

Architecture

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## **FIRE SAFETY OF HIGH-RISE CONSTRUCTION**

**Abstract:** *The requirements to maintenance of heliports security have been considered in the article.*

**Key words:** *security, heliport, helicopter, high-rise construction.*

**The text of the report.** Intensive development of road transport in the city, where highways network is practically not suitable for providing transport links with high-speed, comfort and safety, due to low traffic capacity of the streets, the poor quality of the road surface and a number of other reasons, led to a crisis transport conditions. The solution to this situation is through the development of the travel mode invented long before. Nowadays helicopter transport is not developed enough yet, but the volume of helicopter transportation is growing, and there is every reason to believe that it will take a leading position in the system of public transport.

With regard for Ukraine, this type of transportation is underdeveloped due to the low level of economic development. The question to deal with helicopter transport development at issue is that we lack scientific - justified legislative and regulatory design basis of this type of transport network in the cities. [1] Therefore, a new term comes into use – heliport.

Heliport – a Complex of facilities to deal with air transport passenger service, located in the part, crowning residential, public and industrial building, or located on the platform of the transport unit, unlike the accepted term

“heliport”, which meant “land (water) area or a specially prepared plot (on a roof, on a raised above water platform surface), having a complex of structures and equipment to ensure takeoff and landing while airplane or helicopter taxiing, storage and maintenance of helicopters” [2].

Helicourt is a structural element of the city and its transportation hub, providing the planned development of the city. The architecture of a helicourt displays dynamics and general thrust of the space, informs about the required movement direction. The helicourt’s architectural and spatial composition usually displays its dominant value as the major facility of a public complex. Increasingly, helicourts are allocated on top of high-rise buildings.

The highest helicourt was built abroad in Guangzhou (China). It was erected at an altitude of 439 meters in the building an international financial center. The next one regarding the altitude range -330 meters was the helicourt in Beijing (China) - the building of China World Tower. Los Angeles (USA) helicourt is located in the Bank Tower at a height of 310 meters; Inchon (South Korea) helicourt is located at an altitude of 305 meters in the buildings of Trade Tower; Osaka (Japan) helicourt is located at an altitude of 300 meters in the buildings of Abeno Harukas.

It was forbidden to erect residential buildings with conventional height (the floor level of the last residential floor) above 73.5m in Ukraine. High-rise buildings construction began in the late 1990s, when the law on anti high-rise building construction was declared invalid and the state economy allowed to construct buildings of large scale. The document “The concept of allocating high-rise buildings and facilities in the city of Kyiv 2020” as of 16.05.2008 allowed to erect buildings above 70 floors. High-rise buildings yield huge profits, especially under shortage of land. Fashion and considerations of prestige play an important role in this case. However, significant deficiencies inherent in

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the skyscrapers are no less than advantages. Moreover, fire hazard shall be recognized as one of the most important considerations, characterized by the following features:

- capability of rapid fire propagation;
- complexity and duration of extinguishing due to high altitude, which is caused by the difficulty of supplying extinguishing means and providing access for fire departments;
- prolonged people evacuation and more.

Currently, the fire and rescue operations are performed using specially equipped car lifts, fire service ladders and cradles. However, while using these means, rescue of a few people only is provided at a time. In addition, these opportunities are severely limited and the efficiency of their action depends on altitude, weather conditions and the nature of fire, road conditions and others.

Lack of full-scale passages and sites for allocation of special fire equipment impede the timely arrival of fire protection units to the place of fire, and make it impossible to arrange works on extinguishing fires and rescuing people. Fires in high-rise buildings usually lead to many human casualties and a significant economic loss. Though, a million square meters of housing are delivered in the capital every year, no new fire station has been built over the past nine years.

Existing nine-storied houses are regarded unprofitable in China, they are constantly replaced with 50 – 100- storied ones, and the building of the kind are in abundance in Celestial Empire. But hereby, no one relies on saving people from fire by means of a sliding ladder because it's pointless. No one in the world can find the stairs of such design capable of reaching the thirtieth floor. There are no pumps and portable units, which could provide water supply under necessary pressure to a great height.

Therefore, the following technical features, that would ensure fire safety, shall be provided in the construction project design. When operating such

buildings, fire risk, and extinguishing fires under urban congestion and highways charge capacity using outdated means seems impossible. Existing fire and evacuation means are not able to provide efficiency for rescuers and firefighters operations, and even performing fire-rescue operations.

The most effective solution in fighting against fire in skyscrapers is the use of fire helicopters. The helicopter sounds the best suited for rescue and fire fighting in high rise buildings, so landing sites shall be outfitted on the roof of skyscrapers. High-rise buildings belong to the objects of class “elite”, where the presence of helicourt is not only necessary, but is also regarded an attribute of high status.

**Conclusions.** Consolidation of the role of cities - is an essential process of development of modern society, characterized by the increasing importance of number and density of urban population, which in its turn, causes the land rising value, and as a result - increasing altitude of buildings, as well as transportation problems.

Every year new high-rise buildings are being constructed in our capital. An increasing number of people want to live and work in Kiev, but to a pity allocating the space for the necessary square meters development gets harder. Currently, construction of high-rise buildings in Kiev is not enough provided with legal and documentary basis that would regulate this process and ensure fire safety.

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