

IMPROVEMENT OF PUBLIC GARDEN NEAR CADET STAIRS IN ODESA

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Abstract. The article is devoted to the search for new concepts for improvement of the areas of the public garden near the Cadet stairs in Odesa. As a result of the inspection of the territory, two problems were identified: the first is the presence of unimproved territories, the second is defects in the coating of the newly built path near the ramp. To solve the first problem, options for designing recreation areas in unimproved areas of the park have been developed. To solve the second problem, as well as to prevent further destruction of paths and platforms, it is offered to use coatings of concrete paving blocks (CPB) with a modified geometric shape of the lower base when CPB are constructed in places of intensive application of horizontal loads and on horizontally and inclined surfaces.

The improvement of park areas and adjacent territories plays an important role for the population. A number of requirements are imposed on the pavements, footpaths and platforms. They must be reliable and durable, have a non-slip surface. For this purpose, in recent years, pedestrian areas have been covered with CPB [1, 2]. Such pavements have many advantages over asphalt concrete pavements. They are environmentally friendly, as they are made of concrete; aesthetically attractive, as they allow you to create patterns and ornaments with a variety of geometric and color solutions. Due to the joints between the blocks from the surface, rapid drainage of rainfall is ensured. If it is necessary to place underground utilities, CPB coatings can be easily disassembled and then placed back. Therefore, in recent years, more and more pedestrian areas are covered with CPB.

Not far from OSACEA, between Dyukovskaya and Balkovskaya streets, near the Cadet stairs, there is the public garden. Most of the public garden surface is sloping. To date, the staircase has been repaired in the park, a ramp for wheelchair vehicles has been built, paths have been partially paved, benches have been placed in many places, a playground and a dog walking and training area have been built (Fig. 1).

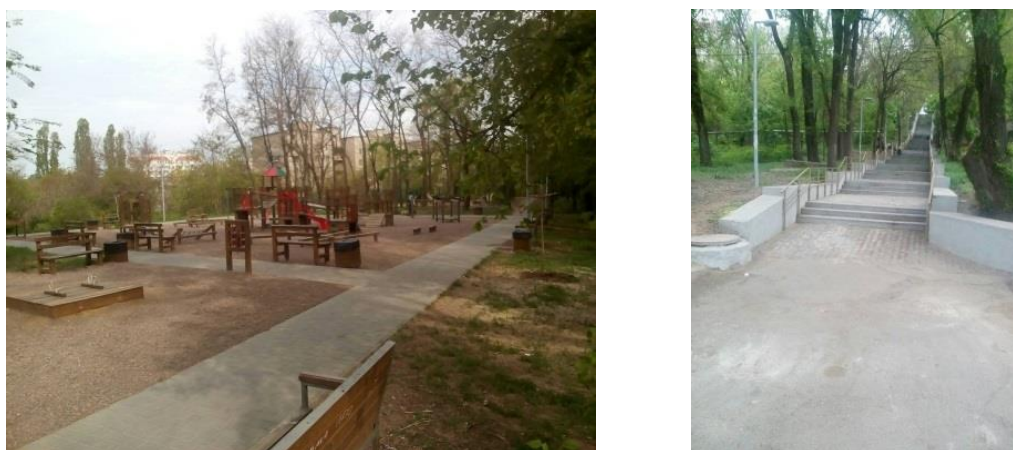


Fig. 1. Improved areas of the public garden and restored staircase

However, there are several unimproved areas, for example, the area on the left side of the stairs, when viewed from above from the street Dyukovskaya on the street Balkovskaya (Fig. 2), another area opposite the dog walking area, as well as unpaved footpath (Fig. 3). In addition, when examining the territory of the public garden near the ramp, defects were found on the new path

made of CPB - the displacement of individual elements, that is, the destruction of the integrity of the coating (Fig. 4).



Fig. 2. Unimproved area of the public garden on the left from the staircase



Fig. 3. Unimproved areas of the public garden – territory opposite the walking area for dogs and unpaved footpath

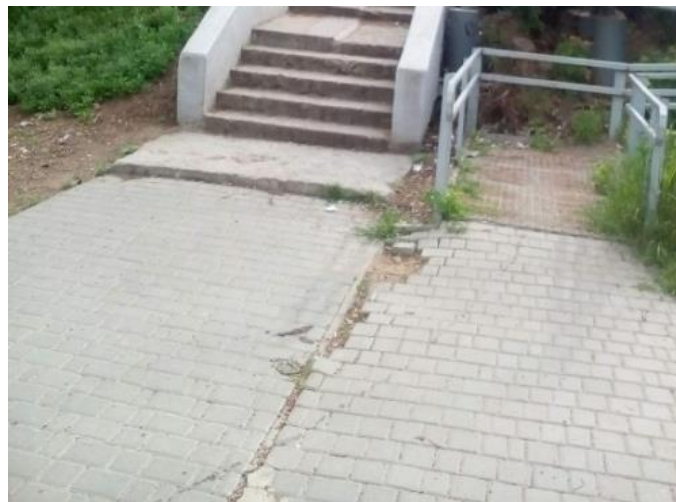


Fig. 4. Destroyed part of the newly-paved footpath near the ramp

The above listed problems determined the direction of research and the search for ways to solve them. The aim of the work is to develop new solutions for the improved territories of the public garden near the Cadet Stairs in Odessa and the search for reliable and durable coatings for paths and playgrounds. The first task is to develop interesting new concepts for the unimproved areas of the park, which should be aesthetically attractive and comfortable for the population. The second task is to select the appropriate coverage for each of these areas.

In the Fig. 5 the plan of the public garden is depicted schematically, and on the Fig. 6 – a scheme for further planning of its improvement. After walking down from the street Dyukovskaya to the left of the stairs there is an unimproved and ungreened extended rectangular area - zone 1 in Figure 6. We offer to design this area as a recreation zone for middle-aged and elderly people. Opposite this area is a stall, so we suggest placing tables and benches there. These tables can be used as chess tables. Here, near the entrance to the park area, an alcove equipped with media players should be placed.

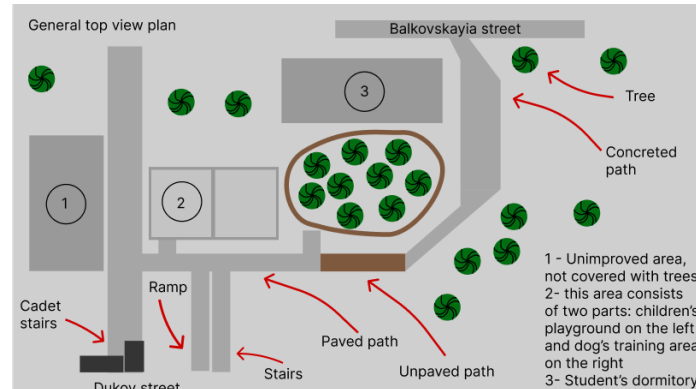


Fig. 5. Schematic plan of the public garden

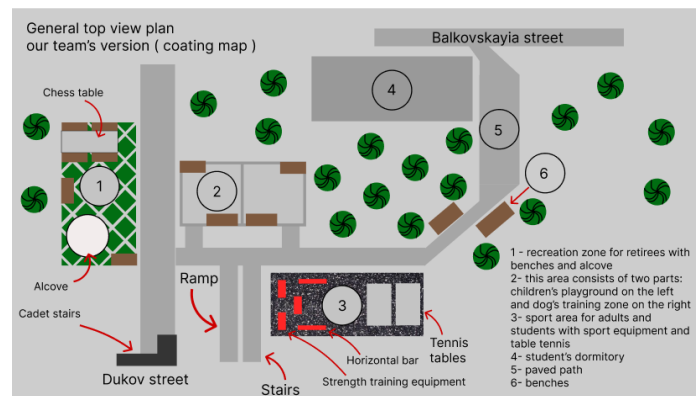


Fig. 6. Schematic plan of the offered improvement of the public garden

The covering of the site in the area of the alcove is planned to be made in the form of a symmetrical pattern in the form of a circle with a combination of delicate shades, as shown in the Fig. 7. This type of paving is called «spreading» of joints.

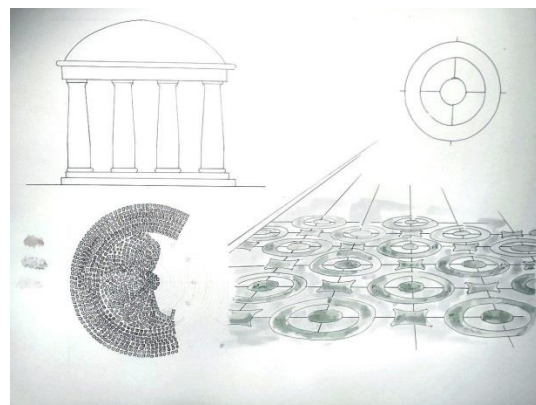


Fig. 7. Offered covering of the area in zone 1 near the Cadet staircase

Opposite to the playground and the dog walking zone is an area that can be turned into an area with exercise equipment for athletes and students (zone 3 in Fig. 6). There will be power simulators, horizontal bars, as well as tables for playing table tennis. In our opinion, it is best to choose crumb rubber as a coating for this area. This type of coating is very comfortable and safe for any type and

complexity of training, as the shock-absorbing properties of the material will reduce the possibility of injury when falling. Rubber coating is a durable material, as it is wear-resistant under any mechanical and atmospheric influences.

In the process of inspecting the territory of the park, loosening and shifting of some elements of the newly-built section of the path near the beginning of the ramp for wheelchairs was found (Fig. 4). In the place of destruction, the coating is affected by both vertical and horizontal loads (from prams, bicycles, scooters and wheelchairs). The coating of this area is made of traditional CPB with a flat base. In our opinion, the destruction occurred due to improper hard stopping up of the coating along its contour, in combination with repeated exposure to a horizontal load. To solve this problem, it is necessary to increase the bearing capacity and reduce the possibility of horizontal shift of individual elements of such coatings. In order to prevent such deformations for paths and platforms, constructive and technological solutions for CPB coatings with toothed pyramidal elements at their base were previously developed [3]. An analysis of the results of studies of such coatings on horizontal and inclined surfaces confirmed their advantages in comparison with traditional coatings made of blocks with a flat base - a significant reduction in the shift of the CPB relative to its initial position when exposed to horizontal loads [4]. The topographic surface of the public garden consists of horizontal and inclined sections. When paving on a section of an unpaved path, as well as during the construction and reconstruction of footpaths and platforms in order to prevent the shift of individual elements of the coating, we recommend using blocks with toothed pyramidal elements on the underside of the base, one of the options of which is shown in Fig. 8.

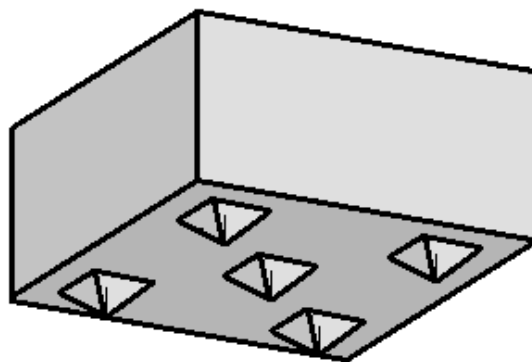


Fig. 8. The option of the offered concrete paving block with toothed pyramidal elements on the underside

Conclusions and results. The territory of the public garden near the Cadet stairs in Odesa was investigated. Zones requiring improvement are defined. Solutions for the creation of a recreation area and a zone for sports in these areas are offered. In the further construction and reconstruction of paths and platforms, in order to prevent their destruction, it is recommended to use the constructive and technological concept for coatings consisting of CPB with a base of toothed pyramidal elements.

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