

## Research on Control Measures for Infiltrating Rainwater in Separate Sewer Systems

Year of Research

2007•2008

### (Purpose)

In the sanitary sewage facility of a separate sewer system, the inflow rate to the sanitary pipeline, final treatment plant, and pump station rapidly increases for a relatively short period of time on rainy days. There have been many reports of this phenomenon (hereinafter “infiltrating rainwater”). If infiltrating rainwater increases to the point where it exceeds the available facility capacity, the sanitary pipelines may overflow, causing sanitary problems or a functional decline of the treatment facility. If the pump station or the like is submerged, sanitary sewage may run off into public water areas, and the effects of such an event are of concern. Under the recent financial constraints, infiltrating rainwater incurs an increase in maintenance costs, so it has become a serious problem for the self-governing body that administers the sewer. When implementing measures for infiltrating water control, it is difficult to identify the causes and source facilities, and clear identification of the effects of the measures is impossible. Therefore, fundamental measures have not been sufficiently implemented as yet.

This research organizes a series of techniques from narrowing down the source region (the place the rainwater has infiltrated) to making an effective plan for measures to address the cause and verifying the effects of the measures. These techniques are then compiled into a technical manual.

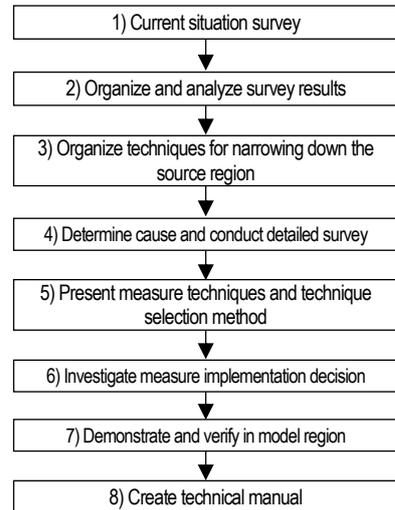


Figure 1 Research flow

### (Results)

#### (1) Research description

The research flow is shown in Figure 1.

##### 1) Current situation survey

Conduct a questionnaire to cities that have separate sewers constructed, to determine the current situation with regard to infiltrating rainwater.

##### 2) Organize and analyze survey results

Once the results of 1) have been received, organize and analyze them. If necessary, hold detailed interviews with some of the cities that are taking measures to implement infiltrating rainwater control.

##### 3) Organize techniques for narrowing down the source region

Organize conventionally used techniques and the newly devised techniques and then evaluate their applicability by confirming their content, application conditions, and points to consider.

##### 4) Determine cause and conduct detailed survey

Based on the results of the questionnaire, interviews, and other surveys, determine the causes of the infiltrating rainwater and organize detailed survey methods.

##### 5) Present measure techniques and technique selection methods

Organize measure techniques by material and part (mains, manhole, collecting sewer, catch basin, and others). Investigate methods for selecting a technique and organize their concepts in the form of a selection flow or the like.

##### 6) Investigate measure implementation decision

Investigate the scope, cost, and effects of the required measures and use the results of this investigation as the criteria for clarifying the concept of the measure implementation decision.

7) Demonstrate and verify in model region

In order to identify problematic places, the scope of necessary measures, the situation, and the like, organize cases of cities which have conducted an infiltrating rainwater survey, implemented measures, or conducted an effect verification, or establish a model region. Based on this, investigate realistic measures techniques and the like.

8) Create technical manual

Create a technical manual based on the results of the various investigations.

**(Schedule)**

- Organize the survey results, documents, and the like and make a proposal concerning measure techniques and technique selection methods.
- Provide an investigation procedure for infiltrating rainwater control measures. At the same time, conduct a research on the concept of measure implementation decisions based on the cities used in the case study or the actual verification in the model region.
- Prepare a technical manual.

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Key words

Separate sewer, infiltrating rainwater, overflow or submergence, increase in maintenance cost, measures effect decision