

Joint Research of Small-scale Stormwater Storage and/or Infiltration system and Drain piping system

Whole term

2005.4~2007.3

Text P.71~P.78

(Purpose)

"The Law concerning Damage Control for Designated Urban River Inundation" came into the effect in May 2004. The law indicates a basic policy that sewage works administrators, river administrators and local authorities should be act in unison to promote the overall flood damage measures.

The Article 8 of this law especially allows sewage works administrators settle technology standards on stormwater storage and infiltration facilities which are introduced to conventional homes for the basins of Designated urban rivers with ordinance constitution.

Therefore, development of infiltration and storage facilities which are introduced to conventional homes is required, from a standpoint of an acceleration of diffusions.

On the other hand, the inlets of each plumbing fittings are set up in outdoor. With connecting these inlets, like surrounding the house outer, the sewage drainpipe is constructed. Connections of such drainpipes, in most situations, are difficult to assure installation space of the STW Storage and/or Infiltration facilities.

The "Drain piping system" will be necessary to assure installation space. The "Drain piping system" helps assuring space by gathering the drainpipes from each sanitary accommodations being set up under the floor level to a header tube.

This research showed that development and the practical use of "Small-scale STW Storage and/or Infiltration system and Drain piping system" are verified to meet the above-mentioned needs, and technological material that clarifies the design parameter is published.

(content)

(1) Overview

- 1) Small-scale STW storage and/or infiltration system (Figure 1)
 - ① Verification of basic performance
 - Prefaced inlet: Verification of solid removal performance
 - Storage and infiltration tank: Verification of infiltration performance
 - ② Verification of Long-term maintenance performance (Accelerated test)
 - Prefaced inlet: Verification of solid removal performance
 - Storage and infiltration tank: Verification of infiltration performance
 - ③ Field examination
 - Verification of the overall performance by actual rainfall
 - ④ Verification of outflow controlling effect
 - Case study that assumes flood region

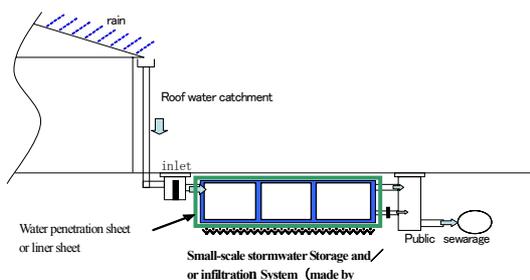


Figure1 Outline of small-scale STW storage and/or Infiltration system

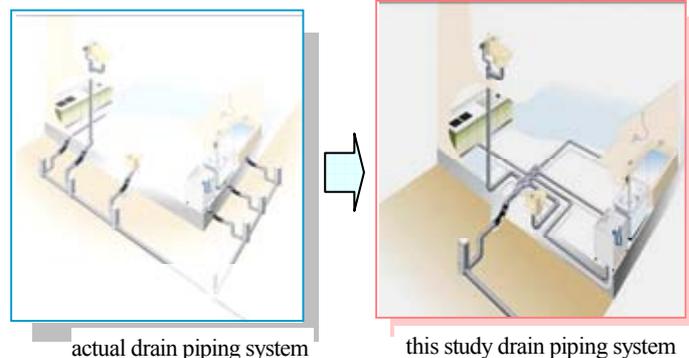


Figure 2 Outline of drain piping system

2) Drain piping system(Figure 2)

①Verification of seal water performance ②Confirmation of control of maintenance

(2) Results

- 1) A prefaced inlet confirmed contaminant was able to be removed by about 60% in rain of about 10mm/hr. A big performance decrease was not seen after using it continuously of two years.
- 2) It is confirmed that the infiltration performance of tank is equal to existing facilities (inlet/trench). Total effects of outflow controlling are high to the extent that there are a lot of free volumes because of high free volume. The infiltration performance for a long term has not decreased.
- 3) It was confirmed to execute a runoff analysis to verify outflow controlling effects when a certain region flooded habitually was assumed, and a system was set up, and to achieve effects of the cancellation of the flood.
- 4) The seal water performance of the drain piping system and the control of maintenance were confirmed.

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Key words

Outflow control, stormwater (STW), storage and/or Infiltration, maintenance, housing area,
long term performance, drain piping