Analysis Of Urban Waterlogging Problem And Preventive Measures

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Abstract

With the rapid development in economic nowadays, as a result of the economic development of our country urbanization, urban waterlogging phenomenon becomes more and more common. Based on the present situation, the trend of development of the urbanization and the analysis of waterlogging, we hope to find out the reason and summarize prevention measure.

Keywords

Urban, waterlogging, measure.

1. The concept of urban waterlogging

Urban waterlogging is because that heavy rain or continuous precipitation over urban drainage ability and then cause water disaster in the city. The objective reason of waterlogging is that the rainfall is intensity big and concentration range. Rain water may form in particularly nasty places and the places where rainfall intensity is larger or longer. While flooding includes flood disaster which caused by flooding in river cross-strait urban and which burst or suffered by the upstream dam breach; marine disasters in coastal cities due to the storm surges or tsunamis; waterlogging disasters in the blocked Lake city due to high water drainage; disasters caused by the low urban drainage ability and disasters often met in mountainous city urban such as flash floods, landslides and rainfall landslide. [1]

2. Urban waterlogging reason

2.1 The rate of water decline caused by urban expansion

With the rapid development in economic nowadays, cities began to exploit on a large-scale. The expansion of urban construction make depressions , lakes, and reservoirs which has the function of natural water storage and the flood peak adjustment are destroyed by artificial filling or filled for other uses, reduces the storage of rainwater diversion function.

2.2 Urban planning limits

That city pipe network is imperfect is also an important reason which leads to the phenomenon that see the sea when it rains. Urban development is always begins from the central area and slowly spreads around, the city planning department also cannot anticipate the ultimate level of urban development. Which leads to the surrounding area was not fully planned and the construction of drainage facilities can't one pace reach the designated position in the early stages of the pipeline design. As time goes on, the newly developed area gradually evolved into the city, the drainage pipe network before is obviously can't meet the demand of swelling of the drainage. So we must do a comprehensive survey of urban water system in the early period of the city overall plan, have a more precise forecast about the development trend for the future of the city, so as to achieve the purpose that designed exhaust pipe rationally.

2.3 Defects of Urban construction and management

First of all, the water supply and drainage pipe network design and construction did not catch up with the pace of urban construction and population migration. Secondly, the old pipeline modification of city involves many departments, transforming city water supply and drainage network demands for many departments coordination. And drainage pipes unlike other buildings, the quality inspection of it is difficult. Because the pipeline inspection is difficult, it is more difficult to design , construct and supervise.

3. The influence of urban waterlogging

3.1 Affection of daily life

Waterlogging affects the daily life of people mostly. When waterlogging occurs, the urban traffic system is the most vulnerable system. Most plain cities go through different levels of traffic due to lack of capacity in the rainy season, add to the congested blocking the traffic. So once urban waterlogging affected the city's public transport facilities such as roads, bridges, subway, train, airport and etc, not only will raise difficulties for people travel, cargo transport and emergency rescue, but also can make urban traffic paralysis. Along with the rising levels of three-dimensional urban traffic, under the overpass low-lying road become more plentiful rainwater, the torrential rain, not only product elimination and several feet, causing traffic disruption, but also then past the cars here, and harming the occupants. If the substation, transmission gas lines, water supply circuit and communication circuit fault occurs, will cause a power outage water gas, communication interrupt, influence people's normal daily life. Once business and production enterprise in the low-lying areas located in the city flooded, industrial and commercial activity would be affected, the production plan of the enterprise can also be disrupted. Some companies related to the livelihood of the people will also bring inconvenience to the life of people.

3.2 Environmental pollution

Urban flood disaster will cause environmental pollution. Our country current urban sewage treatment capacity is low, urban flood often cause sewage, cause environmental pollution and epidemics. For example, there is three flood in Shenzhen in the past two years, Sewage and stench, causing serious environmental problems. After ditch treatment in Guangzhou city, problems of sewage overflowing have greatly reduced. But when water level becomes high, sewage often overflow from the canals low-lying buildings on both sides of the sewer, cause indoor water and pollution. [2]

4. Waterlogging prevention measures

4.1 Perfecting the urban drainage planning

Urban construction quality is closely related to whether there is a reasonable plan, advanced concept and in line with the local actual overall urban planning. Urban drainage planning is a special planning of urban overall planning, its quality affects the stand or fall of urban drainage system construction directly. Cities should be based on the overall requirements of their own, combined with the local hydrological meteorological data, and according to the different characteristics of the new and the old, seeking truth from facts to determine the construction plan of the drainage engineering, to guide the construction and retrofit of drainage pipe network system. In addition, it should be timely updating the concept of urban planning management, make measures of penetration and regulating reflect in prophase planning.

4.2 The rational use of urban construction land, permeability, hysteresis, storage, platoon.

Based on the terrain and topographical features, we should study urban drainage system of intercepting flood control, diversion and storage measures seriously. As the important carrier of urban flood drainage, the depression of water conservation and landscape value, ditch, pond and river should be strictly protected, not at liberty to landfill or occupation. In addition, building water reservoir in the appropriate areas, planning a percentage of flood storage and detention area, also can slow storm water runoff formation time effectively and achieve the purpose of discharging flood peak. City construction should adopt various improvement measures to increase the flooded area actively. For example, can adopt porous asphalt or concrete pavement, lay turf brick in the pavement, square or recreational area, increase the urban greening area, lay floor tile water permeability to make rainwater penetrate into underground aquifer quickly. In urban construction area, we can increase the landscape water body area, increase the number of underground water storage facilities, let the public places, stadiums and other squares tens of centimeters lower than the general roads, etc. to increase the storage capacity of the water in heavy storm. Let the water out after heavy rains.

4.3 Strengthen the management of drainage at ordinary times and rainstorm contingency plans

For the urban drainage pipe network system which has been built should strengthen the management and maintenance, formulate urban flood control and drainage plan and implement the specific measures, strengthen the degree of prevention and propaganda. Making people further understand the city drainage status and management problems, helping people to take care of urban drainage conscientiously. The government must ensure and increase daily maintenance and management of funds of urban drainage system, according to the standard drainage facilities maintenance on a regular basis. In addition, we should make clear the responsibility and authority of the various management departments, ensure that all departments in accordance with the unified plan of unified command and scheduling, strong drainage facilities and rescue personnel on standby, to inspect at any time, and quick reaction, quick response.

5. Summary and outlook

With the development of our economy, urbanization is inevitable trend. For waterlogging phenomenon in the process of urban development, understand the causes of urban waterlogging phenomenon, find a solution to the urban waterlogging phenomenon is imminent. We should think new method in practice constantly, and draw lessons from foreign successful experience, strive to get a set of suitable for urban waterlogging problems in China's exclusive solution.

References

[1] L. S. Kun: The urban flood control problems, Water Conservancy Planning And Design, 1994 (3):16-18.

[2] X. L. Yun: Preliminary analysis by mode of urban flood disasters, Journal of Natural Disasters, 1995 (S1).