

Whole term

1996.4 ~1996.12

**(Purpose)**

Recent flooding events frequently afflict the downstream area of Roppo-drainage district in Chiba-city. Therefore, a development plan for installation of stormwater infiltration inlets and drainage facilities was set forth.

The basic study on the development plan was conducted throughout FY 1995 and FY1996. The 'guideline for the stormwater infiltration system' formulated the basis of this plan.

In the FY1995, the preliminary layout of the suitable sites for infiltration inlets as well as the list of the target districts was prepared. Different features, namely, mode of allocation of the facilities, infiltration capacity of the inlets etc. were investigated.

In the FY1996, a comprehensive study about the effect of installing the infiltration facilities on control of stormwater flow and increment of groundwater recharge was conducted. Recommendations for enhancing the capacity of the inlets were proposed as well. Finally, the optimum layout of the infiltration facilities was proposed.

**(Results)****1. Comprehensive study on different types of infiltration facilities**

The efficiency of four types of infiltration facilities (public and domestic infiltration inlets, infiltration inlet for gutter, and infiltration trench for gutter) was assessed.

Simulation analyses predicted that allowable rainfall intensity could be enhanced from 50 mm/hr (present) to 55~56 mm/hr at the downstream end of main drainage pipe. The average of allowable rainfall intensity could be enhanced to 53~56 mm/hr considering different capacities of distributed pipe networks.

Analyses also revealed that the infiltration facilities would be more effective in controlling stormwater flow if those are placed at the upstream rather than at the downstream.

**2. Recommendations for further improvement**

As means for improving the function of stormwater flow control, two approaches, namely, 'expansion of installation area' and 'enhancement of infiltration and storage capacity' were investigated. It was concluded that the latter approach would be more effective. Furthermore, it was proposed that the depth of infiltration facilities be increased to enhance their capacities.

In this plan infiltration facilities were viewed as a means capable of contributing to achievement of the immediate goal for stormwater flow control.

**3. Comprehensive study about effect on groundwater recharge**

Estimations, based on reasonable assumptions, of the amount of evaporation, surface runoff and infiltration indicated several tens of centimeters of recovery of groundwater level in the Roppo-drainage district.

**4. Layout of the infiltration facilities**

The above investigations confirmed the performance of the infiltration facilities. It was concluded that the layout of the infiltration facilities as proposed in FY1995 was satisfactory, and, hence, this plan was recommended as the standard layout plan.

**5. Others**

As mentioned earlier, the development plan was set out based on the 'guideline for the stormwater infiltration system' as published by the Ministry of Construction on December, 1994. The fact that preliminary evaluation indicated the performance of the proposed plan shows the effectiveness of that guideline.

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**Keywords**

stormwater infiltration system, 'infiltration pit', effect of stormwater flow control, groundwater conservation, design infiltration capacity