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The Methods for Implementing Engineering and Preparatory Works and Improvement in Cities

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Abstract: *This article provides an overview of the engineering choice and improvement of urban areas, taking into account emergency situations.*

Keywords: *city; general plan; release; groundwater level, climate zone.*

Introduction

The study of the natural conditions of the place allows evaluating the selected land for the city in terms of urban planning. Usually, the complex solution of urban planning depends on the level of engineering training in the area. Also, the natural conditions and complexity of the terrain of the chosen place have a direct impact on the requirements of urban planning. Areas with good construction conditions do not require much work. However, taking into account the risk of landslides in the area where the city will be built, the rise in groundwater levels, as well as other physical and mechanical phenomena, engineering preparatory work will be carried out only if it is technically and economically justified [1-5]. Creating and implementing an optimal urban plan requires finding ways to use some of the unused reserve area of the existing urban area. To this end, it is important to change the areas that are considered "inconvenient" in accordance with the requirements of urban planning. Wetlands, cliffs, floodplains, etc. are among such "inconvenient" places.

In the process of planning for the implementation of creative work on the ground, the architectural solution of the architectural solution (master plan and vertical section) with the integral connection of residential and historical monuments, greenery, ancient trees and surrounding valuable areas in the city. Ensuring the execution of the plan is the main goal of engineering training in the urban area [6-11].

One of the key components of the urban planning project is the engineering documentation for the region's engineering training. The document outlines the zoning plan, the master plan for new and developing cities, residential areas, rural housing, industry, suburbs and green spaces, as well as specific plans for parts of the city and neighborhoods and a group of buildings. The forms of the zoning plan serve for the implementation of project-plan solutions between the regional planning and urban planning

project. The draft zoning plan provides for the identification of the sequence of formation of industrial complexes and the distribution of housing, depending on the conditions of the site, and clarification of their formal solutions. The initial phase of such projects will last for 10 years, the next phase for 20 years, and the demographic, economic and environmental calculations for 40-50 years. At the stage of development of the master plan of the city, depending on the activity of its constituent factors, their solution is determined by the designation of city centers, the role of administrative and cultural facilities in the urban distribution. The master plan identifies public service networks and engineering locations that are relevant to all activities for the future long-term development of the city or other residential areas [12-19].

In the development and definition of the master plan, a clear plan will be developed for the zoning of individual districts by urban planning complexes and the level of activity of the city. With this project, architectural-complex solutions of creativity will be identified and reconstruction solutions will be implemented in the coming years. The draft of the concrete plan is the basis for the formation of a creative project in the implementation of the project of complex and group placement of neighborhoods, quarters, houses. This project will be implemented in two stages. The first is related to the initial cost of construction, and the second is the cost of labor [20-24].

As a result of the topography and changes in its shape, the physical process of the soil changes as the natural flow of surface water becomes more difficult. As a result, groundwater levels will rise and swamps will form in the region. Therefore, one of the main tasks of engineering measures is to ensure that the terrain does not change. The next task is to use "inconvenient" places for some purpose in urban development. Cities are inextricably linked with engineering activities, landscaping and the design of underground engineering equipment [25-28]. One of the main measures of engineering training is the landscaping of ravines, vertical planning, which is closely related to engineering landscaping. Engineering training plays an important role in improving the sanitary and hygienic conditions of the city. It will clear swamps, improve irrigation systems and water basins. Engineering measures allow for efficient and rational use of urban terrain. In this case, inconvenient and unsuitable areas in the territory of residential areas are partially or completely eliminated. Efficient use of urban space ensures a compact location of the city, which allows to reduce the length of streets and public transport, which in turn provides great economic benefits in urban life [29-32].

Engineering measures will be carried out prior to the commencement of construction, taking into account the requirements of the buildings, architecture and master plan ideas used to maintain the state of the environment. Landscaping is carried out on the basis of vertical planning, the use of retaining walls, stairs, ramps and other elements of engineering landscaping in the formation of various slopes. Engineering preparatory work is carried out as follows:

- a) excavation, plowing and hydromechanization, filling of pits and ditches, leveling of hills;
- b) the use of open or closed (hidden) drainage systems;
- c) organization of irrigation systems;
- g) use of a drainage system that lowers the groundwater level;
- d) construction of structures that ensure the immutability of the terrain and use it for other purposes (retaining walls, dams, etc.);
- e) strengthening of various natural and artificial slopes.

Each city has its own natural conditions. These conditions are not the same even in close-knit areas.

The territory of the country is divided into 4 climatic zones depending on climatic conditions, each region, in turn, is divided into 4 climatic districts. Urban design is based on meteorological data. This includes the average monthly precipitation during the year and its intensity, the time of snowfall and its thickness, the level of weather over the period (low, high, average and the number of changes per day); wind strength, direction and return (year-round and seasonal); humidity, thickness and return of the fog, number of sunny days throughout the year, and so on [32-37].

Accommodation is chosen depending on the main wind direction. In addition to the main function of the streets, they take into account the role of natural corridors in the ventilation of the city will be:

- relief - the largest and most important in urban planning, and a number of activities, such as urban planning, irrigation, are closely related to its condition;
- Snow - flooding of low-lying areas due to rainwater can turn some areas into swamps and damage engineering works;
- Flooding of foundations and basements of buildings or structures as a result of rising groundwater levels complicates construction and rehabilitation works;
- The banks of rivers, lakes, reservoirs and reservoirs are damaged or eroded as a result of rising or falling levels.

The influence of water, wind and human activities, which create changing natural processes in nature, is important in the formation of relief. Therefore, the selection of land for urban development takes into account the following important natural processes:

- flooding of some parts of the city by snow, rain or river water;
- the appearance of cliffs;
- landslides (landslides and landslides);
- floods;
- the presence of karsts and subsidence;
- erosion of the relief surface under the influence of water and wind.
- human activity processes include:
- disruption of relief as a result of mining;
- the risk of flooding of residential areas as a result of the construction of reservoirs and rising groundwater, etc.

The study of the natural conditions of a particular place depends on the shape of its relief, the condition of the ground, especially the amount of snow and rainwater. Depending on the nature of the environment, it is important to decide on the allocation of urban areas, the planning of highways, the interdependence of traffic and the selection of green areas [38-42]. The relief depicts a landscape view in the form of a geodetic map based on a topographic map, which includes rivers, lakes, greenery, swamps, etc. and artificial structures (residential areas, detached building, road, railway, dams, bridges, etc.).

Geomorphological conditions are the concept of the slope of a relief, its shape and slope.

Geological conditions are the concepts that determine the physical and mechanical properties of the soil and the laws of their change. The ground-lithological map is an important document in the engineering preparation of the sites, and it is determined whether the relief layer is suitable or unsuitable for urban development, or not at all.

Hydrological conditions are conditions and processes that occur at the surface of rivers, lakes, reservoirs, streams, and swamps. This condition is studied in conjunction with hydrogeological conditions and other natural processes, and provides information about the main sources of water formation, the laws of their movement, chemical and bacteriological composition, the geological condition of the coast, the bottom of the lake [42-45].

Hydrogeological conditions are the study of the presence or absence of groundwater, its quantity, the periodic formation or presence of ever-present aquifers, their development and movement. All of this is analyzed in close connection with lithology. This is because groundwater can contain a variety of chemical compounds that can adversely affect the foundation of a building. If the groundwater is close to the ground level, the construction work will be more complicated, and it will be necessary to reduce the level, which will increase the cost of construction.

A well-developed engineering training plan will include vertical planning, snow and rain drainage, irrigation, groundwater drainage outside the city, and other specialized facilities related to engineering training. In this case, the scale is taken as 1: 1000-1: 2000, the construction project (M 1: 500-1: 1000) clarifies the engineering preparatory work.

As a result of the topography and changes in its shape, the physical process of the soil changes as the natural flow of surface water becomes more difficult. As a result, groundwater levels are rising and swamps are forming in the area. Therefore, one of the main tasks of engineering measures is to ensure that the terrain does not change. The next task is to use "inconvenient" places for some urban purposes. Cities are an integral part of engineering activities related to landscaping and underground engineering equipment design.

One of the main measures of engineering training is the landscaping of ravines, vertical planning, which is closely related to engineering landscaping. Engineering training plays an important role in improving the sanitary and hygienic conditions of the city. It will clear swamps, improve irrigation systems and water basins. Engineering measures allow for efficient and rational use of urban terrain. In this case, inconvenient and unsuitable areas on the territory of residential areas will be partially or completely eliminated. The use of urban land provides a compact location of the city, which allows to reduce the length of streets and public transport, which in turn provides great economic benefits in the activities of city life.

Engineering measures will be carried out prior to the commencement of construction, taking into account the compliance of the structures, architecture and master plan ideas used to maintain the environment. Landscaping is carried out on the basis of vertical planning, the use of retaining walls, stairs, ramps and other elements of engineering landscaping in the formation of various slopes. Engineering preparatory work is carried out as follows:

- a) excavation, plowing and hydromechanization, shoveling, filling of pits and ditches, leveling of hills;
- b) the use of open or closed (hidden) sewage systems;
- c) organization of irrigation systems;
- d) the use of a drainage system that lowers the groundwater table;
- e) construction of structures that ensure the immutability of the terrain and use it for other purposes (retaining walls, dams, etc.);
- f) strengthening of various natural and artificial slopes.
- g) Based on this information, we will study 3 types of environmental emergencies:

1. *Conditions associated with changes in the state of land (soil, subsoil):* catastrophic landslides - landslides, landslides as a result of mining and other human activities;

Contamination with toxicants from soil and land industry, presence of heavy metals, petroleum products, as well as pesticides and other toxic chemicals used in agricultural production in concentrations that pose a threat to human health.

2. *Circumstances associated with changes in the composition and properties of the atmosphere (air):* Extremely high pollution of the atmosphere with the following ingredients:

- Sulfur oxide, nitrogen oxide, carbon monoxide, dioxide, dry matter, dust and other anthropogenic harmful substances in concentrations that pose a threat to human health.
- Formation of large-scale acidic zones and large amounts of acid waste:
- High levels of radiation:

3. *Situations associated with changes in the state of the hydrosphere:* Industrial and agricultural runoff from surface and groundwater:

Extremely high levels of pollution of petroleum products with wastes and other harmful substances containing heavy metals, various toxic chemicals that have caused or may cause poisoning;

An increase in the amount of groundwater that may or may not have caused the collapse of buildings, utilities, and housing;

Acute shortage of drinking water due to pollution of water sources and water intakes with harmful substances.

At present, the United Nations - in addition to the description of emergencies in the UN:

- a) emergencies of a socio-political nature
- b) military-type emergencies can be included.

According to the decision of the Cabinet of Ministers of the Republic of Uzbekistan, the following types of emergency situations have been approved in our region:

1. Earthquakes, landslides.
2. Floods, floods, etc ;
3. Chemical - accidents at hazardous facilities (release of acute toxic substances);
4. Accidents and catastrophes at explosive and flammable facilities;
5. Accidents and accidents on railway and other means of transport;
6. Accidents at radioactive sources.

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