

Cooperative research on the maintenance equipment of sewerage pipe

Period

1996.41-1998.6

67P? 72P

(Purpose)

It is necessity of appropriate maintenance in order to sufficiently demonstrate the functions of sewerage facilities. But, the sediments such as sand and sludge are easy to deposit in the bottom of sewerage pipe being the important role of sending the sewage to the disposing facility. There is the afraid of the functional decline of the sewer facilities, while sediments become the **obstruction** of the flow of sewage. And, it is afraid the increase in pollution loading amount discharge to public waters in rainy weather in case of combined sewerage.

As one of the methods of prevention of sand and sludge sedimentation of sewer in ordinary management, the sewerage pipe maintenance equipments (called the following, cleaning ball) is usually used. In this research, on the maintenance of sewer using the cleaning ball, , the effect was confirmed by the experiment of from trial collection pipes to actual sewerage pipe, and the consolidation of the base materials for the practical application was made to be a purpose.

(Result)

1. Survey on actual situation of cleaning ball utilization in foreign countries

The cleaning ball was mainly utilized in Germany and other European countries, and the using effects and using points were arranged by literature and questionnaire survey by surveying the actual situation in Germany.

2. Present state of sewerage pipe and actual condition of the maintenance in Japan

The frequencies and methods of maintenance, extension and diameter of sewer in Japan, etc. were arranged, and extraction of present problems and applicability of cleaning ball from the viewpoint of present maintenance form, etc. were examined.

3. Application experiment of the cleaning ball

Derivation of the ball speed calculation formula.

From ball roll experimental result of the trial sewer of acryl, combined sewer of B town in A Prefecture and separation sewer of D City in C Prefecture, the ball speed calculation formula was derived.

validation experiment of Cleaning effect in separation sewer

Using real sewer of D City in C Prefecture, sedimentation protective effect by the ball application was confirmed. It was able to confirm that sedimentation of solid matters to the sewer bottom could be prevented by ball application throughout for about 3 months in this experiment.

Sedimentation thickness in the ball unused for 2 months: 10 - 30mm.

Sedimentation thickness in the ball used for 2 months: 5~ 10mm (the week 5 time application).

4. Examination of the application range

On the basis of application experiment in real sewer and collected material, the flow conditions in sewer applying the cleaning ball was examined.

5. Examination on operational procedure and economical efficiency

It arranged necessary instrument and procedure in the case of sewer maintenance operation by the cleaning ball, and the maintenance systems were compared with the others method used in the present in the economical efficiency.

Collaborators : Asahi Tec Corp.. KANSEI Co.

Japan institute of Wastewater Engineering Technology

Researchers :Maeda Masahiro,Saeki Morihisa,Nagamatu Shiniti

Key Words

Pipe and drain maintenance, service area sedimentation protective effect