

## Survey research about development of maintenance plan for wastewater treatment plant

Whole term

2005.9 ~ 2007.3

### (Purpose)

This survey research is necessary for the purpose of developing software to judge deterioration degree of wastewater treatment plant. The software makes it possible that the person who is not specialized engineer easily performs deterioration diagnosis of institution. By this result, administrator gets possible to devise an effective reconstruction plan of institution.

The Liaison conference for sewerage technological development carries out this survey research by a plan for two years, and it was the first year this time. For 14 government ordinance cities and Tokyo, we conducted investigation into deterioration degree of concrete of a sewer institution.

### (Result)

The deterioration investigation of concrete was performed with two phases. At the first phase, site reconnaissance and hearings with the administrator were performed about many institutions. Information was collected by investigation of this time about the following items.

- 1 ) Deterioration degree of concrete of wastewater treatment plant
- 2 ) Environment that gives it to corrosion for institution
- 3 ) Driving situation of institution

At the second phase, chemistry and physical concrete investigation were performed. These detailed investigations were performed for the institution which deteriorated intensely. We obtain concrete samples from wastewater treatment plant, and following investigation was carried out.

- 1 ) Measurement of neutralization depth
- 2 ) Measurement of sulfur penetration depth
- 3 ) Compression test of concrete test piece
- 4 ) Visual check of concrete rebar
- 5 ) EPMA test

Furthermore, following investigation was performed to elucidate relations of environment and deterioration degree.

- 1 ) Water temperature
- 2 ) pH
- 3 ) Amount of dissolved oxygen
- 4 ) Oxidation-reduction potential
- 5 ) Concentration of dissolved sulfide
- 6 ) Concentration of sulfate ion
- 7 ) Concentration of hydrogen sulfide gas

### (Future schedule)

This investigation was performed in winter season. We have to conduct investigation about water and gas in summer to consider environmental seasonal variation.

Furthermore, we are going to examine relations of environment and deterioration degree in second year of survey research.

Collaborators : Liaison conference for sewerage technological development

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key words

Operation and maintenance, Reconstruction, Renewal, Concrete deterioration,  
Deterioration diagnosis