

# How to realize sponge city in Urban garden greenbelt system

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**Abstract:** In recent years , sponge city becomes a hot word on urban planning and landscape design in the world , from low impact development rainwaterSystem Build . Urban green space system as an important part of the City Construction of Sea Association , in the beautiful green landscape , and social features andon the basis of ecological needs , also need to practice its seepage , Backwater , storage , Clean Water , the contribution of drainage and water for urban stormwater management , to address the problem of urban waterlogging and drought , restoring natural drainage City .

**Keywords:** sponge City ; City Garden green space ; Green Design

building SpongeBob City Heavy to speak , require priority in upgrading urban drainage systems rain stay , Give priority to using the power of nature more. , construction naturally Accumulate , Natural Infiltration , Sponge City of Natural Washlet <sup>n 1</sup> . Natural accumulation , -peak Storage , controlling runoff ; Natural Infiltration , that restores The ecology, Natural circulation ; Natural Washlet , To reduce pollution , Improve water quality . 2006 year , Beijing Tong Lin Green Bureau release ( Notice on the development of conservation-oriented greening work in the forest , strong Advance Rain-type green space Construction of . so far , China Several cities approved in line Sponge City pilot project construction , The implementation methods of these pilot construction projects have the different , But the purpose is the same , Once a certain method is in the pilot project Good effect , can be extended to other sponge city building areas .

## 1. Sponge City background

Traditional city development , is a solid , Pouring concrete roads and Building , or large area hard paving, etc. . in this case , Most of the rain does not naturally penetrate the soil ., When runoff is large, it will be from to accumulate on the ground when emissions are less than times , occurs in urban waterlogging . When the rain is low

Core , Rich Terrain , has a high , Low , Water , Land , Overcast , Yang , forward and back Artificial micro-terrain foundation for ecological conditions such as , This is not only green for the public the , provides a variety of ecological conditions , And for the creation of a rich Commons , the view types and levels provide extremely advantageous conditions for. now , with inner green more thick , Healthy Well , But plant layout , planting Way too Drab ,, less- than- shrub variety , Floral variety not rich , lack low-levelGround by plant . so , People's common planting feature not only to echo the Four Seasons Clear Natural climate features , and plant diversity , landscape types are abundant rich , Creating colorful green plants individually , Patchwork plants Community , forms a different green space . cultivation is large , bold lines , large block . with contrasting , simple and crisp colors , embodies times special sign , gives a strong sense of the era . focus on greening plant levels vs colors , highlighting the landscaping

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advantages of scale planting , highlighting spring spring Flowers , Summer flower Summer shade , Autumn Qiushi , Seasonal plant landscape in winter .

Shangyang Park the same class as the , because the design of a Class View is not Same as general viewing design , It meets landscape requirements ,, you must also fully display the ornamental features of a class of plants , embodies a special class of plants personality Characteristics . so , planting to be a special type of plant for the keynote , the is appropriate for with low flowering shrubs , deciduous and evergreen trees , combining rocks plants view , create comfortable and rich scenery flower environment . cropping practices to break Traditional Nursery , Taiwan mode , with rich environment background , Multi-corner Show the color beauty of a class of plants , Group Beauty ,do point , line , surface knot close . and combine the elaborate embellishment of the rock sketch , sketch out the unique and far-reaching mood . both highlights " Special "features , with "" Specialized win , and the limited Create rich and colorful , clear hierarchy of plant landscapes .

Plain Common is a small fellow with the theme of JIANGNV story legends , planting to be in Chinese classical same forest dot planting , Cong main , gesture , heavy style ,heavy mood , to create a poetic charm , Love-View , Love A view of the blend . uses high-density , multiple shrubs , evergreen tree More significant methods , Place a few places in the downtown , quiet elegant , exquisite appropriate , Change more interesting .

Xiaho Pang can Next to the Lotus leaf Infinity , Ying-day Lotus other Red "" variety Lotus Main view , crape myrtle , Iris to match scene , highlight Summer view ; "The same with prominent Sophora japonica " ,, features of Ginkgo , through solid image such as green carving Show Plant culture , Reflection Theme ,, highlighting personality .

Wei The Weeping Willows to the main landscape tree , synaptic ; out willow willow with wind dance "" features , multiple spades , crape myrtle , colorful flowers like Acacia wood , to add " " map watermark Shade fun, and so on , making visitors walk in the same road on or boating on the water , to get a glimpse of the common plant landscape .

focus on designing with the theme and environment conditions of each park

According to the common theme and environment conditions , is passed with a strong Regional features , well-designed , beautifully styled , different common facilities , like sculpture , Floor Coverings , lighting , Skin Box , Guide Sign , seat sit 凳 , superscript tags and Rest frames , embodying common personality space , Show Rich and strong cultural connotations and details , highlighting unique common culture , Make each "" As a place for recreation and culture . , cultural connotations in leisure ,, Leisure permeates cultural meanings , To become the Urban spiritual civilization matrix to , Intuitive window of civilized level , City Modernization , the epochal pacesetter , Enhance the understanding and edification of the public culture by visitors .

Summary , increasingly frequent information exchange in modern society , promotes different The culture of the region learns from each other and borrows from it ,many are ships to product , is the designer's main landscaping tool , There are also successful Cases . But that doesn't mean simple copying . , Mutual Assimilation and lose character . believe in the development of the future , after constant Explorations and Practices , will create more and more features of the age , have fresh Clear features , a city with a local style is the same as .

To resolve a short period of time rainfall frequency , waterlogging severity , 10 Drought , water shortage long Obsession , researcher proposes low impact development ,emphasizes that town development should be reduced by Less impact on the Environment ' based on source control and buffer load concept , add Add infiltration area and water , Increasing drainage , reducing runoff , reduce silt Stack , make the development area as close to the water cycle status as before development , with a view to to alleviate urban waterlogging problems . at the same time , developing rainwater system , Save Rainwater and Take advantage of , can be used for green use on one hand ,Landscape water , PR toilet water , on the other hand can reduce ground drainage , significantly

increased Rainwater Utilization .

## 2. Sponge City and Urban garden green space

SpongeBob City accompanied by urban flood control and waterlogging rise , requires city city planning , building , drainage , Road , to co-ordinate with departments such as forestry and transportation , coordinated construction . and city with Forest Greenland system , Main include Commons green , Community Satellite Green , Road green space , areas such as waterfront and City square , How to better understand and try to be a sponge city in these areas the rationale for the SpongeBob requirements ,is the focus of the discussion in this article .

## 3. understanding of Sponge City by Green space design

The generally considers a sponge city to include infiltration , Lag , Storage , Washlet , use and row several technology , some methods can be used in the design of urban-green Greenbelt The body to implement these procedures .

### 3.1 infiltration

that is, natural infiltration , by building a green roof , High permeable surfacing , gravel floor and natural ground , water permeable floor coverings parking and people's line square , restore Ecology , returns to the state of the natural hydrological cycle , can intercept more more rain in urban green areas , and reduce surface when concentrated rainfall runoff . If you are laying in a gap in the same case , , sanding , nested Grass , or using permeable asphalt mixture , pervious Cement concrete , Permeable Road tiles and other porous materials can be implemented <sup>m</sup>. Practice Certificate , through high permeability the infiltration and impoundment of road surfaces , can reachdrizzle not wet shoes , heavy rain no water effect , as it is named Sponge Super Absorbent , Resolve City waterlogging problems .

### 3.2 Lag

that is, building a lower-concave green space , Square , Grass Ditch , eco-buffer with apply , reducing runoff rate , The also increases by extending the drain time downprecipitation , increases the likelihood of natural extinction . city in the same forest green space, in the same Place. Take measures to control storm runoff using landscape space , can be large greatly reduce urban non-point source pollution . If a permeable cloth is added to a drain ditch and the cobblestone , can effectively slow down the flow rate , can also filter the mud brought by rain slag , reduce pipe dredging frequency , only require a regular replacement of the permeable cloth .

### 3.3 Storage

that is, peak storage , protects the wetlands and waterfront areas that are not developed by , Restore and transform corrupted water systems , local design including storage pool , rain pot , wet-pond , Rainwater harvesting in the rain wetlands, etc. storage Facilities .

### 3.4 Net

that is, natural washlet , To work with nearby . design Natural hydrological cycles and process Systems , Restore or rationalize the construction of constructed wetlands ,put impervious Waterfront hard paving to eco-gentle slopes , make full use of plant backwater and washlet the role of water bodies , to reduce pollution , Improve water quality , and the bin The Water area green space forms a distinctive ecological landscape with .

### 3.5 with

is an in- place Loop . in our country with the green water still mostly from the same forest from the " Living Water for residents " , resulting in a constant intensification of the conflict between the Green water for the same forest and the water for the residents escalation <sup>w</sup>. near rainwater storage facilities , include same forest landscape water ,Green water for irrigation , Public Health water, etc. , All can The extracts the initial washlet to use the . especially in less rainy season , move can effectively reduce the amount of washlet water in the factory , for resources is a good Protect and Reuse , as its name is Sponge High Drainage of .

### 3.6 Row

To widen the channel , Dredging , Restore Natural system connectivity ; combines Perimeter Municipal road network and pipelines , Implementing stormwater diversion Pipe network construction , high standards Rain pipe net , runoff transformation, etc. , to achieve total rain and waterlogging Control requirements . Street Greenbelt , to intercept perimeter catchment area domain runoff , and cut rainwater runoff through sponge facilities such as vegetation buffer zone flow rate and pollution load .

## 4. Issues to note

Although the voice of SpongeBob City is very high , Many cities also make A lot of effort and practice research , But there are still a lot of questions that need to be Note" , " : ① for the stability of permeable pavements , for different load required permeable pavement , developing special structure to load up ; ② in rain dirt row Port Planning Wetland , Increase the proportion of plant Washlet , restore Natural ring Water system washlet in [ ; ③ In the sunken green space , around cistern and Eco-buffer zone to select a flooded plant , avoid damp and stagnant areas The plants in the field are flooded ; ④ Micro-terrain adjustment in low-lying areas , Rich Landscape form ; ⑤ because of the small size of urban green space in China , surface water pollution Heavy Duty , green space How much water and water can be taken to the optimal control The function also needs deep research and discussion. ⑥ SpongeBob City system to build a certain level of culture , for effective fit SpongeBob City Department build this feature, in the construction of the same forest Greenland system , certain to ensure that the city's human and material resources are adequate , based on different Regions make different building plans .

the infiltration of urban and forest Greenland to rain water , Stores , filtering and emitting , then stream human constructed wetland natural washlet , or native ecological channel , Stream to city with Forest Greenland , Mountain , To do soil and water conservation and rainwater savings using , makes the City green space to maintain a rich natural landscape based on , implementation like Sea cotton the ability to absorb water and to drain in a timely manner , and has for natural disasters Good response , better assist the city in urban green space system City Complete the evolution of the sponge City , Achieving sustainable urban development .

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