

Research on the Landscape Design of Urban Wetland in the Construction of “Sponge City”

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Keywords: Sponge City, Urban wetland, Landscape design, Research

Abstract. With the development of science and technology and the progress of society, the pace of urbanization has been accelerated, and a variety of environmental problems have also emerged. To change the status of urban ecological environment, major cities have accelerated the pace of urban landscape environment construction. Among them, wetland landscape construction effectively absorbs the "sponge city" design concept, which not only updates the concept design of wetland planning in the city, but also can promote the city wetland construction quality to a certain extent. Through the analysis of the connotation of the sponge city theory, the important role of "sponge city" in the city wetland construction is described in the paper. Finally, the paper explores the application of the concept of city wetland in the sponge city to provide some references for relevant researchers.

Introduction

The essence of sponge city is to solve the series of rain, flood and ecological problems brought about by urban development with modern rain and flood management, and realize the balance like nature. From the study of many engineering practice is not difficult to find, sponge city theory in engineering construction, not only improve the quality of city construction, but also makes the city resident population living environment has been significantly improved. At the same time, "sponge city" as a new concept, in the urban wetland landscape application, make the landscape ecological environment improved, but also promote the wetland landscape construction to benign development. With the gradual enhancement of people's awareness of environmental protection, in the future city development process, the "sponge city" design concept will become the mainstream trend of the development of city construction.

Theoretical Connotation of Sponge City

The so-called "sponge city" refers to the process of construction in the city, through reasonable planning and management of city, the building, road green space and ecological system to fully play out, release of rainwater infiltration and runoff of rainwater and absorb the effect of effective control, to realize the natural permeability of nature purification, in the process of city development and the development of natural accumulation. At present, our country has already carried on the sponge city pilot construction in many areas. After the sponge city is completed, it can solve some problems in the urban construction process effectively. Next, we will briefly introduce the role of sponge city.

First, the sponge city construction can play a certain role in the protection of the ecological environment. Sponge city after the completion of certain to ecological protection of grassland, woodland, lakes, rivers, more water city keeper, promote the hydrological cycle.

Second, the ecological environment plays a certain role in rehabilitation. In the process of building the city, through the construction of the traditional way, will have some certain destructive effects on the city original sponge, the sponge city theory in the construction of the city, not only to protect the city of, but also is to repair damaged sponge.

Third, a new "sponge" is constructed". In the new technology and new process function, construct a new sponge structure in city construction, can not only control the city construction in the process of

effective strength, but also to a certain extent without destroying the environment in the city area with water, which will be in the building damage to water environment to a minimum.

Important Role of “Sponge City” in the City Wetland Construction

Regulate Rainfall and Runoff. The sponge city construction scheme for city wetland construction plays an important role in the river, or in the rain season, the city wetland can regulate rainwater and flood problems to a certain extent, excessive rainfall and stagnant water to the city from now to alleviate waterlogging phenomenon, reduce the downstream water level and the downstream flood prevention and flood problems appears in the city.

Maintain Urban Water Balance. As the city wetland hydrology material has its own special properties, has a water storage function more powerful, under normal circumstances, the city wetland called "biological reservoir" or "natural reservoir". Under the action of urban wetland, it can effectively collect the runoff and rainwater, the water accumulated in the plant, the wetland, the surface and the soil. Among them, the accumulated rainwater can provide a certain source of water for nearby farmland and green irrigation, and can also promote the local air quality.

Purify Rain and Flood. With the acceleration of urbanization in our country and the pace of urban economic development, at the same time, the city's ground and air pollution are also showing a more and more serious development trend. The construction of wetland in the city effectively alleviate this problem, the purification function of wetlands in the rainwater, and microorganisms, soil, vegetation root and artificial medium for biological, physical to storm water sediments and retention of heavy metals and other polluting substances, harmful substances in suspension the rain in the wetland under the action of interception, and adsorption, nutrients and toxic substances in the transformation and degradation of wetland plants and Biological Chemistry under the effect of the rain water quality level has been effectively improved.

Application of Sponge City Theory in Landscape Planning

Application of Sponge City Theory in Landscape Route Planning. In the actual garden road planning and design process, the effective integration of sponge city theory not only protects the ecological environment of wetland park landscape, but also improves the overall quality level of landscape planning and design. The ring road network design concept into the wetland landscape design, landscape of the road can be reduced to a certain extent area, change the traditional linear path design model, using the line or is replaced by the curve, and the interval of greening area must comply with the relevant requirements of the drainage design. At the same time, the park will be neatly arranged on both sides of street trees replaced with high density, continuity and dispersion of ornamental vegetation. In addition, the pavement material selection process, must be consistent with the sponge city design theory, to select the performance and quality to meet the requirements of design related landscape, construction material has good permeability, and these materials should have good treatment of storm water runoff and improve the rainwater quality function.

Application of Sponge City Theory in Urban Wetland. In the process of water landscape design, reasonable storage of rainwater can be achieved under the action of wetlands, artificial lakes, rivers and streams. The traditional design method is the bottom of the pool and the pool wall curing treatment, this pool will be in a closed state, water management and water landscape for improving convenience, but some, this design also has problems of permeability, volume exchange hinders the natural environment and water, this design the way to play the advantages of relatively abundant in rainfall season, rainfall in relatively few seasons, only in the way through the injection of tap water in the tank to meet the design requirements of the wetland landscape, thereby wasting water resources. Based on this, water landscape designers in the garden planning and design process, we must from the landscape topography as the main starting point, low-lying land design scheme, so that rainwater can be collected in low-lying land. In addition, the bottom or water to maintain a certain permeability function, the ecological riparian wetland park and artificial wetland construction, enhance the

purifying capacity of the water, this is where the sponge city construction theory. In the design of water landscape, the relationship between landscape design and rainwater storage can be handled well. It is the key to realize the ecological benefit and landscape benefit of wetland.

Application of Sponge City Theory in Green Space Design. Sponge city concept in wetland green design application, not to park the natural terrain too much change, the related design personnel need to terrain and depth information to be fully considered, flexible use of terrain features of the natural formation of gardens in the park design, for example, can be designed into the Canyon Park row sink or reservoir channel or contact area. At the same time in the process of planning and design of wetlands, there will be a lot of green design, relevant personnel need to land within the plant root growth condition information into consideration, set in the wetland ponds on the puddle is reasonably designed to enable wetland grass, trees and shrubs rationally.

In addition, in the process of planning and design of green design, relevant personnel must be on the underground pipelines, the garden outfall location accurately grasp the water channel and wetland landscape and the organic combination of. The design method can not only meet the requirements of drainage related design in wetland, but also make the green space in wetland show multi-level characteristics and improve the interest of wetland landscape. In this process, we must pay special attention in the wetland green space planning and design, must be reasonable arrangement of artificial wetland and vegetation types, so that it can play in the water quality of the wetland purification effect, promote the overall quality of wetland water increased, so vegetation can grow in water environment in health.

Application of Sponge City Theory in Waterfront Landscape Planning. As an important link of waterscape city wetland area, wetland water area and outside water facilities, the facilities of the disadvantages of the traditional way is through the canal and ditch water pipeline drainage facilities such as rainwater will be ruled out as soon as possible. However, storm water management of drainage facilities is on the net link, can transfer is in the process of infiltration and purification in the rain, we will introduce green drainage facilities.

Grass ditch is a ditch drainage system in the planting of vegetation landscape. Cagou in the transportation process of the rainwater, can be alleviated on the flow velocity and the infiltration and purification of rain water. In the grass ditch design process, related design personnel must from the overall layout of the landscape as the main starting point, with the integration of the natural landscape, layout and vertical design of shallow gully vegetation, rainwater can ensure smooth out, its purpose is to carry out uniform distribution so that the net water grass ditch runoff, erosion prevention on the environment.

There are obvious differences with underground pipelines, and the design of open channel drainage can effectively transport rainwater to the water collecting area in the channel. In the process of designing the channel according to the actual demand of landscape design, different structure types, reducing flow at the same time, but also to a certain extent, promote the rain infiltration and evaporation.

Catchment Landscape Planning. In the city wetland landscape design process, the main content is the catchment landscape, in the construction process of wetlands, must carry out the necessary protection of existing wetlands, to reduce the original wetland environmental damage and interference. To establish a reasonable wetland hydrological connection process and site development, the rain water can flow into the reasonable wetland, wetland in the rain water into after to do the necessary processing, set flow and precipitation, abandoned the filtration device, its purpose is to make water after filtration and purification before entering wetlands. However, according to the already converted wetland landscape, must factor from the wetland soil, hydrology, rainfall and climate and other aspects of the comprehensive consideration, to make the wetland can be restored to the state before the natural environment, the rain and flood management more efficient, more flexible and adaptable. The reinforced cement brick embankment reconstruction into floodplain; the straightening and hardening of the river restoration bent into a natural state; allow temporary flooded; using wood, stone cage revetment, ecological bag, ecological brick, gravel slope and another ecological revetment. Through the collusion of water system and the restoration of river ecosystem, a

sponge body for the whole hydrological system of surrounding area is formed to mitigate flood disaster, and water resources are used to promote urban wetland breeding.

Conclusion

To sum up, the "sponge city " of design theory has played a crucial role in the city wetland landscape design in city wetland is not only the main city of rain and flood resources conservation land, not only beautify the city, but also for the construction of the main field of entertainment and leisure activities to provide security. "Sponge city" in the city wetland construction theory can be formed in the water circulation system more perfect, in the process of planning which will not be able to put aside the landscape construction of city wetland, and should be included in the planning, so that the whole city is better able to rely on nature, adapt to nature, through the force of nature with city wetland landscape reasonable planning, effective management and control of water resources.

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