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MODERN WATER EQUIPMENT: DESIGN FOUNTAINS

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ABSTRACT

This report provides general information on world-famous water devices, including fountains, their various parameters and designs. Specific examples are the features of fountains and the latest modern technologies. For example, the idea for the Julie Penrou (Colorado Springs) fountain belongs to architects David Barber and Bill Burgess. The fountain consists of 366 water pipes that rotate once every fifteen minutes. Today, many architectural designers are creating new projects using world practice. And in the future these projects will be continued and more positive projects will be created.

KEYWORDS: Springs, Streams, Waterfalls, Pools, Ponds, Rivers, Lakes

I. INTRODUCTION

Water is an integral part of the natural landscape and plays an important role in the formation of the garden and park environment. Water in nature can take many different forms and situations. Colorful types of water devices can be used in gardens, parks, large areas, recreation areas and in front of various public buildings. Water plays a particularly important role in shaping the park environment. This is due to the fact that water lowers the air temperature, increases its humidity and has a significant effect on the microclimate in general. The aesthetic value of water and its physical properties are also very important here.

When using water as part of landscape design, you must try to fully and with a high aesthetic taste show all its natural properties. The natural properties of water are associated with its fluidity and colorlessness, its ability to take any shape and color, its ability to reflect images of surrounding objects and its sound. In landscaping gardens and parks, such forms of water as

springs, streams, waterfalls, pools, ponds, fountains, waterfalls, rivers, lakes, and pools are used [1].

II. MAIN PART

Landscape and park design, the use of water devices in public open spaces, the improvement of their scenic solutions have become topical issues of our time. At present, it is necessary to know and apply modern typology and technology of water facilities in the organization of greenery in hot and dry climates of the Republic.

Today in the world there are unique water devices related to the topography, which are not repeated, and they are created on the basis of scientific and technical achievements. Waterworks built in several cities of the United States, Japan, Korea, UAE, Austria, Sweden, Peru, Canada, Italy, Singapore, China, Spain are distinguished by their originality.

The water system in the United States was developed long ago. For example, the idea for the Julie Penrou (Colorado Springs) fountain belongs to architects David Barber and Bill Burgess. The fountain consists of 366 water pipes that rotate once every fifteen minutes. Although the facility is located far from the city center, it has always attracted people with its perfection and charm. Examples include the Keller in New York, the 71 Fountain in Ohio, the Corona in Chicago, and the Vaillancourt Fountain in San Francisco.

The Buckingham Fountain in Chicago is considered by many to be one of the most beautiful fountains in the world. It is a monument built in honor of Clarence Buckingham. The diameter of this fountain pool is about 85 meters, and the composition in the center of the pool, which rises 7.5 meters above the water level, is made of 3 layers of pink marble. 65,000 liters of water are pumped every minute from 134 pipes. In the evening, the fountain is illuminated with 840 lamps. This view is enjoyed by visitors to the Grand Park from April to October each year.

In Irving, Texas, the sculptural composition "Las Colinas Mustangs" (1981) is made of bronze, with a statue of 8 horses moving along the water. Water gushes from the horse's hooves when it hits the water, which helps the horses look like they are moving. In the evening the underside of the hooves is illuminated. This fountain is one of the largest sculptural compositions in the world.

Modern fountain devices are based on completely innovative technologies. In Charlotte, the 7.6-meter, 14-ton Metamorphoses fountain by Czech sculptor David Cherny consists of a constantly rotating, stainless steel plate with a male head. The speed of movement of the plates is controlled by the program. The fountain is a product of innovative technologies and reflects the image of a strong, ambitious human being [3].

The Bellagio Music Fountain is located in front of the Bellagio Hotel and is one of the most visited places in Las Vegas. The fountain was designed by Mark Fuller, an engineer at WET, California. His pipes move based on the sounds of classical music and pop ballads. The height of the fountain is 80 m, consisting of 1,175 pipes and 4,500 lamps[4].



Figure 1. Bellagio Music Fountain Figure 2. Floating Fountains (Osaka)

A similar musical fountain is located on an artificial lake of more than 12 hectares near the BurjKhalifa skyscraper in central Dubai. The fountain has a width of 275 m, a shooting height of 152 m, 6600 lamps and 25 projectors. The United Arab Emirates is one of the most developed countries in the world. The Volcano Fountain in Abu Dhabi is also impressive. Water flows like lava from a volcano-like tower. To enhance the effect, yellow light was used.

The tallest fountain is the King Fahd Fountain, built in Saudi Arabia. Its height is 312 m, 18 tons of water is thrown into the air per minute, water comes to the fountain from the Red Sea. Its base is designed in the form of a crown.

A number of modernized waterworks have also been built in Japan. In Osaka, Japanese architects discovered a new artificial waterfall called the Clock at the railway station. The waterfall not only lifts a person's mood, but also gives him pleasure, showing watery patterns in different looks and showing the time every minute. The waterfall flows through a large window. "Floating fountains" are widespread in Osaka. Such fountains were designed by Isamu Noguchi. A cube-shaped geometric body moving under strong water pressure in a recreational water basin is mounted on steel pylons. The light that illuminates the fountain device in the evening makes it look special.

We can see an antique pool in the XII Century Art Museum in Japan. This pool was created on the idea of the talented artist Leonardo Irlich. The secret of the pool is that it consists of 2 parts, which are separated by a mirror. The window is mounted above the pool, parallel to the water level. The height of the water above the window is 10 cm, and the bottom of the window is painted with aquamarine, the lower part of the pool is entered through a special path, where vacationers can easily walk, walk.

The world's longest fountain-bridge "Moonlight" (2009), which is included in the Guinness Book of Records, was built in Seoul, South Korea. The bridge consists of two floors, with water flowing from both sides of the upper floor. At night, they are illuminated by 10,000 LED lamps reminiscent of a rainbow of different colors. The length of the bridge is 1140 m, the water for the fountain is taken from the Hangang River and consumes 190 tons of water per minute. The fountain is equipped with 38 Grundfos pumps, the maximum water consumption for each pump is 420 m³ / s. The water pressure is 810 m / s.

At the entrance to the Crystal Words Swarovski Museum in Wattens, Austria, a giant fountain in the direction of phytoplastics on a high hill depicts a treasurer with a green giant's head. His eyes

are made of Swarovski crystals. When the fountain lights are turned on in the evening, the giant's eyes appear in a green crystal state. The museum is located under this hill.

Vortex fountain "Charybdis", sunderlandThis original fountain was created in 2000 by sculptor William Pye for the luxury Seaham Hotel in England. According to Homer's Odyssey, Charybdis was a mermaid who was hit by Zeus' thunderbolt and transformed into a whirlpool as harsh punishment for stealing Hercules' herd. Pye later carried on this concept building similar sculptures in Oman and Brazil[8].

The boat "Fountain" on the beach Malvarosa in Valencia, Spain, was built on the basis of skillful engineering ideas. Built of 6 metal constructions, this fountain shows the shape of a full boat when the water is thrown. In the evening the fountain is illuminated with a reddish light. A similar fountain is also available in Israel and Portugal. There is a red Crane Fountain in El Puerto de Santa Maria, Spain. A large amount of water flows out of a large water tap in the air and hides the pipe. In fact it moves water inside the pipe. The design of the fountain, though simple, does not fail to amaze. Similar fountains have been built in a number of cities in Spain, Belgium, the United States and other countries.

Another Guinness Book of World Records fountain is the Property Fountain in Santek, Singapore. The fountain was completed in 1998. The fountain device is made of bronze and the 4 supporting curved columns hold a ring-shaped structure, which symbolizes the unity, solidarity and equality of all races and religions in the country.

The Red Fountain in the UK is like a stepped garden. Once a year, that is, at the David Festival in March, it will have a special look. During the festival, the water of the fountain is given a red color as a symbol of the blood of the righteous.

Dacien Si is a 15,000-square-meter musical fountain in Dayanta Square, Xi'an, China. In the fountain area, 1024 pipe holes are installed in a regular sequence, allowing you to walk and walk freely through the vertical corridors. Foshan Falls in China consists of 10,000 old toilets[5].

The Fountain Park in Lima, Peru, is the largest fountain park in the Guinness Book of Records. The creation of the park was designed almost a hundred years ago. However, the construction of the park was completed in 2007 with the discovery of a new project on its territory. As a result of the project, the park has created the largest complex of fountains in the world, among which there are 13 different fountains, most of which are interactive. All the fountains are lit at night, some of them constantly changing colors. The largest fountain in the park is called the "Magic Spring" and is capable of lifting water over 80 meters. There is a "Tunnel Fountain" that connects the part of the park with other facilities for regular exhibitions.

The park has a "Fantasy Fountain", a musical fountain, a pyramid-shaped fountain, a children's fountain, phytoplasmic fountains[6].

The Peterhof Grand Cascade in St. Petersburg is also the largest and most beautiful collection of fountains in the world. It was built in the 18th century and has 3 cascading staircases, 17 fountains, 29 bas-reliefs and 255 bronze statues[7].

In addition, thousands of beautiful and unique waterworks around the world have been built with high design skills. It takes a long time to describe them one by one.

III. CONCLUSIONS AND RECOMMENDATIONS

In conclusion, we can say that the world's waterworks serve as a great practical example for our state. Today, many architectural designers are creating new projects using world practice. And in the future these projects will be continued and more positive projects will be created. At our institute, a project of aqua parks and fountains has been created, and construction work is underway, studying the unusual fountains of the world.

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