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Code for design of outdoor wastewater engineering

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1 General

1.0.1 This standard is formulated to ensure urban safety, scientifically design outdoor drainage projects, implement the concept of sponge city construction, prevent urban waterlogging and water pollution, improve and protect the environment, promote resource utilization, and improve people's health.

1.0.2 This standard is applicable to the design of permanent outdoor drainage projects in newly built, expanded and reconstructed towns, industrial areas and residential areas.

1.0.3 Drainage project design should be based on the approved urban master plan, special sponge city plan, urban drainage and sewage treatment plan, and urban waterlogging prevention and control special plan, starting from the overall situation, comprehensively considering the planning period, project scale, and economic benefits, social benefits and environmental benefits, correctly handle the relationship between short-term and long-term, concentration and decentralization, emission and utilization, through comprehensive demonstration, to achieve safety and reliability, protect the environment, save land, economically reasonable, advanced technology and suitable for local actual conditions.

1.0.4 Drainage engineering design should be coordinated with special planning and design of water resources, urban water supply, water pollution prevention and control, ecological environment protection, environmental sanitation, urban flood control, transportation, green space system, river and lake water system, etc. According to the blue line and water surface ratio requirements of urban planning, natural water storage and drainage facilities should be fully utilized, and the elevation layout of different areas should be stipulated according to the nature of land use to meet the drainage requirements of different areas.

1.0.5 The design of drainage works shall meet the following requirements.

1 Including safe discharge of rainwater, resource utilization and pollution control, treatment

of sewage and reclaimed water, treatment and disposal of sludge;

2 Coordinate with the rainwater system and sewage system in the adjacent area;

3 The original drainage engineering facilities can be properly transformed to give full play to their engineering efficiency.

1.0.6 The design of drainage works should actively adopt new technology, new process, new material and new equipment on the basis of continuously summarizing scientific research and practical experience in production.

1.0.7 The equipment of drainage works should be mechanized, automated, and intelligentized gradually.

1.0.8 The design of drainage works shall not only be carried out in accordance with this standard, but also comply with the current relevant national standards.

2.0.1 Wastewater engineering

Projects for collecting, conveying, treating, and regenerating sewage and rainwater.

2.0.2 stormwater system

Infiltration, stagnation, collection, transportation, treatment and utilization of rainwater facilities are combined in a certain way, covering the whole process management, early warning and emergency measures from the generation of rainwater runoff to terminal discharge.

2.0.3 sewage system wastewater system

The collection, transportation, treatment, regeneration and disposal of urban sewage facilities are combined in a certain way.

2.0.4 drainage facilities wastewater facilities

The general term for pipelines, structures and equipment in drainage engineering.

2.0.5 combined sewer overflow (CSO)

When the combined drainage system rains, the combined sewage discharged into the water body exceeds the interception capacity.

2.0.6 runoff pollution

Through rainfall and surface runoff, pollutants in the atmosphere and the surface are brought into the receiving water body, causing the receiving water body to be polluted, which is the main source of urban non-point source pollution.

2.0.7 volume capture ratio of annual rainfall

Control the rainfall runoff on the underlying surface of urban construction through natural and artificial infiltration, stagnation, purification, etc., and obtain the ratio of the controlled annual average rainfall to the average annual rainfall total.

2.0.8 low impact development (LID)

Emphasize that urban development should reduce the impact on the environment, the core of which is based on the concept of source control and impact load reduction, construct a drainage system that is compatible with nature, rationally use space and take corresponding measures to reduce the peak value and total amount of rainstorm runoff, delay The peak flow time occurs to reduce urban non-point source pollution.

2.0.9 dry weather flow (DWF)

Urban sewage in sunny days, including comprehensive domestic sewage, industrial wastewater and groundwater infiltration.

2.0.10 Maximum dry weather flowrate design flow in dry season

The amount of urban sewage at the highest day on a sunny day.

2.0.11 Design wet weather flowrate in rainy season

The rainy season design flow of diversion system is the sum of the dry season design flow and intercepted rainwater. The rainy season design flow of the confluence system is the combined sewage volume after interception.

2.0.12 intercepted stormwater

The intercepted rainwater in the drainage system, this part of the rainwater is sent to the urban sewage treatment plant through the sewage pipe to control the urban surface runoff pollution.

2.0.13 Overall peaking factor

The ratio of the highest daily maximum hourly sewage volume to the average daily average hourly sewage volume.

2.0.14 runoff

The rainwater that falls on the ground exceeds the infiltration and storage capacity of the ground in a certain area, and the excess water flow from the ground to the pipes and channels to the receiving water body is collectively referred to.

2.0.15 recurrence interval for storm sewer design

Storm return period for storm sewer design.

2.0.16 recurrence interval for urban flooding design

The rainstorm return period used in the design of urban waterlogging prevention and control system, so that the depth of water accumulation and water receding time in the ground, roads and other areas do not exceed a certain standard.

2.0.17 urban flooding, local flooding

Heavy rainfall or continuous rainfall exceeds the drainage capacity of cities and towns, resulting in flooding disasters on the ground of cities and towns.

2.0.18 urban flooding prevention and control system

The overall combination of engineering facilities and non-engineering measures used to prevent and deal with urban waterlogging in a certain way, including natural and artificial facilities and management measures for rainwater collection, transportation, regulation and storage, drainage, treatment, and utilization.

2.0.19 percolation underdrain

Conduits used for stormwater infiltration, transfer or temporary storage.

2.0.20 Bar screen machine

It is a machine that removes the grid slag trapped by the grid by mechanical means.

2.0.21 radial flow settling tank

Sewage decelerates in the radial direction to allow the solids in the sewage to settle.

2.0.22 Inclined tube (plate) settling tank

A pool in which inclined tubes (plates) are added to the pool to allow the solids in the sewage to settle efficiently.

2.0.23 High efficiency settling tank

By mixing sewage and return sludge, flocculating to increase the size of suspended solids or adding heavy media such as sand and magnetic powder to increase the density of flocs to accelerate the sinking of the pool.