

In connection with the increase in the volume of construction works and reconstruction of hydraulic structures, the use of trench fastening is becoming increasingly relevant and necessary to ensure the safety and the efficiency of work.

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HOUSING STOCK

Residential buildings, as well as residential premises in other buildings located on the territory of Ukraine, form the housing fund of our state according to Article 4 of the Housing Code [2].

Housing stock is a set of all residential premises, regardless of the form of ownership, including residential buildings, specialized buildings (dormitories, shelter hotels, houses of maneuvering fund, residential premises from the housing fund for temporary settlement of citizens, special homes for lonely elderly people, boarding houses for disabled people, veterans, and others), apartments, service living quarters, and other residential premises in other buildings suitable for living [3].

The housing stock is a complicated engineering complex, which consists of residential buildings, water supply and sewerage systems, heat and power equipment. It includes automatic means of control and operation, various communication networks, fire-fighting, elevator, sanitary and other equipment.

Categories of housing stock by purpose are as follows:

1.General purpose housing stock is a set of housing of all forms of ownership, intended for the residence of citizens;

2.The social housing stock is housing intended for the residence of citizens in need of social protection. This category of citizens includes disabled people, veterans, single elderly citizens. They are provided with housing in nursing homes;

3.Special purpose housing stock includes serving housing which is provided for employees of enterprises, institutions and organizations and for citizens who, by the nature of their labor relations, must live at or near their place of work. Workers, employees, students, pupils, as well as other citizens are provided with dormitories for an appropriate period. Places in boarding schools are given to disabled people, veterans, lonely elderly citizens. The special purpose fund includes flexible housing stock for temporary residence of displaced citizens and shelter hotels for refugees, homeless and internally displaced persons. The special purpose housing stock is formed by constructing apartments of new buildings, reconstructing existing houses and apartments of other categories of housing stock, reconstructing non-residential buildings and by including them in the housing stock, as well as by transferring one housing stock to the fund of another purpose.

The housing stock of Ukraine includes the following types of buildings:

1)residential buildings are the buildings that are intended for human habitation, have one or more apartments, as well as all necessary auxiliary premises.

Residential buildings are characterized as buildings with such features as:

- compliance of buildings with architectural, construction, sanitary, hygienic, fire and other norms and standards, which makes these buildings suitable for permanent residence of citizens;
- acceptance of buildings by designers and specialists of the completed building that meets the specified conditions;
- registration of building as residential by local governments.

It is necessary to distinguish auxiliary rooms premises and utility rooms of residential building.

Auxiliary rooms in residential buildings are rooms for the provision and maintenance of the house, and for consumer services for the population at the place of residence (lobby, staircase, transition gateway, inter-apartment corridor, wheelchair, basements, attics, etc.);

2) apartments are parts of residential buildings for single persons or for one or more families with comfortable living rooms, utility rooms, a separate exit to the staircase, gallery, corridor or street;

3) part of an apartment (single-family house) is a living room in an apartment (single-apartment house), which is suitable for permanent residence of a single person or family, and utility rooms of an apartment (one-room house) [1,3].

Utility rooms are kitchen, bathroom or shower room, toilet, apartment corridor or hallway, storage rooms or closets built into the apartment. They cannot be the subject of a separate lease agreement.

The above mentioned information provides a classification of the housing stock of Ukraine in accordance with the current legislation in the field of real estate. Each category of the housing stock category is given a concise definition.

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A RISE OF CONSTRUCTION EFFICACY BASED ON SMART APPROACH TO ACTIVITY ANALYSIS OF WORKERS

It is common knowledge that workers activity on the building site is very important because directly influences general efficacy of any construction. Irrational workers' behavior and time spending can lead to low production, discrepancies in project's schedule, constructional defects, extra expenses etc. That is exactly the point why workers' activity monitoring is so important for managers who can estimate labor efficacy better and construction progress with it. However, activity analysis of workers is mostly carried out by using method of manual observation nowadays, which is time-consuming, labor-intensive and expensive. And the reliability of such observation is under the question. The researchers have developed various automatic technologies to monitor construction sites basing on mentioned issues. They have come to nonvisual and visual methods of workers' activity analysis. [1]

Nonvisual methods are based on electronic sensors that continuously collect workers' speed, acceleration, direction etc. to classify the activities by using the global positioning system (GPS), inertial measurement unit (IMU) system, radio-frequency identification (RFID) system, and ultrawideband (UWB) system. [2-4] One of key advantages of this methods is that we can very simply identify each construction worker and his activity during working day. However we need him to wear these sensors what may cause negative reaction beside affect conventional working process.