

## Surveillance study on rain water infiltration evaluation technique

Whole term

1997.4 ~ 2000.3

### (Purpose)

A measure to counter rainwater in urban areas is centered around a flood measure as to how quickly rainwater is removed, and flowing-down type tubes and pumping plants have been mainly established therefor. In recent years, “urban-type floods” have increased in accordance with the expansion of impermeable areas due to rapid urbanization, and attention has been paid to the technique of inhibiting the flow of rainwater through the permeation of rainwater.

Under such circumstances, a rainwater permeation business has been implemented in many districts in anticipation of a good effect of improving an environmental aspect and reducing cost including the limitation of water discharging amounts to discharging rivers and securing of low water flow-rate through rainwater permeation, and actual effects therefrom have been increasing.

However, it is clear that the effect of inhibiting the rainwater flow-rate and of recovering a water environment is high in a rainwater permeation facility, but since the quantitative permeation effect such as “grasping a long-term permeating capability” and “grasping an influence of permeated rainwater upon groundwater” has not been grasped, no clear positioning has been established yet in a rainwater removal plan.

Then, we studied the quantitative assessment method and environmental assessment method of a rainwater permeation effect with the aim of positioning rainwater permeation facilities clearly in the rainwater removal plan and spreading the rainwater permeation facilities much more than before.

### (Content)

In order to spread rainwater permeation facilities, to clarify the effect of introduction is important. The effect of introducing rainwater permeation facilities can be classified into the prevention of floods and the improvement of a water environment.

As the effect of preventing floods among these effects, we studied;

- (1) Improvement of planned rainfall strength and flow-out index
- (2) Reduction of the capacity of a regulating pond
- (3) Reduction of the scale of rainwater draining pumps
- (4) Reduction of rainwater-related expenses

As the effect of improving a water environment, we studied;

- (1) Effect of improving confluence of rivers
- (2) Securing of a constant flow of rivers and regeneration of springs
- (3) Relaxation of an urban climate and supply of water to a green tract of land

Besides, we showed our basic idea about a rainwater permeation business, and established the installation density and unit permeation quantity of rainwater permeation facilities from the results obtained in advanced cities, and indicated representative values of planned permeation quantities as reference values based on them.

### (Result)

We are planning to make a manual concerning the method of making a rainwater permeation plan and a rainwater permeation effect by introducing the “Handbook to Sewerage Rainwater Permeation Facilities Installation (draft)” of the Ministry of Construction and the “Technical Manual for Sewerage Rainwater Permeation Facilities” of the Japan Institute of Wastewater Engineering Technology. We will reflect the contents of this research as the results of basic studies.

By making this manual, we can objectively assess the effect of preventing floods and of improving a water environment in a rainwater permeation business and clearly position the rainwater permeation business in the rainwater permeation plan.

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Keywords

Rain water infiltration evaluation technique, Flood control effect, Improvement of combined sewer system effect