

Results of Research Planning to Save the Function of Sewerage Considering Network (Nagoya City)

Year of
research

2008~2010

Promotion of earthquake
disaster prevention

(Purpose)

In this study, to save a minimum function (primary treatment function) in each facilities to prevent the secondary disaster due to the large-scale earthquake for 14 water treatment centers and 17 sewage pump stations in Nagoya City when striking it, the method of the disaster mitigation measures to consider the network between the sewage facilities etc. were examined.

In " Results of research planning to improve the earthquake resistance of sewerage facilities considering network (Nagoya) 2008~2010" of the plan already, the damage situation and measures etc. of civil engineering facilities were examined. In this study where it had been succeeded, the examination that considered the damage situation of the machine and the electric installations in addition to civil engineering facilities was done.

(Results)

The main contents and the results of this study are as follows :

(1) Questionnaire concerning anti-earthquake measures execution condition of machine and electric installations

To understand the anti-earthquake measures execution condition of machine and electric installations of the object facilities, the questionnaire was executed. The result was totaled, analyzed quantitatively by using AHP (Analytic Hierarchy Process) etc., and the anti-earthquake measures execution condition of existing installations such as the sweeping machines was evaluated relatively. In a middle classification, the installations of the primary sedimentation tank and the final sedimentation tank were confirmed and they were confirmed that anti-earthquake measures were not structurally enough compared with another.

(2) Damage situation of sewerage

The treatment ability that remained at the water treatment center immediately after struck (Remained Ability) was estimated. The remained ability to examine including even the machine and the electric installations was smaller than the remained ability to examine only civil engineering facilities.

(3) Remained ability when struck and recovery of influent quantity

The process of the recovery of the influent quantity according to the restoration of the water utility and the recovery of the treatment ability by the restoration of the machine and the electric installations from the state immediately after struck was estimated, and the time limit etc. for which the restoration of the machine and the electric installations was necessary were examined.

Facilities where the restoration of the machine and the electric installations was able to be adjusted to latter part were parts when there was the extension of time to restoration, considering the recovery situation of the influent quantity (Fig.1).

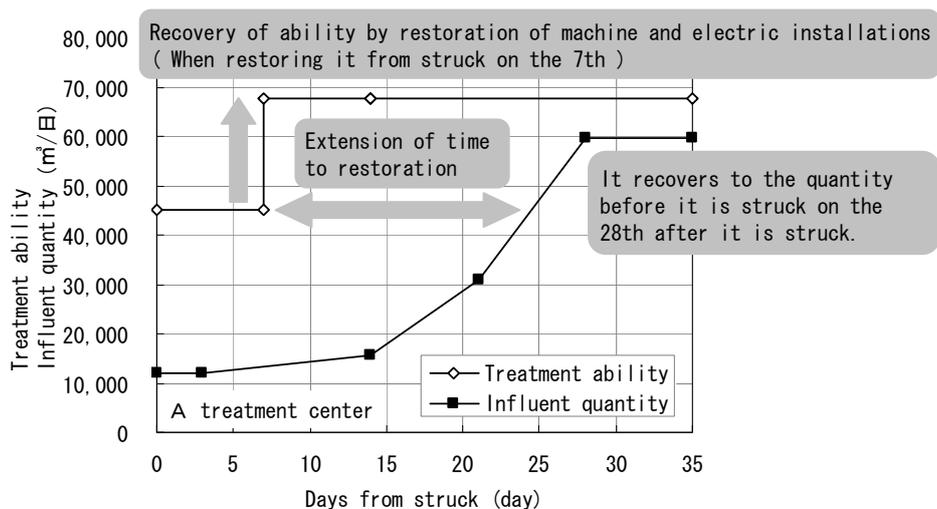


Fig.1 Recovery of treatment ability and influent quantity

(4) Saving function method

It was judged that execution was difficult though making to the network that connected between the water treatment centers that used the existing pipe type (tunnel type) retention facilities (storm-water detention reservoir) and the existing pipe network was examined. On the other hand, it was able to be confirmed that there was effect of executing for the inflow wastewater for several days from struck in a part of treatment zone for the disaster mitigation measures in the on-site by the primary treatment that used the nearby box type retention facilities.

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Key words

Disaster mitigation, Anti-Earthquake Measures, Questionnaire, Remained Ability, Influent Quantity, Functional Restoration, Network, Retention Facility