

Study on the fieldwork process of infiltration capacity for storm water infiltration system implementation plan in Otsu City

Whole term

2003. 7 ~ 2005. 3

(Purpose)

Storm water storage and infiltration systems are effective measures against flooding, CSO and non-point pollutant loads.

Otsu City has made the infiltration site map which showed suitable sites for infiltration system, based on the existing data of boring works in the catchment basin of Otsu City Sewage System in 2003, and has been carrying out the investigation how to apply the storm water infiltration system in order to encourage introduction of the storage & infiltration combination projects smoothly in future.

Otsu City has a plan to set the projects of the storm water storage & infiltration combination system which is classified “water recycle & recreation type model” in the water recycle & utilities projects. These are covered by the system of the supporting projects for the new generation sewage system. For implementation of this combination project, they need to make a concrete plot plan of the storm water infiltration facilities and to understand the capacity and the effectiveness of applied facilities in the necessary documentation process. Following the above situation, the following works were carried out for the project preparation process in the study area where existing boring data were not enough to show the feature for the system.

- a) Selecting 10 public sites
- b) Fieldwork for identifying the capacity,
- c) Re-selecting the suitable sites and remaking the infiltration site map.

(Results)

The investigation process flow is shown in Figure-1. The results of the fieldwork experiences are summarized as followed;

- 1. The eight sites of which capacities were suitable show the tendency that infiltration flow becomes steady after 20 minutes from the starting time (Figure-2).
- 2. The average of the ultimate infiltration flows classified by the soil is defined on each. These figures are 1/3 or 1/4 of the manual converted values (Table-1).
- 3. The storm water infiltration technical manual for sewage system notes that the infiltration capacity at mounted site is low, but it is shown that the value of the capacity is defined by the soil classification even at mounted site.

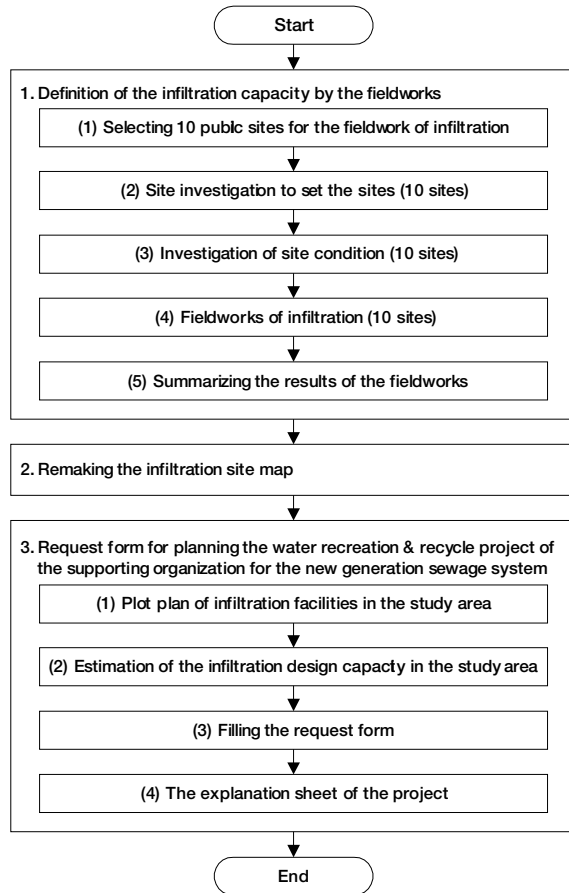


Figure-1 Investigation process flow

Reflecting the results of this fieldworks experience helps to make a plan more accurately. Reflecting the actual capacity to the design process with adding more data collected from another boring works and field works of infiltration should be important. This study would be useful for starting projects.

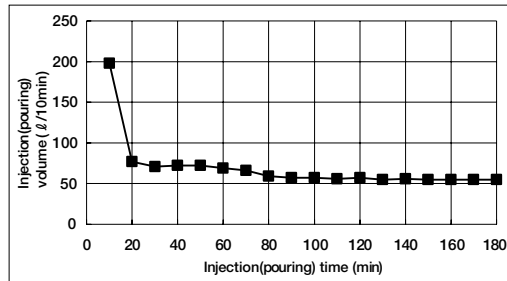


Figure-2 Changes of pouring volume in pouring time at the fieldwork

Table-1 The ultimate infiltration flow classified by both soil conditions and infiltration facility types

Soil condition	Infiltration inlet		Infiltration trench		Soil condition classified in the manual
	Converted value in the manual (ℓ/min /unit)	Results of fieldworks	Converted value in the manual (ℓ/min /unit)	Estimated values from the results of fieldworks	
gravel	18.2	6.8	35	13.1	grits
sand	9.1	3.8	17	7.1	Sandy soil
fine soil	4.5	1.1	8	2	silt
	Infiltration inlet:Diameter 35 cm Depth 50cm		Infiltration trench:Diameter 200cm		

Converted value in the manual = the values in the manual
x expanded infiltration area of the infiltration inlet(Dia.35cm Depth 50cm)
/ the val ues in the manual x expanded infiltration area of the infiltration inlet(Dia.50cm Depth 60cm)

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key words

The storage & infiltration combination projects, Fieldwork of infiltration, The infiltration site map, Infiltration system