

Handels- und Gaststätteneinrichtungen sowie Ingenieur- und Transportbauwerke gekennzeichnet.

Unterirdische Objekte werden unter den Straßen und Plätzen der Stadt, unter den Schienentransportwegen, unter unbebauten Abschnitten, einschließlich unter den Plätzen und Boulevards, direkt unterhalb von Wohn-, Verwaltungs- und öffentlichen Gebäuden oder deren Komplexen platziert [2].

In den zentralen Teilen der Stadt sind Tiefgaragen und Parkplätze neben großen Institutionen, Hotels, Einkaufszentren, Supermärkten, Märkten, Unterhaltungsbauten sowie in der Nähe von Stadien, Bahnhöfen und anderen öffentlichen Einrichtungen für Massenbesuche gebaut [2].

Unterirdische Gebäudeteile umfassen Sockel, Fundamente, Wände, Böden, Fundamentträger, Balken und Versteifungsmembranen, Tunnel und Kanäle.

Die Topologie der Bildung konstruktiver Lösungen für unterirdische Gebäudeteile spiegelt die Komplexität der Auswirkung der Bestandteile bei der Auswahl einer rationalen Variante unter vielen anderen Varianten.

Die Nomenklatur konstruktiver und raumplanerischer Lösungen für den unterirdischen Gebäudeteil kann heutzutage dank integrierter Lösungen mit innovativen Technologien erheblich erweitert werden.

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METHODS OF DEVELOPMENT OF MOUNTAIN TERRITORIES FOR ORGANIZATION OF ENERGY EFFICIENT ECOLOGICAL SETTLEMENTS

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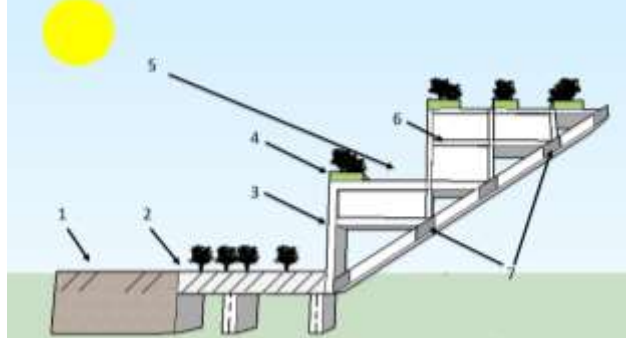
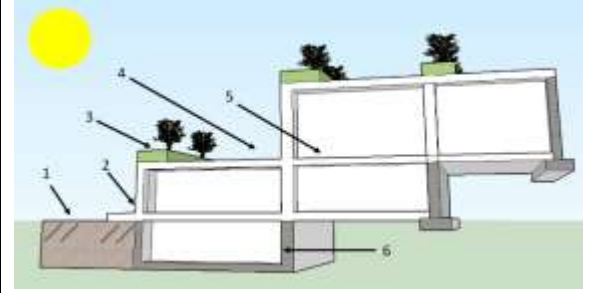
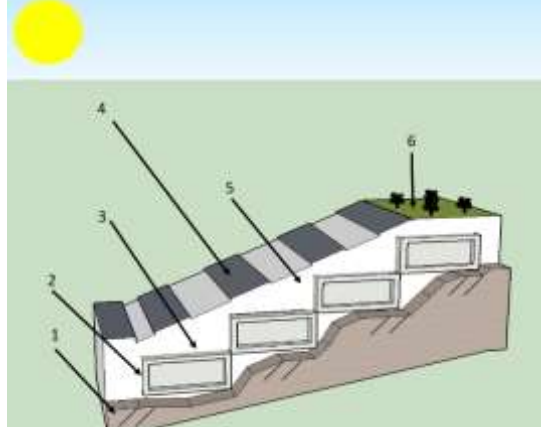
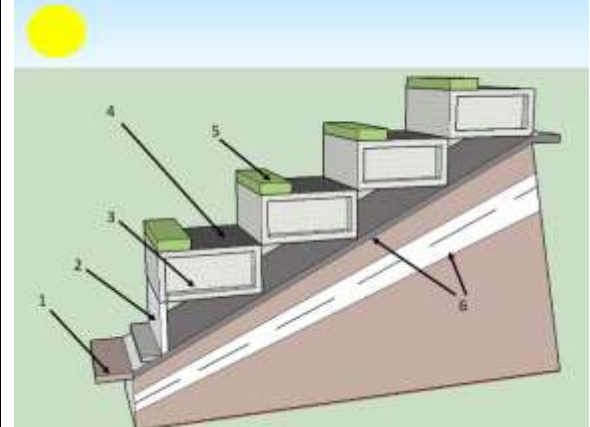
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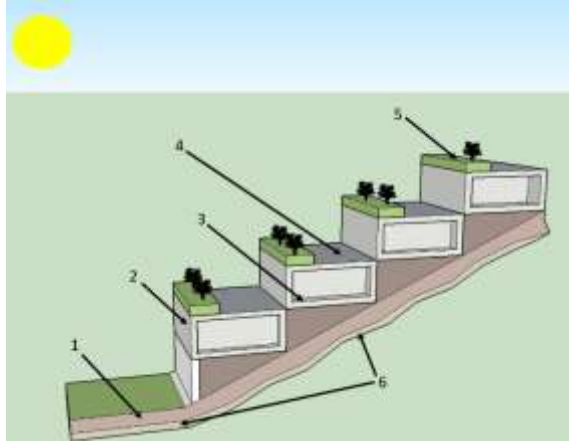
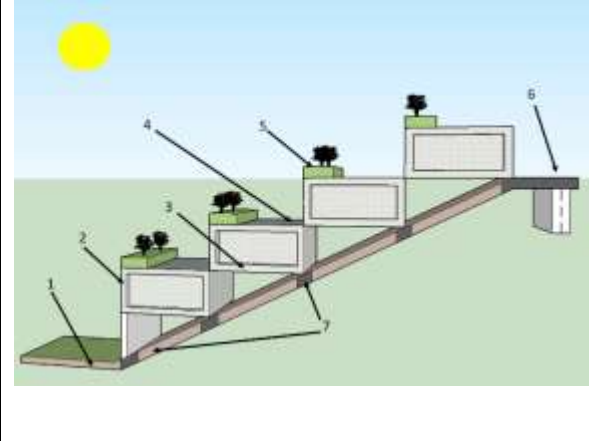
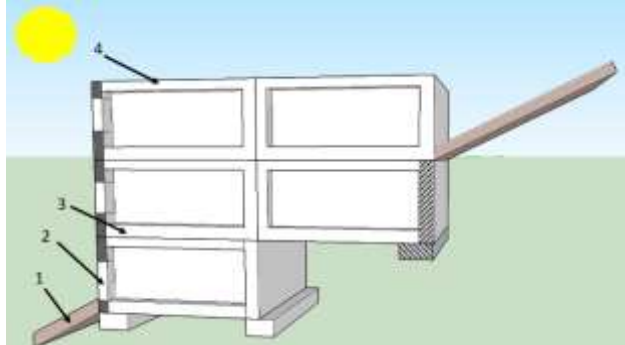
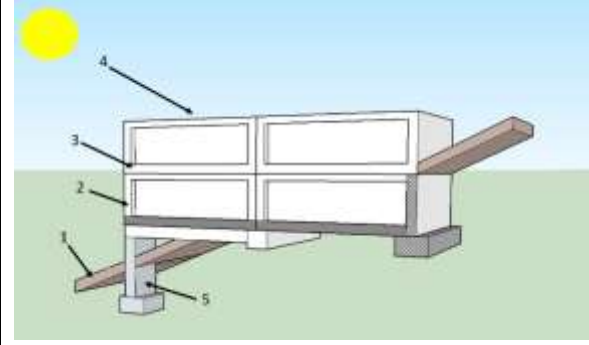
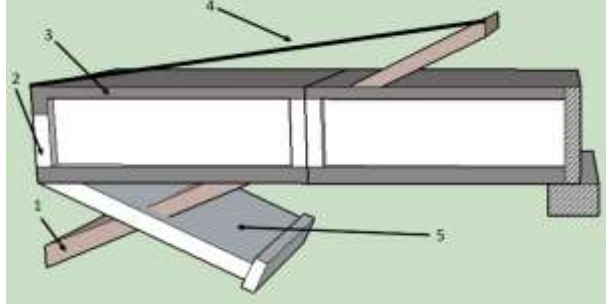
Designing energy-efficient ecological settlements is a new direction in urban planning, which is currently developing rapidly. The concept of sustainable energy-efficient ecological settlement should play a growing role in the future development of territories in all regions of our country, in the future and around the world. The paper presents the best ways to develop the territories [1] of the western part of Ukraine, which have a positive impact on the environment. Some aspects are important in this regard: economic feasibility, short construction time, reduction of energy consumption, reduction of waste and further management.

The concept of energy-efficient ecological settlements has an undeniable impact and serves as an alternative sustainable model of residential areas. As a relatively small experimental example, these urban planning entities have the opportunity to explore and apply new solutions, the need for which is obvious in the global care for the people of our country in the most difficult period of today, which will forever leave a mark on the body. This is a devastating war in eastern Ukraine, especially pathetic to talk about his hometown of Kharkiv, where I was born and live today.

Energy-efficient ecological settlements could be of strategic importance for the restoration of mountainous western regions of Ukraine. Mountainous areas are a natural, historical, cultural and economic heritage, based on appropriate management to promote the sustainable development of these areas and the planet. Below, Table 1 [2], presents the best ways to place passive buildings in energy-efficient ecological settlements.

Table 1 – Organization of energy efficient ecological settlements - ways to place passive buildings in mountainous areas

| without trimming the slope | trimming the slope |
|--|---|
|  |  |
| <p>1 - soil, 2 - pile grille; 3 - walls and columns, 4 - containers for landscaping; 5 - photovoltaic solar panels, 6 - floors, 7 - lattice of cross strips.</p> | <p>1 - soil, 2 - walls and columns; 3 - containers for landscaping; 4 - photovoltaic solar panels, 5 - floors, 6 - underground room (bomb shelter).</p> |
| raised above the slope | on a wedge-shaped foundation |
|  |  |
| <p>1 - soil, 2 - walls; 3 - floors, 4 - photovoltaic solar panels, 5 - diaphragm, 6 - landscaping (green roof type).</p> | <p>1 - soil, 2 - walls; 3 - floors, 4 - photovoltaic solar panels, 5 - containers for landscaping, 6 - wedge-shaped foundation.</p> |

| | |
|--|---|
| <p>on a broken foundation</p>  | <p>without trimming the slope</p>  |
| <p>1 - soil, 2 - walls and columns; 3 - floors, 4 - photovoltaic solar panels, 5 - containers for landscaping; 6 - broken plate.</p> | <p>1 - soil, 2 - walls and columns; 3 - floors, 4 - photovoltaic solar panels, 5 - containers for landscaping; 6 - pile grille, 7 - cross grille.</p> |
| <p>on steep slopes</p>  |  |
| <p>1 - soil, 2 - walls and columns; 3 - floors, 4 - photovoltaic solar panels.</p> | <p>1 - soil, 2 - walls and columns; 3 - floors, 4 - photovoltaic solar panels, 5 - column.</p> |
|  | |
| <p>1 - soil, 2 - walls and columns; with - flowers, h - photovoltaic solar panels, 5 - column.</p> | |

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WHAT WILL THE CONSTRUCTION OF THE FUTURE LOOK LIKE?

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The future is already with us. This opinion determines the prospects of architecture and construction for the next 30 years. What will be the norm tomorrow is emerging and developing before our eyes today.

In order to glimpse at least a little into the coming day, to predict what will be built, it is necessary to understand what the actual construction process will be like. British infrastructure company Balfour Beatty recently tried to do this. It published a forecast until 2050, where it listed the signs of the construction industry of the future.

According to analysts, construction will be focused on innovation, and fruitful alliances will emerge between construction companies and large technology players. Thanks to this, construction will be much faster than it is today. Including through the use of 3D and 4D printing technologies.

Digital technologies will be introduced throughout the entire construction business chain, from design, procurement, to the construction itself. The shape and offering of the industry will change, and data analytics will be actively used for better understanding of customers and meeting their needs. And immersive visualization combined with information modeling (BIM) and augmented reality technologies will allow architects to effectively collaborate and demonstrate the results of their work to customers.

Artificial intelligence, in turn, will open new opportunities for processing a colossal array of data and self-learning based on access to new information. Due to this, labor productivity will be increased, risks will be reduced and enormous funds will be saved.