

## Joint research on Iwamizawa Sewer pipeline life-extension planning

Year of Research

2011 • 2012

Appropriate stock management

### (Purpose)

This study aims to establish the formulation method of sewer pipeline life-extension planning efficient and effective to promote the renovation such as updating the planned management and preventive maintenance of the sewer pipeline facility. Therefore, utilizing the knowledge and new technology, to perform life-extension planning of sewer pipeline facilities (short-and long-term planning), the development of manhole cover life-extension plan.

### (Results)

The following results to what has been carried out in this study.

#### (1) Digitization of sewerage facilities related materials

We were electronic such as sewer pipeline facility information by utilizing mobile mapping system (MMS) to target the sewer pipeline facility of approximately 500km in the city.

#### (2) Life-extension plan (short-term plan)

Each span are scored risk from the viewpoint of "magnitude of impact" and "the likelihood", we determined the survey priority. Based on this, we conducted a visual TV camera investigation. Then, based on the diagnosis result, we made the extraction of spans that need to be rebuilt. Some routes were used Impact Elastic-Wave Method. By establishing a standard that allows the determination combined with television camera findings and results of this survey, we made a decision. As a result, 25 span (1,003.20 m) has become the determination requiring renovation. In the span that require renovation, 14 span (582.47m) can be applied life-extension planning support system became life-extension planning applications target. Therefore, we have developed a business plan for four years.

#### (3) Life-extension master plan (long-term plan)

As a facility for the sewer pipe is owned Iwamizawa, to develop a long-term renovation plan. For this purpose, after you organize the information basis of the existing sewer, we examined the methods of estimation of deterioration prediction models and a database of existing findings. Simulation of renovation project, we set up the scenario multiple businesses in the next 100 years. We made a selection of the optimal scenario considering such as soundness of each span and leveling the project costs. As a result, the case that rebuilt on a priority basis Hume Pipe based on the current level of the city budget has become the optimal scenario. The annual average investment was ¥ 587 million.

#### (4) Manhole cover life-extension plan

Consider the situation of maintenance so far, we against 100 points extracted from the point where the defect has occurred and neighboring them, we made the sighting survey of manhole cover. Judgment of renovation was carried out by determination by the deterioration and damage determination by the installation standards. As a result, human hole lid is required reconstruction has become 98 points. manhole cover that the judgment was renovated has an update, because measures for a life-extension is not familiar, To perform integrally with the sewer life-extension planning, Manhole cover business plan has plans to four-year plan period, carried out by considering leveling of renovation project cost .

#### (5) Flow calculation of the district confluence

In the confluence area, the existing route that flow capacity is missing has been confirmed. Therefore, performing the calculation of the plan flow rate needed to confirm flow capacity after the renovation, we made a proper understanding of the cross section.

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Key words

Life-extension plan, Stock management, Risk management, Impact Elastic-Wave Method