

2.7 Project of rehabilitation center for military servicemen and war veterans in Zhytomyr, which takes first place in the "Steel Freedom" architectural competition

The consequences of warfare, especially the mental and physical trauma suffered by military personnel and veterans, require urgent physical and psychosocial rehabilitation. Ukraine, a country that has long fought and continues to fight for its independence, has witnessed the sacrifice of its military, who have given their lives defending its territorial integrity. The demand for such specialized rehabilitation centers with experience in working with military personnel and veterans is very important in today's environment.

Our journey began with a shared desire among our team of architects to use our skills not only for aesthetic or functional purposes, but also as tools for positive social change. Inspired by the potential impact of our discipline, we looked for opportunities to channel our creativity into projects that could make a tangible difference in the lives of people and communities. The competition to create a rehabilitation center for military personnel and veterans in Ukraine was the perfect platform to combine our passion for architecture with a deeply rooted sense of social responsibility.

To analyze modern medical facilities, we can consider a number of projects from international experience.

1. Shenzhen Bao'an District Maternal and Child Health Hospital

In a high-density urban environment and with complex technical requirements, designing a hospital building that will fulfill various types of functional tasks is a major challenge for architects.

The height of the surrounding buildings, noise around the projected building, and other aspects of the environment were analyzed. The project adopts a "compact triangular structure", with the medical technology department as the center, and arranges the outpatient department on the main city road with a large flow of people, and the inpatient department is separated from the main roads of the city and the main sources of noise.

The triangular layout not only ensures the best communication between the medical and technical building, inpatient department, and outpatient department, which significantly reduces the time of medical care but also provides the shortest distance between the emergency department and the inpatient, medical, and technical building.

This project includes skylights that transmit sunlight and atriums for visual communication (Figure 1). The project uses several distributed landscape systems, such as courtyard landscaping, roof landscaping, and landscaping of the building's entrance area, with great attention paid to natural vegetation and corridors connecting the buildings (Figure 2).



Figure 1. Hospital lobby



Figure 2. Corridors between hospital buildings

2. AZ Alma Hospital is a medical facility located in Eeklo, Belgium. It is known for its modern architecture that combines functionality with aesthetics (Figure 3). The 60,000 m² building was designed by AAPROG architecten and M4 architecten. The architects focused on the construction of the complex in terms of infrastructure, technology, inclusiveness, and living comfort.

The lobby of the hospital is an atrium with a glass roof as its accent. The roof solution was developed by Forzon. The structure has an area of 1400 m² and rises to a height of 25 m (Figure 4). The entire structure was equipped with double glazing and thermally broken profiles. The combination of steel structures, aluminum elements, glass, gutters, and waterproofing makes this project unique in its region.



Figure 3. Exterior of AZ Alma Hospital



Figure 4. Atrium roof structure

The glass atrium is not only an interesting architectural element of the building, it also lets in a lot of natural light (Figure 5). In places where there was no daylight, artificial adjustable lighting was used to adapt the color of the light to the time of day, improving the biorhythm of both staff and patients. Thoughtful lighting design has a positive effect on patient well-being, providing comfort and speeding up recovery.

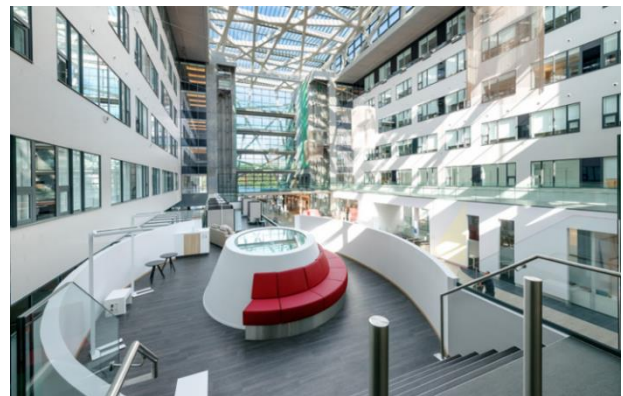


Figure 5. Hall interior

A rehabilitation center is a space that is maximally oriented towards people with limited mobility. Unlike other types of buildings, where architects can simply adapt their design to the needs of people with reduced mobility, a rehabilitation center requires inclusivity to be taken into account in all decisions from the very beginning of the design. Based on these judgments, when developing the concept, we set ourselves the main task of creating the most convenient and simple layout for the patients of our center (Figure 6).



Figure 6. Exterior of the rehabilitation center

The building's design began with the location of the main block with medical facilities and wards along the site, which provides a meridional orientation for maximum insolation of the living quarters. The idea of dividing the building into blocks was introduced to optimize functionality. Thus, the dining room and gymnasiums were separated into their own blocks, as their arrangement under the living areas is not efficient due to the large number of vertical utilities to serve patient rooms (Figure 7).

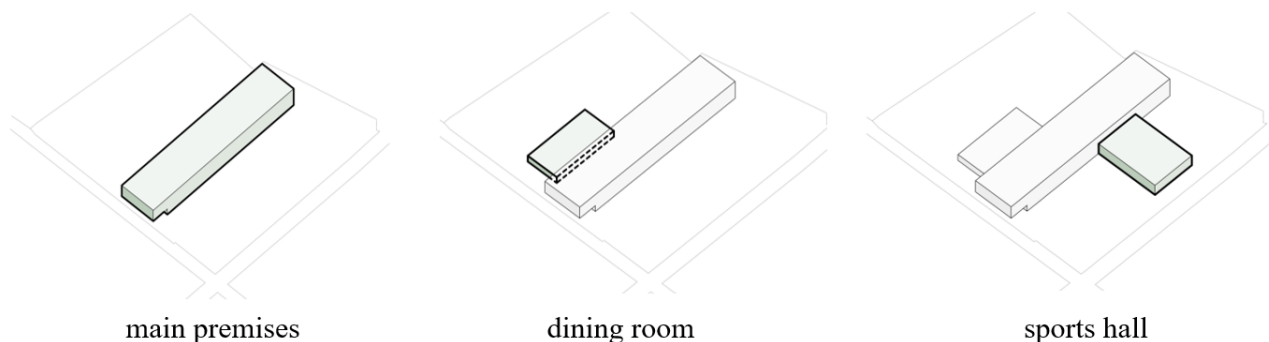


Figure 7. Organization of the main functional areas of the building

This concept made it possible to divide the site into four functional zones, taking into account their purpose. Thus, the representative zone is located on the view part of the site and will be the first to welcome visitors to the rehabilitation center.

The recreational area is organized in a quiet place surrounded by a park and separated from the road by the main block of the building. The sports area is located next to the sports block, and the utility area is next to the kitchen (Figure 8). This approach contributes to the efficient use of the territory and ensures a comfortable stay for residents.

The paths were designed taking into account the main routes of movement of the center's patients and visitors to the hydropark. A representative part of the site has a playground and a waiting area. The

recreational area is filled with a tactile path with different types of paving, a place to spend time with your family, a dining room terrace, and a place to grow greenery. The sports area has exercise equipment and a driving simulator for people with disabilities (Figure 9).

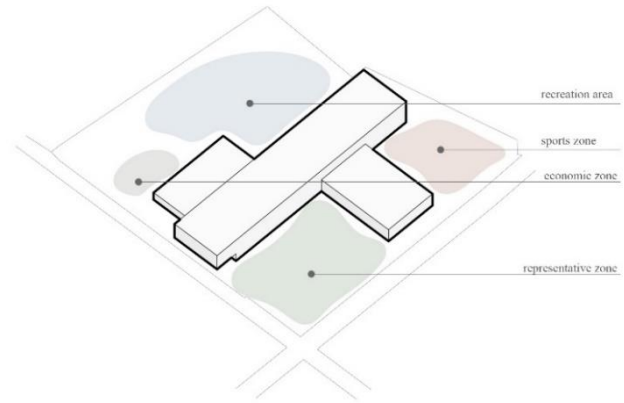


Figure 8. Functional zoning of the territory



Figure 9. General plan of the territory

The main principle in the design of the rehabilitation center was to reduce the length and complexity of the patient's movement paths. In the center of the building, there is a lobby with a reception, around which several blocks are formed. The lobby

is designed to separate the flow of outpatients and inpatients. The sequence of patients' visits to procedures and training sessions determines the location of medical and sports facilities next to each other. The view from the dining room opens onto a quiet part of the site. The location of the staff and administration premises minimizes the need for patients to move around this block (Figure 10).



Figure 10. First floor plan



Figure 11. Second floor plan

Elevators in the lobby provide the fastest and most convenient access for inpatients to the dining room and rehabilitation facilities. This also helps to disperse the flow of outpatients and inpatients. Fire safety is ensured by a large number of evacuation exits from the building and the presence of smoke-free zones connected by vertical communications.

Residential wards are located on the 2nd, 3rd and 4th floors. Each floor has areas for patients to relax and communicate, and the 2nd and 3rd floors have open landscaped terraces. In addition to their recreational function, they also serve an aesthetic purpose (Figure 11).

Designer perforated profiles and cassettes were used for cladding the facades (Figures 12 and 13). The public spaces (lobby, gyms, dining room, and recreation areas) have panoramic glazing to unite the interior with the exterior. Panoramic windows with opening sections were chosen for the wards. Thanks to the perforation that hides the opening sections of the windows, it was possible to create a minimalist silhouette of the residential floors, provide a sense of privacy for patients and sufficient

insolation, while maintaining the ability to ventilate the rooms (Figure 14). In the sports block of the building, perforated profiles serve as sun protection.

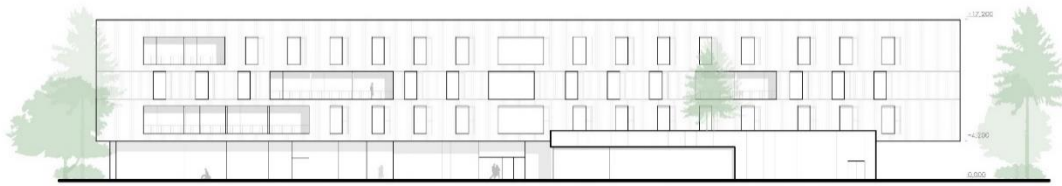


Figure 12. Front facade of the

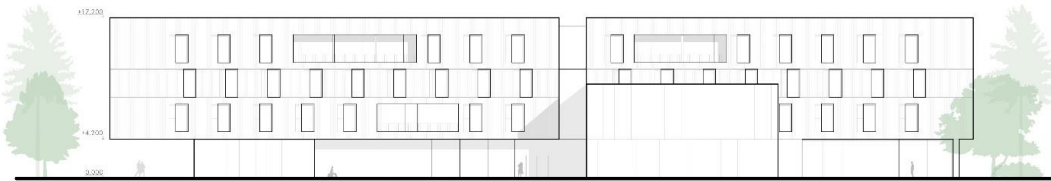


Figure 13. Rear facade of the

The side facade is accentuated by the open console design, which is the accent of the side facade. It has not only a functional but also an aesthetic function, making the volume recognizable.

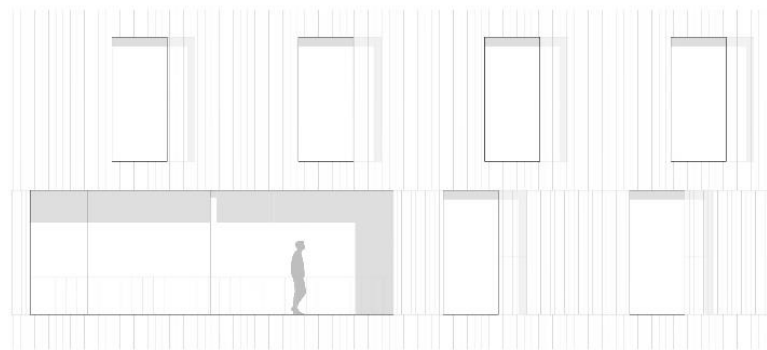


Figure 14. Fragment of a facade

The interior of the building uses light colors and natural materials for the psychological comfort of patients (Figure 15). Much attention is paid to the inclusiveness of the interior space. There are no obstacles to movement in the form of thresholds, improperly placed furniture, narrow doors and corridors, etc. The configuration and size of the furniture provide free use for people who use mobility aids. For example, in the dining room, a person in a wheelchair can independently use the serving line, all elements of which are located at a slightly lower height, and there are many places at the dining tables for people in wheelchairs.



Figure 15. Dining room interior

Inside the dining room, an atrium was designed to separate the distribution line from the food consumption area. This allows us to preserve a couple of trees on the hydropark site, as well as to ensure that people are surrounded by nature on three sides during the meal.

The structural structures used in the pool and dining room to cover a large span are at the same time aesthetically pleasing and enrich the interior design of the complex.

Conclusion:

In light of current challenges and needs, the creation of rehabilitation centers for military personnel and veterans is becoming an extremely important social mission. According to the views expressed, the infrastructure of such facilities should be inclusive, focused on functionality, and simplified access for people with reduced mobility. The design of these facilities requires careful consideration of every detail, from corridors to zoning, in order to optimize movement and ensure patient comfort. Ensuring the economic feasibility of the design is also an important aspect, contributing to the realization of the facility and preserving the country's resources. However, the most important thing is to create an atmosphere conducive to the psychological comfort of patients, where the rehabilitation process is intertwined with elements of normal life. This approach takes into account the needs of those seeking help to the fullest extent possible and contributes to the rapid and effective restoration of their health and social integration.