

Joint Study on Sewer Damage and Its Impact Caused by Large Earthquake in Aomori City

Year of Research

2007~2010

(Purpose)

In recent years, large earthquakes have occurred frequently and damage to sewer facilities has become a serious issue.

“Drainage earthquake measures emergency plan” in Aomori city has developed on FY2006 and drainage earthquake measures emergency project based on this plan is being carried out (FY2007-FY2011). However, the investment in such emergency measures has the possibility of making the finance of Aomori city a severer situation.

From such a situation, the drainage earthquake resistance projects of Aomori City for the future should be more efficient. Therefore, to develop more integrated earthquake countermeasures plan including the developed emergency measures plan is necessary. The term of this study is 4years (FY2007 to FY2010).

The results in FY2008 are as follows.

- (1) The investigated of Prioritization for pipeline facilities (fig.1.)
- (2) Earthquake measures and disaster mitigation measures for Waste Water Treatment Plant (WWTP) and Pump facilities.

There are pipelines with a total length of 1,065 km, and 2 treatment plants and 15 pump facilities in Aomori city.

About pipelines, Of total length, 297 km in Yaeda drainage districts (combined sewer areas and separated sewer areas) is to be targeted in FY2008. About WWTP and pump facilities, Of these facilities, Yaeda WWTP and 2 pump facilities (Shijimikai and Sakuragawa dai-ichi) is to be targeted in FY2008.

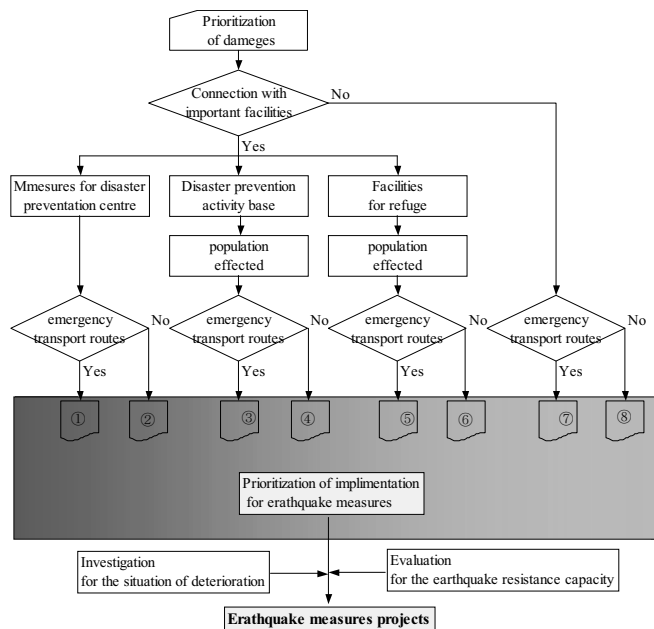


fig.1. Prioritization for pipeline facilities

(Results)

- (1) The investigated of Prioritization for pipeline facilities

① Measures policies according of Prioritization for pipeline facilities

Prioritization for pipeline facilities considered in measures for disaster prevention centre, emergency transport routes, population effected was estimated (fig.1.)

As for the high-ranking pipeline facilities of priority, the situation of deterioration is investigated and the earthquake resistance capacity is evaluated. As a result, when earthquake resistance measures are necessary, measures corresponding to the evaluation result will be done.

② Disaster mitigation measures for pipeline facilities

the temporary toilets measures were developed, the necessary number of temporary toilets was calculated, the emergency check maps were created and the network pipes were selected.

- (2) Earthquake measures and disaster mitigation measures for WWTP and Pump facilities

① Damage estimation in past large earthquakes

The cost of the damage was calculated in consideration of the earthquake intensity, liquefaction risk level and occurrence or non-occurrence of fluidizing phenomenon etc.

② Measures policies according of Prioritization for WWTP and pump facilities

Prioritization of earthquake resistance measures was to set in consideration of being kept the pumping

function and the precipitation function of sewage, facilities where staffs are residing and the influence on secondary disaster etc. according to the influence level when facilities receive damages and the past disaster cases.

③ disaster mitigation measures for treatment plant and pump facilities

The installation location and the scale of the temporary precipitation pond and the disinfection facilities were to set..

(Plans for the future)

Going forward, we plan to perform damage estimations, earthquake countermeasures planning, and disaster mitigation planning for the remaining separate sewer areas in Aomori City. In this way, we will compile an earthquake countermeasures plan for the entire Aomori City area by FY2010.

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Key words

Damage estimation, population effected, earthquake countermeasures plan