

Research on the repair and renovation of sewer systems

Whole term

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(Purpose)

In Japan, the sewer systems have been improving since Meiji era. Especially, many sewer systems in the city have become so outdated that they need to be improved or repaired. In addition, the number of sewer systems to be improved is in the increasing phase.

Hence, it is essential to install the technology for repair and renovation of the sewer systems. Therefore, Public Works Research Institute prepared a questionnaire, which was trusted to the Japan Institute of Wastewater Engineering Technology, to investigate the state of the sewerage systems and their repair and renovation.

(Results)

The actual situation was understood through a questionnaire survey carried out in 51 cities in the whole country. The answers for the questionnaire were obtained from 40 cities. Some issues were identified and necessary actions were undertaken in order to solve those. The results are mentioned below.

- 1) The conditions of pipelines could be categorized in to 4 groups such as: being in good condition, improvement is completed, need to be improved and not being clearly identified. Among the 41 cities, in which the questionnaire was answered, the number of pipelines categorized under each condition was the same irrespective of the discharged form.
- 2) The problems found in pipes were lots of cracks, breakdowns, loose connections, having sand deposits and intrusion of various other matters through connections.
- 3) The method of digging up the ground and injecting a polymer is the common way of repairing pipes.
- 4) At the primary settling tanks and the sludge treatment systems in sewerage treatment plants, the percentage of the pipes not in good condition exceeded the number of those in good condition.
- 5) Both the primary settling and the sludge digestion tanks were likely to get corroded by hydrogen sulfide which had caused corrosion for more than half the total cases.
- 6) The pipes having corroded by hydrogen sulfide were repaired by coating and lining.

Further, the problems that would have to be solved and activities that would have to be undertaken in order to improve the system, were organized. Those problems and activities are as follows:

- 1) In the case of pipe systems, guidelines have to be established to judge the materials, and the method of construction work has to be developed.
- 2) In the case of treatment plants, there should be a method of repairing the existing facility; guideline to judge the necessity of repair work; and a manual for investigation, selection and development of materials.

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Keywords

Repair, Renovation, Deterioration and defect of the system, Cause for deterioration