References:

1. Кислун О.А., Скриннік І.О. ІТ в процесах створення та експлуатації об'єктів будівництва. *Центральноукраїнський науковий вісник.* 3(34), 2020, с.2 18-225.
2. Iturralde K., Pan W., Linner T., Bock T. Automation and robotic technologies in the construction context: research experiences in prefabricated façade modules. 2022. https://www.sciencedirect.com/science/article/abs/pii/B9780128224779000097
3. Casini M. Advanced building construction methods. 2022. https://www.sciencedirect.com/science/article/abs/pii/B9780128217979000064
4. Saidi K.S., Bock T., Georgoulas C. Robotics in Construction. 2016. https://www.researchgate.net/publication/305719378_Robotics_in_Construction
5. Integrated mechanisation and automation of construction. https://pl2t.com/uk/blog/post/kompleksnaa-mehanizacia-i-avtomatizacia-stroitel-stva/
6. Jayaraj A., Divakar H.N. Robotics in Construction Industry. *Mat. Sc. and Eng*. 376. 2018.
7. Bock T. The future of construction automation: Technological disruption and the upcoming ubiquity of robotic. *Automation on Construction*. 59, 2015, p.113-121
8. Cai Sh. et al. Construction automation and robotics for high-rise buildings over the past decades: A comprehensive review. *Advanced Engineering Informatics*. 42. 2019, p.1-18
9. How construction robotics is going to change the industry forever https://www.cemexventures.com/how-construction-robotics-is-going-to-change-the-industry-forever/
10. How robots are changing the construction industry. https://www.monsenengineering.com/ how-robots-are-changing-the-construction-industry/
11. Вашпанов Ю.О. Сучасна мехатроніка в будівництві. Навч. посібник. О.: ОДАБА, 2023. 236 с.
12. Vashpanov Yu.A. Remote optical measurements of cracks in concrete structures using computer image processing. *IOP Conf. Ser.: Mater. Sci. Eng.* 2021. 1141 012028 (Scopus).

UDC 74

PROBLEMS OF CREATING SMALL ARCHITECTURAL FORMS IN ODESA

Zhakot A., Sultanova M., *students of gr. A-176*
Scientific supervisor – **Kalinin O.O.***, PhD, Associate Professor (Department of Descriptive Geometry and Engineering Graphics, Odesa State Academy of Civil Engineering and Architecture)*

Annotation. The relevance of the problem of equipping waiting areas (stops) for public transport is formulated. The systematic principle of the approach to solving such problems that occur not only in the city of Odessa, but also in other cities of ukraine, as well as abroad, is substantiated.

Small architectural forms, in addition to their immediate purpose, in one form or another must fit into the overall ensemble of urban landscapes.

These include kiosks for periodicals, small stalls intended for selling ice cream, soft drinks and other small piece goods, small pavilions for sports entertainment. For example, for shooting at targets from pneumatic or laser weapons, Chess and checkers pavilions, small playgrounds.

Small architectural forms occupy a special place when equipping park areas and squares with gazebos of various configurations, fountains, flower beds, sculptural compositions, openwork bridges thrown over various small obstacles, for example, through streams and ravines, and so on.

Originally executed small architectural forms, if their intended purpose is successful, allow not only local residents, but also their guests to feel comfortable and learn about the history of the city or village.

Small architectural forms, of course, include the installation of canopies of various shapes for waiting areas (stops) for public transport passengers.

The purpose of such canopies is not limited to just marking a gathering place for those waiting for their passenger transport, it is also a place where you can hide from natural precipitation (especially slanting rain) and a place where you can sit and wait for your transport, especially at significant intervals of its movement. This should also be a safety island, especially during heavy traffic.

Studying these issues, the authors of this publication came to the conclusion that in the city of Odessa there is practically no systematic approach to the construction of canopies at bus stops that meet the criteria and requirements listed above. First of all, we can note their unsystematic and completely illogical diversity, as well as the lack of an aesthetic image.

As an example, we consider it possible to cite one of the canopies located at the tram and bus stop “Balkovskaya Street” near Dyukovsky Park, Fig. 1a.

This “Monster”, about three meters high and about four meters long, has a double-sided cantilever-type canopy, each side measuring almost two meters. The canopy structure is based on thick steel pipes with a diameter of at least 150 mm. The “trick” of the seating design can be considered to be a pipe of the diameter indicated above, located so that the pipe will touch the seated person under the knee hole. With this canopy it is practically impossible to hide from the wind or rain, and in winter you can hardly sit on a cold pipe. The cost of building materials for the construction of this shed is clearly overestimated. In addition, the shopping stall is located on the side of suitable transport, narrowing the view of trams or buses approaching the stop.

Studying foreign experience as a typical example in Fig. 1 b shows a canopy located in Warsaw. The significant difference between this canopy is obvious. Lightweight openwork structures, canopies not located high, three-sided transparent fencing (note, without gaps at the junction of glass on the rear longitudinal wall), excellent visibility of the road and the absence of a retail outlet.

a) b)

Fig. 1. Examples of awnings at the bus stops of public transport
a – fragment of an awning in Odesa at the bus stop “Balkovskaya Street” near Dyukovsky Park
b – the awning at the bus stop on Orlyat Street in Warsaw

It is appropriate to note that in the city of Warsaw, as in other cities in Poland, there are many examples of canopies and the professional approach of architects and designers is felt. You can also give similar examples in Slovakia and England (Fig. 2a and b).

a) b)

Fig. 2. Charac examples in Slovakia and England
a) The most common canopy design on the remains in Slovakia
b) Characteristic look awnings associated with England

Conclusions. As a result, it is considered possible to recommend that the municipal services of Odesa limit the number of canopy designs for equipping stops, and for their design and construction, involve qualified architects, designers, constructors, as well as historians studying the development of the city.

UDC 692.52

COMBINED HEAT AND SOUND PROTECTION OF FLOORS OF APARTMENT BUILDINGS

Zamula M., *post-graduate student,*
Panova V., *student of the gr. MBG-449*
Scientific supervisor – **Kersh V.,** *PhD, professor (Department of Urban Construction and Management, Odesa State Academy of Civil Engineering and Architecture*)

Abstract. The possibilities of using gypsum-containing materials for thermal and acoustic protection of interfloor floors are considered. The properties of compositions with heat and sound insulating aggregates are investigated. Mathematical models of the properties are constructed, which are used to analyze the role of components in providing thermal and acoustic characteristics. A compromise-optimal composition with improved properties is proposed.

State of the problem. The growing need for heat and sound insulating materials in the construction sector is due to increased requirements for energy efficiency and comfort of buildings. The use of energy-efficient soundproofing materials for building envelopes, including floors, is a feature of the application of energy-efficient soundproofing materials, which makes it possible to solve the main tasks of reducing the penetration of heat and sound into the premises and at the same time reduce the consumption of basic building materials, energy intensity and construction costs.