thameswater.co.uk

DRINKING FOUNTAINS

Unhindered access to drinking water is one of the sustainable development goals, which is particularly critical in light of climate change, where every summer is becoming increasingly hot. People actively lose access to drinking water while cycling. Buying or obtaining drinking water in cities and communities is becoming a fairly acute problem, as most stores do not have bicycle parking. Equipping drinking water fountains is a matter of life safety not only for cyclists but also for all community residents. In many cities, this solution is implemented primarily in residential areas in the form of wells, while more compact options can be arranged in other areas. Modern designs of drinking fountains allow for maintaining hygiene conditions and filling water containers, thereby reducing the use of disposable plastic. Drinking fountains are equipped at key points, both transportation (urban, suburban) and recreational, tourist cycling routes. Drinking fountains can also be a component of bicycle parking.


State of Green

DUMPS

When riding a bicycle, sometimes there is a problem with throwing out garbage. This applies both to intercity bicycle routes (transport, recreational and tourist), where there is no need to install ordinary trash cans, and to bicycle traffic within the city, especially when the trash can is placed near a building behind a pedestrian sidewalk. In order to reduce the risk of cyclists violating the pedestrian space on the one hand and clogging the streets and roads of the community on the other, so-called bicycle dumps are arranged. Special trash cans for cyclists have an inclined orientation and are placed higher above the ground surface, so they are convenient for throwing out garbage without stopping the movement of the bicycle. The design of the bicycle trash can should be wide enough to ensure the possibility of getting garbage there at speed. They are arranged on bicycle routes of all categories, where there is a significant transit flow of cyclists. It is especially important to install them on intercity bicycle routes, as well as tourist and recreational routes that run outside the built-up area.


thomasrud.dk

CONTAINER FENCE

A simple restraining fence of the handrail type allows you to direct the flow of traffic participants and reduce their movement speed in places of potential conflict, thus increasing their attentiveness. To reduce the speed of movement of cyclists and provide a wide viewing angle in front of the conflict area, several restraining fences are installed to ensure movement past them on a wavy trajectory. The restraining fence is dangerous in the event of a collision, so it cannot be used on sharp differences in height (more than 10%). The most critical is the use of such a tool at intersections of the bicycle network with public roads outside intersections, as well as with trunk railway lines. In the Irpin community, a similar solution has already been implemented at the pedestrian railway crossing between Tsentralnaya and Pidhirnaya streets. It is important to arrange a safe railway crossing for cyclists at the existing crossing along the street. Kotlyarevsky. Also, the pedestrian crossing near the street remains unequipped. of peace

vsim.ua

TRAFFIC COUNTERS

The lack of data on the real number of bicycle users is often an obstacle to making the right political and project decisions regarding the development of bicycle infrastructure. Traffic counters with the help of sensors allow you to count and display the number of cyclists who pass a particular section. Such a decision raises awareness of the real number of cyclists and the need to develop cycling infrastructure. Traffic counters, although they are more of a marketing solution, allow to record real indicators of bicycle traffic, and thus — to promote the organization of bicycle infrastructure, thereby indirectly helping cyclists. Usually, such devices are installed on main city bicycle routes on the main streets of the city, as well as in its center, where various bicycle routes intersect and the most indicative intensities of cyclist traffic are available. When distributed on the main roads of the city, bicycle traffic counters simplify the calculation of the number of cyclists for annual monitoring and use in projects of further development of bicycle infrastructure.

Bicycle parking should be provided near the railway station, suburban train stops and bus stations, as well as mass-visited facilities. They can be placed in other places as well, subject to approval of the installation with the balance keeper of the street and road network in the community or settlement. It is recommended to store bicycles in a well-lit and visible place, preferably under a canopy to protect against precipitation or in rooms on the first floor. Storage of bicycles should be provided in accordance with the functional zoning of the territories of settlements. The distance to bicycle parking spaces in industrial, communal and warehouse areas (from entrances or passageways in institutions and enterprises) should be no more than 30 m, in limited conditions up to 100 m. or between them near main streets. It is also worth providing bicycle parking racks in residential buildings near entrances for temporary storage of bicycles.
The size of the parking lot for temporary storage of bicycles in the building area is calculated as 0.25 parking spaces per apartment. In the regulatory documents of European countries, the following approximate indicators of provision of bicycle parking spaces for various buildings are calculated: business centers, offices and hotels — 0.3 spaces per one employee; shopping, sports and cultural leisure centers — 0.3 places per visitor; medical institutions — 0.15 places per visitor. For educational institutions, this indicator is calculated as 0.3 places per employee, as well as: for kindergartens - 0.2 places per pupil; for primary schools — 0.3 places per student; for secondary schools and institutions of higher education — 0.5 places per student.
Bicycle parking racks have a length of 0.7-1.0 m and a height of 0.75 m and are installed one or more depending on the demand of users.
They can be located perpendicular to the carriageway or at an angle to it, and they can also be placed along the curb instead of restraining posts. As a rule, bicycle parking racks are placed on the sidewalk, but it is allowed to place them on sidewalk islands made from marking 1.16 at the level of the carriageway. The distance between individual bicycle parking racks should be 1.0 m for the possibility of parking bicycles on both sides of the rack. The width of the bicycle parking zone is taken as 2.0 m, while they should be located outside the transit zone of the sidewalk and should not interfere with the convenient movement of pedestrians and cyclists.

BICYCLE PARKING

1. Irpin, st. University, 1
2. Irpin, st. Yesenina, 30
3. Irpin, st. Soborna, 1
4. Irpin, str. Chekhova, 27
5. Irpin, str. Lisova, 40
6. Irpin, str. Soborna, 105
7. Irpin, Railway station
8. Irpin, str. Soborna, 151
9. Irpin, str. Kotlyarevsky, 31
10. Irpin, str. Pokrovska, 1
11. Irpin, str. Poltavska, 70
12. Irpin, str. Severynivska, 158
13. Irpin, State Fiscal Service University of Ukraine
14. Irpin, st. Mechnikova, 112
15. Irpin, st. Dzherelna, 8
16. Irpin, st. Bilokur, 7
17. with. Mykhailivka-Rubezhivka, str. Shkilna, 1
18. with. Kozyntsi, House of Culture

19

BICYCLE STATION

1. Irpin embankment, next to the Romaniv bridge
2. Irpin, st. Oleg Koshovoy, 17
3. Irpin, st. Soborna, 1
4. Irpin, Central Park
5. Irpin, st. Stelmaha, 20
6. Irpin, Central Square
7. Irpin, st. Soborna, 85
8. Irpin, st. Kotlyarevsky, Pokrovsky Park
9. Irpin embankment, northern project part
10. Irpin, intersection of St. Hryhoriya Skovorody and St. of Kyiv
11. with. Zabuchya, str. Technical, 1
12. with. Mykhailivka-Rubezhivka, str. Shkilna, 1
13. with. Mykhailivka-Rubezhivka, intersection of St. Khutirska and St. Lisova
14. with. Kozintsi, st. School
15. with. Dibrova, str. Opanasenka, 99

16.

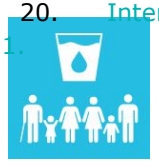
DRINKING FOUNTAINS

1. Irpin, st. Popovicha, 1
2. Irpin, st. Oleg Koshovoy, 17
3. Irpin, st. University Street, next to the Irpin Cemetery
4. Irpin, st. Soborna, 1
5. Irpin, Central Park
6. Irpin, Central Square
7. Irpin, st. Stelmaha, 20
8. Gateway on the Irpin River
9. Irpin, Gostomelske Shosse, 39
10. Irpin embankment, northern project part
11. Irpin, st. University, Central Park
12. Irpin, st. Soborna, Dubka Park
13. Irpin, st. Mechnikova, Mami Park
14. Irpin, intersection of St. Hryhoriya Skovorody and St. of Kyiv
15. with. Zabuchya, str. Technical, 1
16. with. Mykhailivka-Rubezhivka, str. Shkilna, 1
17. with. Mykhailivka-Rubezhivka, intersection of St. Khutirska and St. Lisova
18. Recreational cycling route No. 2, Vakanets station
19. with. Kozintsi, st. School
20. with. Dibrova, str. Opanasenka, 99

21.11. BICYCLE BRIDGES

12. 1. Irpin, next to the Romanivsky bridge
13. 2-3. The southern project part of the Irpin embankment
14. Near the railway bridge
15. Gateway on the Irpin River
16. 6-7. Recreational cycling route No. 2, next to the Kyselivskyi pond
17. 8. Recreational bicycle route No. 2, near the village. goats
18. 9-10. Recreational cycling route No. 2, south of the village. Oak wood
19. Intercity bicycle route No. 5, near the fishing base
20. Intercity bicycle route No. 5, south of the village. Oak wood

21.



6.1 By 2030, ensure universal and equal access to safe and affordable drinking water for all.

Scheme of accompanying bicycle infrastructure given in the Graphical Appendices

TRAFFIC COUNTERS

1. Irpin, between the Romanivsky bridge and St. Cathedral
2. Irpin, st. Oleg Koshovoy, 7
3. Irpin embankment
4. Irpin, st. Shevchenko, 7
5. Irpin, st. University, 16
6. Irpin, st. Severynivska, 11
7. Irpin, Gostomelske highway, 24
8. Irpin, st. Kotlyarevsky, 3
9. Irpin, st. Soborna, 183
10. Irpin, st. Mechnikova, 2
11. with. Mykhailivka-Rubezhivka, str. Zhytomyrska, 84
12. with. Mykhailivka-Rubezhivka, str. Shkilna, 1
13. with. Kozintsi, st. Shkilna, 41

14.

RENTAL OF BICYCLES AND LPT

Rental services of bicycles and electric scooters are important for the popularization of active mobility among people who do not have their own bicycle (including due to the lack of an opportunity to maintain or store it). These are systems of short-term rental of the corresponding type of transport, as a rule, spread over the entire territory of the city or on a significant part of it. They focus on making short trips and, accordingly, a significant number of uses of the transport unit during the day. Community centers often have short trips that can be optimized through the introduction of bicycle and/or e-scooter rentals, thus reducing the intensity of car trips. The organization of such a service usually takes place as an investment project within the framework of a municipal-private partnership. Studies conducted in different countries show that the increase in the number of active cyclists is due to the wide spread of both the bicycle network and the availability of bicycle rental locations/stations and LPT. Their successful placement can encourage new potential bicycle users and increase the use of the bicycle network, further justifying municipal investments in the development of bicycle traffic. Rental systems that are implemented or expanded without taking into account the existing and planned bicycle network, road safety factors, do not succeed. Like the bicycle network, stations or locations of rental services are tools for improving road safety and help reduce the number of deaths and injuries in road accidents by improving the visibility of pedestrians at intersections, narrowing streets, and creating pedestrian and bicycle zones.
Bicycle or e-scooter rentals can boost tourism in a community without the need to transport your own vehicle. Guests of Irpen, arriving or coming from other cities and communities, should be able to rent a bicycle or electric scooter and make a trip through the territory of the community. In this way, the demand for excessive trips by often unlicensed taxis and the busiest public transport routes is reduced.
From August 2022, during the active recovery of Irpen after the Russian occupation, the first full-fledged bike rental service started operating in the city. Within the city limits, bicycle rental locations are common on main streets cities, largely between parks. It is important that a single system operates in Irpen,
Kyiv, Buchi and other communities around the capital, which provides an excellent opportunity to travel with this type of transport for relatively short distances between settlements without the need to own and store a bicycle. This significantly increases the demand for quality bicycle infrastructure in the Irpin territorial community and the Kyiv agglomeration in general.

dumskaya.net

STATION BIKE RENTAL
The classic form of bicycle rental is stationary. Thus, the network is represented by fixed stations where bicycles are locked and interaction with the user takes place. The latter is served by a stela, which, as a rule, contains an electronic interface through which the user can pay for rent, purchase a season ticket, and unlock the bicycle. The ceiling also contains basic information about bicycle rental — rules of use, current tariffs, and a map of the nearest bicycle rental stations and bicycle network. The ceiling structure can be equipped with a solar battery to avoid the need to connect to underground communications. For such a system, stations should be placed near key points of attraction: shopping areas, office centers, shopping malls, transport hubs, residential areas, educational institutions, etc.), the distance between stations should be no more than 500 m (preferably up to 300 m). The design of the rental bike also includes a built-in lock for the possibility of parking next to busy bike rental stations. Such bicycle rental systems were launched in Lviv, Kharkiv, Vinnytsia, Ivano-Frankivsk and Odesa.

bikenow.com.ua

bzh.life

NON-STATION BIKE RENTAL

In contrast to the classic bicycle rental, its non-station form is becoming more and more widespread. Under such a system, instead of stations, virtual service zones are established in the city, outside of which it is not possible to park a bicycle. Usually, the areas where it is forbidden to park bicycles include intra-district passageways, enterprise territories, industrial and warehouse areas, cemeteries, sanitary and protective zones of railways, sometimes areas of estate development. All interaction with the user — searching for a free bicycle, topping up the account, buying a subscription, tracking trips, starting and ending the trip — takes place through the mobile application. The bikes are equipped with an internal lock that locks the rear wheel when the bike is not in use. The position of the bicycle in relation to service areas is recorded using a GPS tracker. This also helps the user track the time of the trip, the distance covered, the number of calories burned, etc. Despite the war, such bicycle rentals continue to work in Kyiv and Lviv. In 2022, this service was extended to Irpin, Bucha, Vyshneva, Sofiivska Borshchagivka, Brovary and Boryspil.

LPT RENTAL

As of the spring of 2023, electric scooters and other LPT vehicles are not fully regulated as a form of transport, in particular in the Road Traffic Rules. Despite this, LPT tools and related rental services rapidly emerged and spread in Ukraine in the late 2010s. Due to the lack of clear rules for LPT, there is a need to sign a memorandum of cooperation between the community and rental operators, indicating the limitations of using LPT to minimize conflicts between different traffic participants.

Rental of electric scooters is organized, as a rule, on a non-station basis form: interaction with the user takes place through the mobile application, it works a similar system of service zones in the city. E-scooter rentals can be more attractive due to the higher speed of movement without exerting physical effort. In order to prevent abuse of speed, operators of such services must limit the maximum permissible speed of LPT vehicles, especially in pedestrian zones, parks, squares, etc. Maintenance of such rentals is complicated by the need to periodically charge electric scooters.

The rental of electric scooters appeared in Irpen appeared in experimental mode in 2021, it is currently represented by one operator.

EDUCATION

topnews.pl.ua

U-Cycle

Traffic rules for cyclists in schools

In order to stimulate traffic safety and popularize the bicycle as a means of transport, it is important to educate future users from an early age. In addition to learning the basic rules in elementary school (which primarily concern pedestrians), there is a need to consolidate and expand knowledge at the middle and high school level. A bicycle can be a teenager's first individual means of transport, as it does not require a driver's license to use it. The study of the Traffic Rules for cyclists can be presented in the form of individual classes or a complex special course for students of grades 7-8 (at the age of 14, when it is allowed to ride a bicycle on the roadway) with repetition and consolidation of knowledge in the 10th grade. The incentive for students should be the prospect of receiving an incentive certificate for passing a test on knowledge of the Road Traffic Rules for cyclists. Usually, such classes are conducted within the framework of cooperation between educational institutions and local departments of the National Police.

BICYCLE SCHOOL

As part of life-long education and popularization of cycling, there is a prospect of road safety cycling schools. Such events are held with the aim of increasing the level of knowledge of the Traffic Rules for cyclists and overcoming prejudices and fears regarding movement by bicycle in the city and community. Traffic safety training usually lasts several hours and consists of a theoretical part and a training ride accompanied by a cycling coach. To take part in a practical bike ride, you must come with a working bike, you can come to the theoretical part without a bike. Participants of such an event will learn where and how to ride a bicycle (and where it is prohibited), how to cycle through different types of junctions, what road signs and markings mean, how to make a left turn on a bicycle. Cycling schools are usually organized by public organizations, sometimes with the involvement of local units of the National Police, but the city government can also be a facilitator.

Володимир Подогов

informator.ua

BICYCLE REPAIR COURSES

A more specialized educational event is a bicycle repair and maintenance school. During such an event, a professional bicycle master teaches the rules of bicycle care. Bicycle maintenance training can be part of a cycling school. Often these activities are combined with other important topics for cycling, such as reinforcing knowledge of road safety and rules, checking the bike and choosing equipment for urban cycling, as well as preparing the vehicle and the necessary equipment for the competition. Usually, such schools take place in the format of a course with practical support on a bicycle, which allows users to independently deal with the technical condition of their own vehicle. Such a measure can allow bicycle users to save on minor maintenance of their transport.

COURSES ON PROVIDING DOMESTIC ASSISTANCE

Every road user is a user of high-risk infrastructure. In order to reduce the severity of injuries and the mortality rate as a result of traffic accidents or other life-threatening cases, it is necessary to be able to provide first aid. Such trainings are held for a wide range of people, in particular for cyclists as vulnerable road users, in the format of one- or several-day courses with practical training of various situations. During training, a certified instructor provides information on the basics and rules of providing pre-medical care. Usually, within the framework of such courses, the legal basis of rendering aid by non-medical workers, assessment of a safe place for rendering aid, recognition of different physical states of a person according to different algorithms, the ability to stop bleeding, ensuring the patency of the respiratory tract, and the ability to perform cardiopulmonary resuscitation are studied. Such events can be organized both by specialized public organizations and by local authorities in cooperation with medical facilities or emergency services.

PROMOTION AND PROMOTION

www.mercedes-benz.com

www.gazettelive.co.u k

INFO CAMPAIGN "BE VISIBLE ON THE ROAD"
Its purpose is to remind road users of the need to ensure their visibility in the dark, as well as to inform about light-reflecting elements and the principles of their operation. According to the Traffic Rules, in the dark and in conditions of insufficient visibility, pedestrians and cyclists moving on the roadway or on the side of the road must use reflective elements or wear clothing with reflective elements for timely detection by other road users. Bicycles must be equipped with reflectors or bicycle lights. Such safety rules are especially relevant in the conditions of the energy crisis, when it is impossible to provide street lighting. The promotional campaign can be carried out in various formats — as part of a road safety course in schools, part of a cycling school or as separate events. Organizers usually give residents light-reflecting elements: flickers, cataphotes, vests, etc. Such a campaign does not remove the responsibility of local self-government bodies for the best possible provision of street lighting, especially in places of pedestrian crossings and bicycle crossings.

INFORMATION CAMPAIGN "WE'RE ON THE WAY"
All road users have the right to their place on the road and have a common goal — to get to their destination safely and quickly. In parallel with the development of bicycle infrastructure, it is important to carry out information campaigns to form a respectful attitude between different participants in the movement. Their goal is to draw the attention of road users to the problem of road traffic injuries and remind them of the need for mutual respect and observance of the culture of space use. In particular, this applies to ensuring an interval of 1.5 meters when cars overtake cyclists, giving priority to pedestrians at crossings, prohibiting the movement of bicycles through pedestrian crossings, etc. Such a campaign is spread in social networks and on street advertising media on the main streets of the community. The advertisement is aimed at all road users with coverage of typical common road accidents involving bicycles and pedestrians. At the same time, it is worth paying attention to the fact that the responsibility for road safety lies with all its participants, including cyclists. Such campaigns are usually organized by public organizations or local self-government bodies in cooperation with the National Police.

www.unionsquarenyc.org

30daysofbiking.com

EUROPEAN MOBILITY WEEK

The European Mobility Week is a pan-European initiative founded by the European Commission and aimed at improving the environment and living conditions in communities. Such a promotional campaign takes place every year in mid-September in more than 1,800 European cities. The European Mobility Week encourages local authorities to introduce and maintain balanced mobility and develop ecological modes of transport, as well as encourage residents to use alternative (compared to cars) modes of transportation, draw attention to the need to improve the environment and living conditions of the population. The initiative includes various thematic events, including walking and cycling tours, workshops, open lectures and discussions, raffles for subscriptions to public transport or bicycle rental, as well as measures aimed at reducing the use of personal cars. The greatest effect of such a promotional campaign is achieved with the cooperation of local self-government bodies with public organizations. Usually, the organizers call for active participation, create educational campaigns and events, fix and approve programs and plans for the development of balanced mobility in communities, and also conduct presentations where they report on the results of work and achievements of the community in the field of mobility and safety.

CHALLENGE "30 DAYS ON A BICYCLE"

Every year, the "30 days on a bike" campaign takes place around the world, which starts on April 1 and lasts for a month. The idea of the campaign is very simple — to ride a bicycle for any distance for any purpose throughout April. For motivation to ride a bicycle every day, you should announce your intention in advance by registering on the campaign website and declaring your intention on social networks, and during the month share your cycling stories and photo memories, because in this way, the participants of the flash mob encourage their close circle to join the flash mob. All residents of the community are invited to participate in the event, regardless of whether they often use a bicycle. Such an action is a reason to start actively using the bicycle as a means of transport. The event is an international flash mob and does not have a single organizer in Ukraine. It is open to all communities, organizations and companies that want to support the initiative, but very often the co-organizers are public organizations in partnership with local authorities. They create interesting trainings, excursions, cycling trips or cycling-themed competitions.

EVENTS

A DAY WITHOUT A CAR

Every year on September 22, many countries around the world celebrate the International Car-Free Day, it is considered part of the European Mobility Week. On this day, in order to preserve the environment and popularize alternative types of mobility, people are encouraged to use public transport, bicycles, public transport or walk. The goals of such an event are to draw attention to the problem of atmospheric air pollution by vehicles, reduce the level of traffic jams, reduce noise pollution, and promote the development of alternative modes of transportation. The main goal of such an event is not to force people to give up their cars, but to create the most comfortable conditions to reduce dependence on this type of transport, to promote the balanced development of mobility. Car Free Day is not officially celebrated in Ukraine, but such actions are held at the initiative of the public or local self-government bodies in certain communities. In particular, some cities within the framework of the European Mobility Week combine Car Free Day with other measures to encourage the use of environmentally friendly and active means of transportation.

WORLD BICYCLE DAY

World Bicycle Day was officially approved by the decision of the UN General Assembly in 2018 and is celebrated annually on June 3. On this day, cities prefer bicycles over cars thanks to the temporary closure of some streets, themed flash mobs and encouragement to choose this type of transport for commuting to work, school or for leisure. Usually, on World Bicycle Day, themed events are held in the central part of the city. A bicycle ride through the city's central streets, which are closed to cars, can also be organized — a great opportunity to rethink them for further transformation. This event is designed to promote increased attention to the development of bicycle infrastructure, as well as to increase road safety at the official level. Also, on World Bicycle Day, people are encouraged to adopt best practices and tools for the development and popularization of this type of transport among residents. Professional public organizations are usually the organizers in close cooperation with the cycling community and local self-government bodies. Considering the fact that this holiday is quite young, it is worth organizing a wide information campaign.

u-cycle.org.ua

Iryna Lastovetska

BIKE TO WORK / EDUCATION

Such events encourage residents to use bicycles for commuting to work or school and may be held several times a year. They can be linked to other events and campaigns in the field of balanced mobility (European Mobility Week, "30 days on a bicycle", Traffic Safety Week, etc.). Companies, organizations and community institutions, including institutions of higher and secondary education, can take part in the flash mob. Usually, a meeting is organized for the participants in the central part of the settlement or near a prominent place in the morning hours for a joint thematic pastime, which includes a joint photo, communication, networking (building long-term professional relations between the participants), sometimes a joint breakfast before the working day. Also, as a rule, competitions with incentive prizes are held - "Best business style", "Largest corporate bicycle convoy", etc. Organizers can be both public organizations and local self-government bodies in close cooperation with the cycling community of the community.

THEMATIC BICYCLE PARADES

Thematic bicycle parades are held to unite the bicycle community, as well as popularize bicycle transport as a convenient means of daily transportation. Among other things, the purpose of such events is to refute stereotypes that cycling is only about sports and tourism, which, accordingly, requires sports clothing and equipment. Bicycle parades emphasize cycling for everyone in casual clothes on ordinary bicycles. This call is designed to rethink the bicycle as an efficient and practical means of transportation. The following thematic events are held in the cities and communities of Ukraine: "Girls' Bicycle Parade", "Retro Bicycle Cruise", "New Year's Bicycle Parade", etc. During such events, the organizers encourage users to use clothes, accessories or signs on a certain theme, arrange a meeting at a specified location and travel along an agreed route. Local cycling communities and public organizations are usually the initiators, but the participation of local self-government bodies is a good prospect for such events.

PROMOTION

We Love Cycling

AWARDING

The time an employee spends on the way to and from work is unproductively spent, often accompanied by additional stress and "transport fatigue". Cycling saves time standing in traffic jams, so it automatically reduces transport losses, and therefore brings socio-economic benefits to the employee and the employer. The biggest way to motivate employees is money. In the Netherlands, Great Britain and Belgium, employees who cycle to work are paid a bonus or a wage supplement for each kilometer cycled or days cycled. Usually, payments are made by employers themselves with the assistance of the state or municipalities. Employers confirm that cyclist employees work more efficiently, get sick less often, and are not late for work. Thus, the overall productivity of the company and the number of efficiently spent hours are increased. At the same time, the organization ensures the use of bicycles among its employees due to the availability of appropriate facilities - bicycle parking, bicycle repair shop, shower room, etc.

Rowerowy Poznań

EXTRA DAYS OF VACATION

It has been proven that people who actively use bicycles for commuting to work have better health and are more productive, and take sick leave less often. Therefore, another way to encourage employees to use a bicycle for business trips on a daily basis is to offer additional days to their annual vacation. In this way, the employer can be sure of the higher productivity of the employee, and therefore has the opportunity to allow him or her to work fewer days in the year. As a rule, cyclists spend their vacation more actively, which, among other things, has a positive effect on their well-being during further work. This corporate policy is aimed at forming a healthy and resilient team. According to the Code of Labor Laws of Ukraine, such a measure to encourage employees can be recorded when concluding a collective agreement at an enterprise or institution. A certain limit of cycling kilometers or days of bicycle use during, for example, six months of work can also be a criterion for granting additional leave.

www.vmr.gov.u
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SUBSCRIPTIONS FOR RENTAL OF BICYCLES OR LPT

Free subscriptions to rental services are an effective means of motivation for more active use of a bicycle or LPT, especially in the absence of personal transport. On the one hand, employers can do this by buying a certain number of subscriptions per month or season for their employees. It is especially valuable when local self-government bodies, thanks to free bicycle rental subscriptions, motivate employees responsible for the development of bicycle infrastructure in the community to actively use this mode of transport. On the other hand, the rental services themselves can offer free subscriptions to users to promote themselves. In addition, thanks to the supply of "humanitarian" bicycles from European countries, free bicycle rental is currently being provided in the cities of Ukraine for the needs of volunteers, social workers and employees of critical infrastructure enterprises. Such a service is not universally available, but it ensures the best functioning of cities in wartime conditions.

Www/bikecafe.pl

LOYALTY PROGRAMS

Bicycle-friendly establishments should not only install bicycle parking in front of the entrance. It is important to develop a corporate culture that will popularize cycling among both employees and clients. In order to promote their business as a center of progressive values, entrepreneurs can introduce loyalty programs for customers who use bicycle transport. This usually consists of a system of discounts on ordinary goods or bonuses to them, for example, a special

Biscuit with coffee. Another application of this can be themed flash mobs and contests, or even collaboration with bicycle rental services or LPT with raffles for monthly or seasonal subscriptions. Corporate participation in campaigns and events such as the European Mobility Week or Car Free Day is also an important means of encouraging customers to active mobility. Such a proactive position and compliance with modern trends by a business can become its competitive advantage among other players on the market.

www.circularonline.co.u

FINANCIAL AID

In times of crisis, when public transport runs on a limited basis, and it is objectively impossible to provide the entire population with cars, bicycles and LPT vehicles become the "transportation of life". The availability of bicycles for people with limited finances is becoming more difficult, and the demand for their maintenance due to more active use is also increasing. At the beginning of the Covid-19 pandemic in European countries, the problem arose of how people could remain mobile in quarantine conditions. Advanced countries, in particular France, have introduced subsidies from the state or municipalities for the purpose of purchasing or repairing a bicycle. This helped people to start using bicycles more actively, and 93% of those who became cyclists during the quarantine continue to use this mode of transport. In order to provide people with the necessary access to mobility, especially in rural areas, subsidy programs for the purchase or repair of bicycles should be initiated. It can also be a long-term contribution at the local level to ensure balanced population mobility after the war.

www.zhitomir-info

SERVICE CYCLE TRANSPORT

A bicycle can be an excellent solution for labor mobility in cities and communities where the average length of a trip does not exceed 5 km. After the de-occupation of the Kyiv region in March 2022, a great need to provide bicycles for volunteers, employees of communal enterprises and social services to make trips within the settlements became noticeable. Thanks to the work of the ambassadors of the cycling community, several campaigns have been organized to provide Ukrainian communities with "humanitarian" bicycles from European countries, in particular, the flagships of the cycling movement — Denmark and the Netherlands. By offering employees company bicycle transport, employers not only ensure their mobility, but also reduce dependence on cars and make a long-term contribution to the balanced development of the community. It is also promising to create and develop courier services using cargo bikes in the community, in particular, these can be both commercial services and volunteer, communal, and social services.

IMPLEMENTATION PLAN OF THE CONCEPT

	2024-25	2026-27	2028-29	2030-31	2032-33	2034-35	2036-37	2038-39	2040-41	**2042-43**
Bicycle network, km	13,7	27,4	41,1	54,8	68,5	82,2	95,9	109,6	123,3	**137,4**
City	3,8	7,6	11,4	15,2	19,0	22,8	26,6	30,4	34,2	**37,7**
District	3,9	7,8	11,7	15,6	19,5	23,4	27,3	31,2	35,1	**38,7**
Quarterly	6,1	12,2	18,3	24,4	30,5	36,6	42,7	48,8	54,9	**61,0**
City bicycle routes, unit / km	0 / 3,7	1 / 7,4	2 / 11,1	3 / 14,8	4 / 18,5	4 / 22,2	5 / 25,9	5/ 29,6	6 / 33,3	**7 / 36,7**
Intercity bicycle routes, unit / km	0 / 3,5	1 / 7,0	2 / 10,5	2 / 14,0	2 / 17,5	3 / 21,0	3 / 24,5	4 / 28,0	5 / 31,5	**6 / 34,9**
Recreational cycling routes, unit / km	0 / 7,2	1 / 14,4	1 / 21,6	2 / 28,8	2 / 36,0	3 / 43,2	4 / 50,4	5 / 57,6	6 / 64,8	**7 / 72,0**
Tourist bicycle routes, unit / km	0 / 2,5	1 / 5,0	1 / 7,5	1 / 10,0	2 / 12,5	2 / 15,0	2 / 17,5	3 / 20,0	3 / 22,5	**4 / 24,9**
Bicycle parking lots, unit	40	80	120	160	200	240	280	320	360	**400**
Associated bicycle infrastructure, unit	7	15	23	31	35	46	54	62	70	**78**
Bicycle parking	1	3	5	7	5	10	12	14	16	**18**
Bicycle service stations	1	2	4	4	7	6	10	8	13	**15**
Drinking fountains	2	4	6	8	10	12	14	16	18	**20**
Traffic counters	1	2	3	5	6	7	9	10	11	**13**
Bicycle bridges	1	2	4	7	9	9	11	11	12	**12**
Improvement of road traffic safety, unit	5	10	15	20	25	29	33	38	42	**45**
Roundabouts	1	2	3	4	4	5	6	7	8	**8**
Means of traffic calming	3	5	8	10	15	16	18	21	23	**26**
Arranged crossings across the railway	0	1	1	2	2	3	3	3	3	**3**
Distortion of the movement trajectory	1	2	3	4	4	5	6	7	8	**8**
Number of rental bicycles and LPT units.	50	100	150	200	250	300	300	300	300	**300**
Conducted educational activities, units.	Every year at least 4									
Conducted information campaigns, units.	Every year at least 4									
Activities were carried out to popularize bicycles, units.	Every year at least 4									

EXPECTED RESULTS

The concept of bicycle infrastructure development of the Irpin urban territorial community will contribute to the creation of safe, accessible and comfortable conditions for movement by bicycle. Implementation of new and improvement of existing infrastructural conditions will ensure the integrated development of cycling in the general transport system of the community. Creating better travel conditions for existing bicycle users will help attract more people to cycling for different purposes - daily work trips, domestic or recreational trips, as well as tourism. This will improve the quality of life of the population and increase the competitiveness of the territorial community.

The concept is fully synchronized with current planning documents, in particular the Development Strategy of the Irpin Urban Territorial Community for 2022-2032, the Development Strategy of the Kyiv Region for 2021-2027, as well as the National Transport Strategy of Ukraine for the period until 2030. In this way, the integrated development of the community and its bicycle transport system will be achieved, in which strategic documents do not contradict each other, but jointly determine the main directions of the territory's development for a long period. At the same time, the risk of unjustified "manual" control is also reduced.

Availability of the main strategic document on the development of the bicycle industry

of infrastructure will make it possible to establish optimal coordination regarding the creation of an inseparable bicycle network using various forms of bicycle traffic and its integration into the general transport system of the community. Arrangement of urban, intercity, tourist and recreational bicycle routes will be a logical arrangement of bicycle paths, will give them a specific meaning for different trips. The implementation of navigation elements for bicycle routes will be one of the approaches to creating a design code of the community and increasing its visual appeal, as well as the comfort of orientation.

Due to the creation of comfortable infrastructural conditions for bicycle trips on short and medium distances, the daily level will be increased

use of this mode of transport, including involving new users. Safe cycling infrastructure and implementation of facilities

traffic calming, new traffic lights and roundabouts will be the basis for reducing the level of accidents and deaths of all road users in traffic accidents. This will be facilitated by the use of modern technical means of traffic management, as well as training in the basics of traffic rules for cyclists, proper bicycle maintenance and first aid.

The development of infrastructure for bicycle transport as the cheapest form of individual transport will ensure equal rights of access to convenient and safe community movement. The expansion of the bicycle parking network and the introduction of bicycle parking, as well as conditions for bicycle parking in and near multi-story residential buildings, are designed to make the storage and use of bicycles convenient for daily trips.

The development of a local network of bicycle rental and LPT rental will serve as an additional opportunity for movement by these types of transport within the boundaries of the Irpa territorial community. This will be convenient for residents who are unable to store or maintain a bicycle or LPT, as well as for community visitors and tourists.

A developed bicycle infrastructure will become the basis for increasing the culture of active use of bicycle transport. At the same time, it will become possible to organize regular tourist, cultural, educational activities in the community using bicycles. In order to achieve comfortable and safe conditions for the movement of cyclists, along with increasing the subjective safety of road traffic, information and educational campaigns will be conducted on the use of bicycle transport and the stimulation of the respectful attitude of various road users.

The bicycle is the most ecologically clean form of individual transport, therefore prioritization and improvement of conditions for bicycle transport and LPT will contribute to reducing the intensity of motorized transport and its impact on the environment. It will also allow more optimal use of the limited space of the city to move more people, avoiding traffic jams.

Creating conditions that promote daily physical activity during bicycle trips will improve the physical and mental health of the population. This will contribute to reducing the risk of developing heart and respiratory diseases in community residents due to an active lifestyle.

Increasing the economic capacity of the territorial community for small

and medium-sized businesses will be achieved by ensuring the accessibility of points of attraction by bicycle transport, as well as the development of bicycle maintenance services and related bicycle services, in particular, bicycle rental and LPT, bicycle courier delivery systems.

The development of bicycle infrastructure will increase the tourist attractiveness of the community

due to the creation of tourist and recreational bicycle routes and the development of related services and local enterprises, and will also increase the competitiveness of Irpen at the regional and national level.

VOCABULARY

The document uses the following abbreviations:

BCS — branch construction standards
SCR - state construction regulations
SSU — the state standards of Ukraine
A road accident is a traffic accident
LPT is a light personal transport
ORT — organization of road traffic
TC — territorial community
Traffic regulations — Traffic rules

The document uses the following terms and definitions:

Automobilization is the introduction of cars into the everyday life of people and the increase of their role compared to other types of transport. In numerical terms, it is measured by the level of motorization of the population, that is, the number of registered cars per 1,000 inhabitants.

Road safety is a complex and system of rules, measures and means that ensure the conditions of conflict-free and accident-free road traffic, aimed at protecting and preserving the life and health of road users, as well as protecting and preserving the environment and property.

Bicycling is increasing the role of bicycle transport in people's everyday lives. In numerical terms, it is measured by the level of cycling of the population, that is, the number of bicycles per 1,000 inhabitants.

A bicycle path is a covered path made within the boundaries of the road or outside it, intended for movement by bicycles and marked with appropriate road markings and signs.

Bicycle infrastructure is a set of objects, facilities, and functioning services (maintenance, repair, and construction) required for safe and comfortable cycling.

A bicycle network is a set of interconnected forms of bicycle traffic organization.

A bicycle lane is a lane intended for the movement of cyclists within the carriageway of a street and/or road, which is designated by means of road markings or structurally.

The bicycle community is a collection of people who actively use bicycle transport and support the development of bicycle traffic and infrastructure.

A bicycle corridor (recommended bicycle corridor) is a part of the traffic lane marked with road markings or a surface to inform drivers about the intense mixed traffic of cyclists on the roadway together with cars in the passing direction.

A bicycle route is an integral combination of bicycle paths, lanes and other sections intended for the movement of cyclists, which connect the main objects of a settlement, its districts or territories outside it.

A bicycle crossing is a place where cyclists cross the carriageway within the intersection or outside it, marked with road markings 1.15.

Bicycle traffic — the process of movement of bicycle transport and cyclists as participants in road traffic; a set of social relations that arise in the process of moving people and goods with the help of bicycle transport and other road users within the roadway or in other places that are not prohibited by traffic regulations.

Bicycle tourism (bicycle tourism) is one of the types of tourism in which a bicycle is the main or only means of transportation.

A bicycle-pedestrian path (bicycle-pedestrian path) is a path or sidewalk on which pedestrians and cyclists are allowed to travel, while the latter must give way to pedestrians.

Bicycle-pedestrian zone - a square, street or its part where the movement of pedestrians, cyclists, as well as only those vehicles that serve citizens and businesses located in the specified zone or owned by citizens who live or work in this zone are allowed, or cars marked with the identification sign "Driver with disabilities" driven by drivers with disabilities or drivers who transport passengers with disabilities. If there are other entrances to the objects located on this territory, drivers should use them only.

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A shared traffic street is a street with mixed traffic of cyclists and motorized vehicles and a reduced speed limit, marked with appropriate road signs and markings.
Public roads are roads of state and local importance, which provide intrastate and international transportation of passengers and goods, taking into account the administrative and territorial division of the state, connect settlements and are an integral part of the unified transport system of the state.
Residential zone - residential areas, as well as parts of settlements, marked with road sign 5.34. The transit movement of vehicles, the parking of vehicles outside of specially designated places and their arrangement in such a way that complicates the movement of pedestrians and the passage of operational or special vehicles, the movement of trucks, tractors, self-propelled machines and mechanisms (except for those serving objects and citizens, perform technological works or belong to citizens living in this zone).
Means of traffic calming — structural elements of the road (street) or technical means designed to reduce the speed of vehicles and increase the attention of road users.
Capital repair is a set of measures to restore the transport and operational qualities of the street and road network, to bring indicators of road wear strength, load-bearing capacity and dimensions of road and transport structures within the limits of state construction standards, corresponding to the category of street (road) to be repaired.
Comprehensive transport scheme (CTS) is a set of organizational and engineering planning measures, based on technical, economic and ecological reasons, aimed at the development of the city's transport system, optimization of the operation of all types of transport, safe and clearly organized road traffic with a minimum level of traffic jams and reduction accidents KST should be developed as a separate document based on the city master plan.
Light personal transport is a single-seat (personal) vehicle that has a speed of up to 25-40 km/h and is convenient for moving short distances.
Population mobility is the spatial movement of people in order to meet the needs of work, education, leisure, etc.
Traffic management is a complex of engineering and organizational measures that provides conditions for smooth and accident-free movement of vehicles and pedestrians on streets and roads.
Reconstruction — reconstruction of the object of the street and road network put into operation in the established order, which involves changing its geometric dimensions and/or functional purpose, as a result of which there is a change in the main transport and operational indicators.
Recreation is a system of activities related to the use of people's free time for health, cultural, educational and sports activities in specialized areas located outside their permanent residence.
A traffic light object is a complex of equipment (traffic lights, a complex of sound and tactile signal duplication, a pedestrian call board), which, with the help of a road controller using light, sound and visual signaling, regulates the sequence and duration of phases of movement of traffic and pedestrian flows.
Sustainable (balanced, sustainable) mobility — meeting the needs of the population in moving with the use of the least amount of resources, with the least pollution of the environment, with the least threat to life.
Sustainable (balanced, sustainable) development is the development of countries and regions, when economic growth, production and consumption, as well as other types of social activities take place within the limits determined by the ability of ecosystems to recover, absorb pollution and support the livelihoods of current and future generations.
Self-service bicycle maintenance station (VeloSTO) is a stand with fixed tools and equipment for quick maintenance of a bicycle.
A strategic session is collective work aimed at the joint formation of decisions important for the community in the process of dialogue between residents, specialists and local self-government bodies.
Territorial community (community) — residents united by permanent residence within the boundaries of a village, settlement, city, which are independent administrative territorial units of the basic level, or a voluntary association of residents of several villages, towns, cities that have a single administrative center .
Technical means of traffic regulation (TZRDR) — road markings, road signs and their plates, traffic lights, traffic calming devices, road barriers and guiding devices, road marking inserts.

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ГРАФІЧНІ ДОДАТКИ

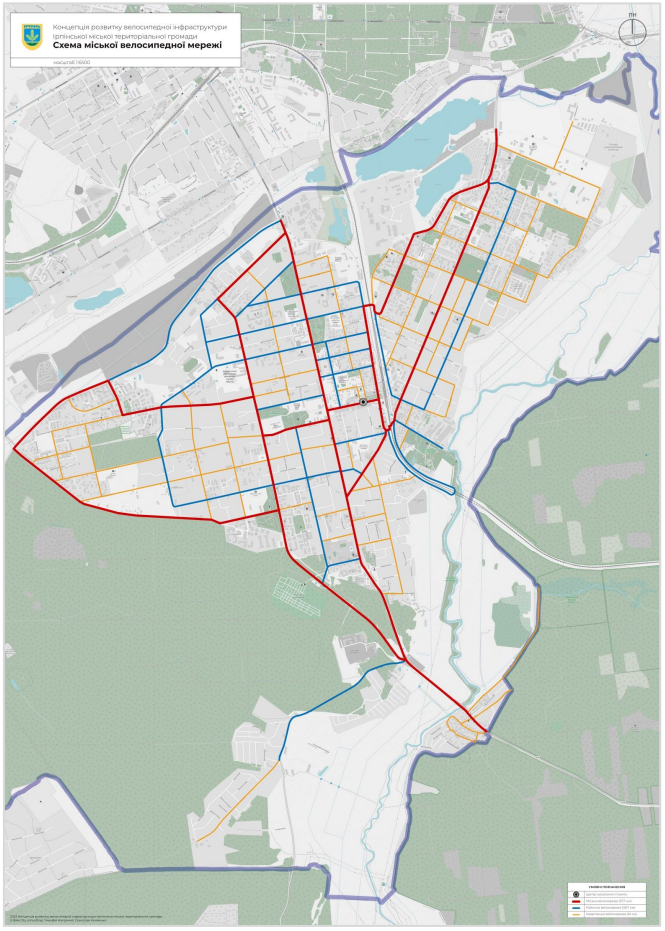

Схема міської велосипедної мережі

Масштаб 1:16500
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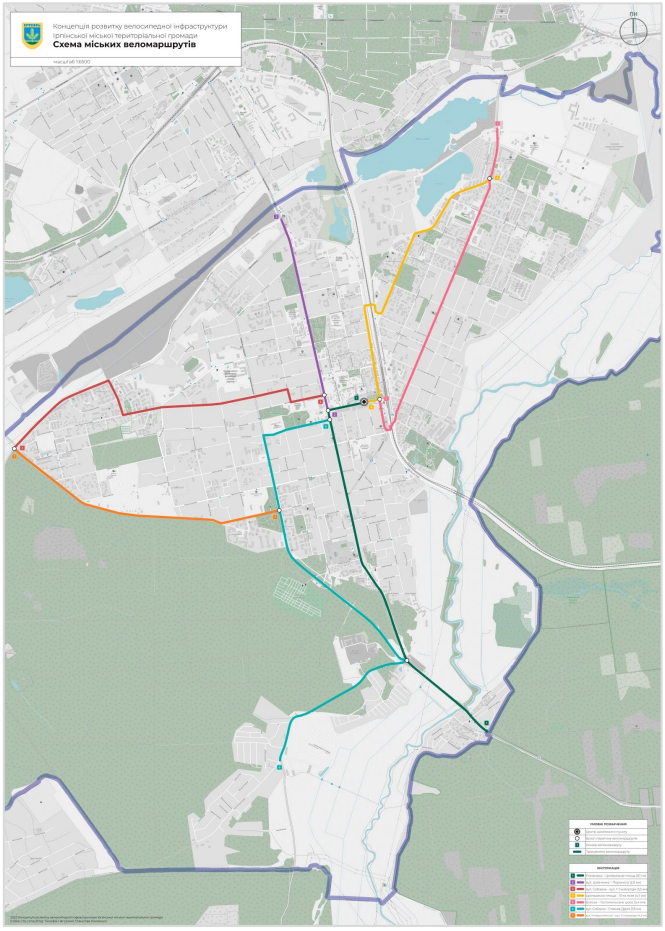

Схема міських веломаршрутів

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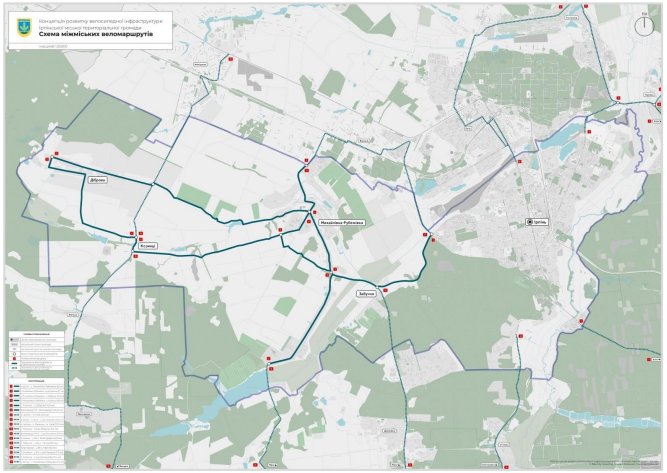

Схема міжміських веломаршрутів

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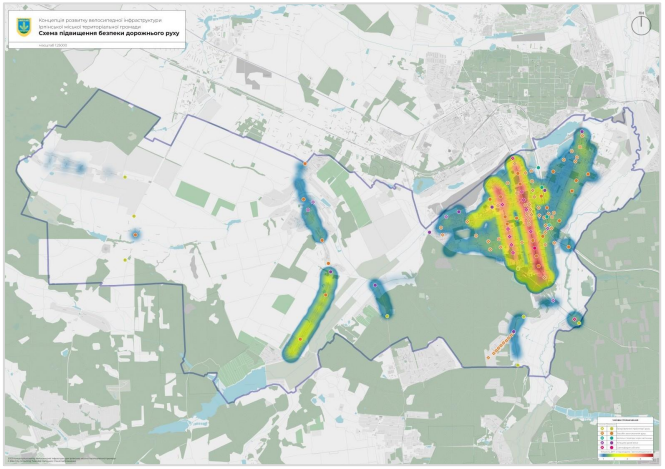

Схема підвищення безпеки дорожнього руху

Масштаб 1:25000
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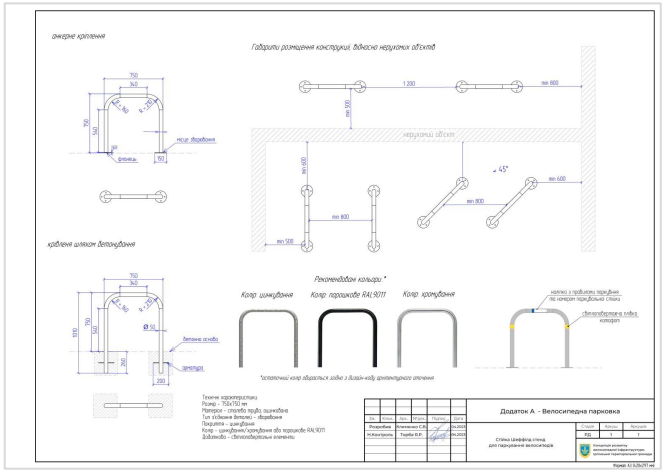
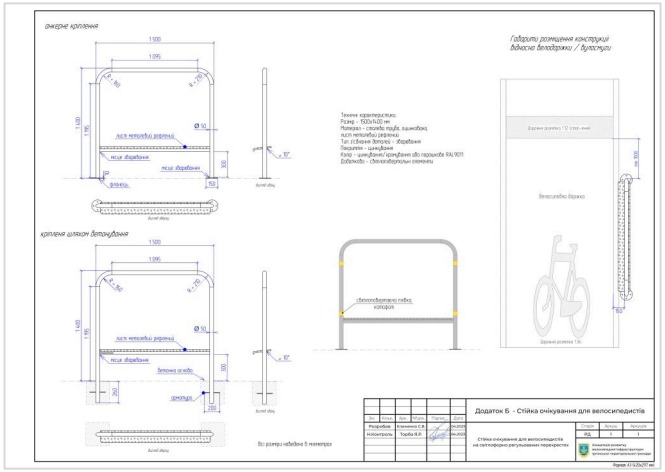


Додаток А
Велосипедна парковка

Масштаб 1:20
Формат: А3 (420х297 мм)



Додаток Б
Стійка очікування

Масштаб 1:20
Формат: А3 (420х297 мм)

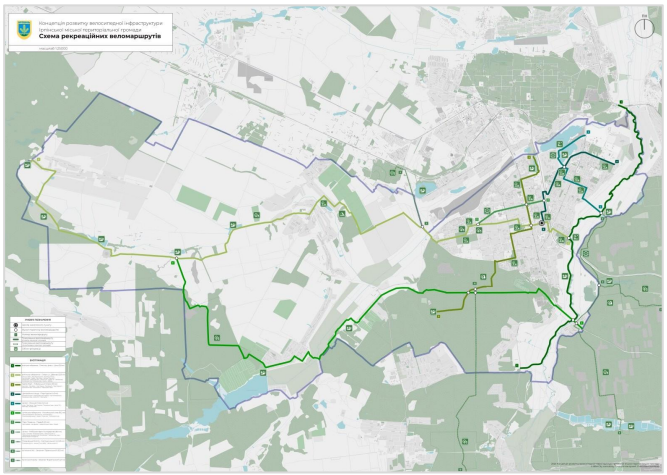


Схема рекреаційних веломаршрутів

Масштаб 1:25000
Формат: А1 (841х594 мм)

Схема туристичних веломаршрутів

Масштаб 1:25000
Формат: А1 (841х594 мм)

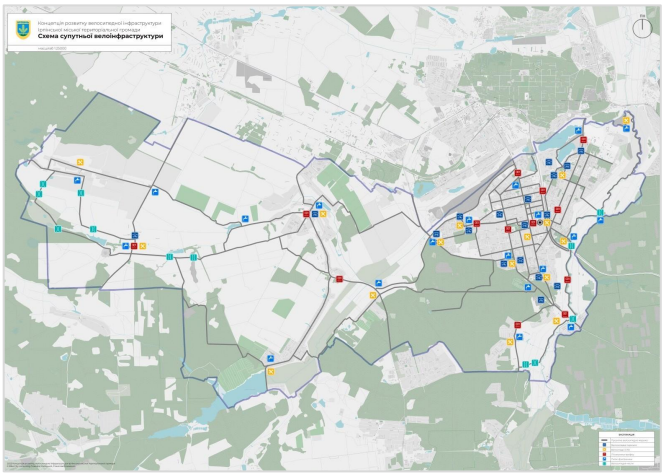


Схема супутньої велоінфраструктури

Масштаб 1:25000
Формат: А1 (841х594 мм)

Виробничо-практичне видання

Концепція розвитку велосипедної інфраструктури Ірпінської міської територіальної громади / Станіслав Клименко, Тимофій Нагорний. Ірпінь, 2023. — 84 с.

Воєнний період став періодом можливостей для відбудови і розвитку міст і громад України за сучасними підходами. У цьому документі наведено аналіз передумов та запропоновано напрямки розвитку велоінфраструктури в Ірпінській міській територіальній громаді Київської області в рамках переходу до політики сталої мобільності. Чітко визначено кроки на період 20 років щодо організації веломережі та окремих веломаршрутів, розвиток велосипедного паркування та впровадження супутньої велоінфраструктури. Проаналізовано статистику ДТП з велосипедистами у громаді та запропоновано шляхи вирішення цієї проблеми. Надано пропозиції із заохочення та промоції велоруху.

Текст:
Станіслав Клименко
Тимофій Нагорний

Креслення:
Ярослав Торба

Макет:
Станіслав Клименко

Верстка:
Тимофій Нагорний

Дизайн
обкладинки:
Софія Мартинюк

Формат: А4 (210 х 297 мм)
Гарнітура шрифту:
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