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ARCHITECTURAL AND PLANNING ORGANIZATION OF THE AIR TERMINAL COMPLEXES BASED ON THE PRINCIPLES OF UNIVERSAL DESIGN

The article is devoted to the complex of questions of forming of unimpeded spatial environment, namely to some features of functionally-planning organization of the air terminal complexes taking into account the requirements of physically challenged people, in particular the parameters of basic typological elements of the proper buildings.

The main objective of the airport as a multifunctional complex of buildings and facilities is maintenance of a service support in the suburbs and creation of all the necessary conditions for change from one mode of transportation to another. For example from rail or motor transport to air transport or vice versa. In many civilized countries buildings and elements of the air terminal's infrastructure are adapted to the needs of physically challenged people and individuals with limited mobility, namely: visually and hearing impaired people, citizens with prams, pregnant women and others. This is a sign of humane social policy and real unimpeded environment that functions according to certain laws, regulations and rules.

Access of physically challenged people to all objects of the urban environment, including the infrastructure of the air terminal complexes based on the principles on the barrierless technologies and universal design, requires adaptation of the most important elements (the so-called functional and typological units) to the needs of disabled people. Norms of the universal design are focused on the needs of disabled people who are considered as the most vulnerable and specific category of population, especially when we are speaking about characteristics of the physical environment. Adaptation of the material and space environment to the needs of disabled people increases its comfort and maintains the same level of comfort for other categories of people. So, norms of the universal design and barrierless technologies of forming of the material and space environment should take into account characteristics of the wheelchair, technological space of the physically challenged people and appropriate space for manoeuvre. According to one of the audit procedures devoted to the accessibility of public facilities, it was single-out nine main characteristics that have an influence on full and universal accessibility of the social infrastructure for all categories of people:

1. Free movement on the surrounding area.
2. Availability of the disabled parking not far from the entrance of the building.
3. The relevant inlet and outlet, parameters and design of doors.
4. Available entrance in the building, availability of appropriate ramps or compensation devices at the entrance.
5. Absence of thresholds and wide corridors.
6. Access to all floors in the building (elevators, escalators, ramps, etc.)
7. Availability of sanitary facilities (lavatory, shower room and so on) specially adapted for physically challenged people.
8. Accessibility of the pay phones and automatic teller machines for disabled people
9. Availability of the direction signs and routes of movement (icons, logo, etc.)

The aim of these measures is to provide safe passage in space and provide opportunities for usage of public domains and benefits. Standards of availability are different in various countries. Many countries have developed their own approaches, taking into account the best world practice. So uniform standards are formed for civilized countries and they take into account regional specifics and mentality.

Universal design provides:

-equality of usage of the public facilities for all categories of users;

-flexibility in usage, it is when one and the same device could be used by all people equally;

-simplicity, when the action does not require additional skills, experience or knowledge of language and can be done on the intuitive level;

-information and signal perception, including blind and deaf people, individuals with lov level of attention or with intellectual vices;

-tolerance to errors when accidental or unintentional action does not create much danger;

-minimal efforts, when the device or element of the environment causes minimal fatig during prolonged action, and also one-time effort;

-sufficiency of size and space, including space for aids used by people with special needs, well as limits of reach different for different people.

According to the nomenclature of the public facilities air terminal complexes belong to t objects and buildings of transport services, communication and information. These are railw: stations, bus terminals, air terminals, airports and other facilities of the automobile, railway, wat and air transport aimed at public service.

Physically challenged people, elderly person and people with young children very often use differe modes of urban transport. As a result railway stations (river, sea, railroad, bus and air terminals) are ve: important for passengers, especially for those who are travelling for long distances. But in practice there a some drawbacks in planning, organization and maintenance of pedestrian routes in the terminal complexe which impedes to the free movement of such category of people. The problem of transport service f(disabled people is stipulated by lack of a special arrangement of public transport system and is als associated with drawbacks in building norms and regulations aimed at healthy people. In public building and the surrounding areas function so-called construction barriers (edgestones, stairs, narrow openings an passages, etc.) that put obstacles in the way of physically challenged people in wheelchairs.

Terminal complexes of different purpose (rail, bus, air) include functionally and compositionall interconnected with each other buildings, structures, components and devices directed at passenger service an implementation ticket, baggage, mail and other operations. Taking into account needs of the physically challenge people we must stress that it is very important to erect public facilities not far from the railway stations. In its turn i is reasonable to erect railway stations near hotels, shopping malls, restaurants, travel agencies, etc. Planning an technological requirements of such facilities must meet the needs of the disabled people.

If the hotels are located separately it is necessary to create special transport stops and parking lots that should be adapted for physically challenged people. Also we should not forget about hotel accommodations that for such kind of people should be only on the first floor and must be located near railway station, ports, air terminals or bus stops.

The necessity for separation of the footpaths and transport routes on the landside areas is determined, mainly, by the number of public transport units (buses, trolleybuses, trams, cars) and the conditions of their movement. For the sake of thorough organization of the pedestrian traffic near the landside areas it is necessary to stick to the following rules:

Arrange pedestrian areas in the central part of the landside area, which in its turn would be divided in two zones: arrival and departure;

Organize pedestrian traffic or road traffic in two or more levels. For example using tunnels, bridges and other structures for interchange flows of pedestrians and vehicles.

The width of the evacuation areas, bus stops and other public facilities should be increased for the benefits of the disabled people. It must be prohibited to place various kinds of stands on the sidewalks because it can impede the free movement of physically challenged people.

For the sake of thorough organization of traffic for physically challenged people it is reasonable to conduct at the landside areas such technical and planning measures like:

Avoid unevenness of the ground;

Arrange various kinds of waist rails for disabled people;

Place special fences near the vertical obstacles in order to make the surface smooth and slip-proof;

Arrange sspecial "relief stripes" on the sidewalks, which can warn physically challenged people about possible danger. Near the main entrance into the landside area should be arranged special disabled parking.

One-storey buildings of the air terminals which are included in the air terminal complexes have prolated form and reach a length of 200 - 300 m, which significantly increases the ways of movement of physically challenged people.

In order to maintain free movement of physically challenged people and individuals with

imited mobility in the air terminals should be implemented elevators , escalators or other means of ransportation. The second option is to create special exit to the platform in the central part of the uilding for such kind of passengers.

In multistory buildings of the air terminals, zone for passengers usually takes two levels. Most top evel (level of entrance to the plane) is for departing passengers, the lower (ground level) is for those who rrives and for operations with luggage. In order to maintain free movement of physically challenged people n the air terminals must be used elevators, ramps, escalators and special arrangement of stair flights. In case of their absence special wheelchairs should be provided for such kind of people.

Boarding and landing must be conducted on the short-ranged or long-ranged platform. While anding on the short-ranged platform from the second floor is used special aerobridge and from the ground level - special boarding bridge. Slope of the aerobridge for passengers in wheelchairs and ndividuals with limited mobility should not exceed 1:12. In the gallery for every 10 meters should e provided special horizontal platform with the following size 1.5 x 1.5 m.

When boarding on the plane from the ground level (landing) for lifting or lowering physically challenged people and people with limited abilities should be used special device - boarding bridge. While delivering passengers to the aircraft which is located on the long-ranged platform must be used special bus with low-floor and must be applied special folding ramp for physically challenged people and people with limited movement.

It is recommended to create in the air terminal special room for the escort service and special area for storage of the wheelchairs that are used by disabled people during registration, custom control and in-flight monitoring. It is advisable to conduct check-in for physically challenged passengers at the special stand, the height of which is 0.67 - 0.80 m, depth 0.4 - 0.6 meters.

It is better to place the ad box on the ceiling or on the registration stand that contains all the necessary nformation and has special lighting. In air terminals of the international airlines should be provided special zones for declaration filling equipped by special tables designed for passengers in wheelchairs.

Conclusion

Thus it should be noted that the design and construction of the air terminal complexes needs establishment of special nomenclature and planning parameters (special auxiliary equipment, devices, etc.). Special attention in the structure of public buildings and in particular of the air terminal complexes must be paid to horizontal and vertical communications, sanitary facilities, areas for temporary residence, zones of seats, servicing area and dining area which are the main typological nodes that should be adapted to the needs of disabled people. On the basis of the established parameters of these zones and their constituent elements, it is necessary to form ways and means of availability of appropriate infrastructure for disabled people and it is very important to remove all the obstacles spatial, social, moral, psychological, etc.). Implementation in the architecture practice basic principles of the barrierless technologies and universal design is the most effective direction of psychological rehabilitation and social integration of physically challenged people.

References

1. *Бармашина Л.М.* Доступність архітектурного середовища (проблеми усунення просторових перешкод щодо життєдіяльності маломобульних людей). Науково-технічний збірник «Сучасні проблеми архітектури та містобудування». Випуск 16. - К.: КНУБА, 2008.-С.303-310.

2. *Сигаев А.В.* Пешеходные пути и транспорт для инвалидов и престарелых Архитектурная среда обитания инвалидов и престарелых. - М.: Стройиздат, 1999. – С.140.

3. *Пелагенко А.П.* Цивільна авіація України: історико-аналітичний огляд. – Київ:. «Аеробізнес», 2005. – 128 с.

4. *Паламарчук Ю.А.* Методика вибору стратегії розвитку міжнародного аеропорту // Проблеми підвищення ефективності інфраструктури: Зб. наук. праць. –К.: НАУ, 2007.- Вип. 6. - С. 164-168.

5. *S. Gielion: Spuce* , Time and Architecture. Fifth Edition. Harvard University Press, Canbridge, 2004.-100 с.