

# Study on Comprehensive Management of Sewer Pipelines

## Water Quality Control Department

Sewer pipeline facilities are a representative example of underground installation, but it is difficult to determine the condition of deterioration. The purpose of this research is to optimize the management cycle of drafting and implementing sewer inspection survey plans, collection of information, and repair and reconstruction.

## Social background and issues

- The total length of sewers in Japan is about 480,000 km, which is enough to circle the globe 12 times, and aging of these buried facilities is progressing rapidly.
- The poor condition of sewer lines causes about 2,900 road collapses every year.
- There are no concrete standards for the selection of sewer pipeline inspection survey methods and repair and reconstruction techniques, which is left to the judgment of local public bodies. However, efficient implementation is difficult, particularly in medium- and small-sized cities which lack the capability to make technical judgments.

## Study contents

### Proposal of a method for setting the starting period of sewer pipeline inspection surveys.

Set the starting period of inspection surveys by evaluating the social impact of road collapses and other types of accidents caused by sewer pipeline facilities.

- Classify sewer facilities in the management classes “Highest priority management,” “Priority management” and “Normal management.”
- Set the start periods of inspection surveys for each management class by utilizing the soundness ratio forecast formula released by NILIM.

#### • Soundness ratio forecast formula

This formula shows the relationship between the soundness ratio and the age of pipeline facilities (elapsed time since construction). The “soundness ratio” is the percentage of sound pipes in all pipes based on the data of inspection survey results collected by local public bodies.

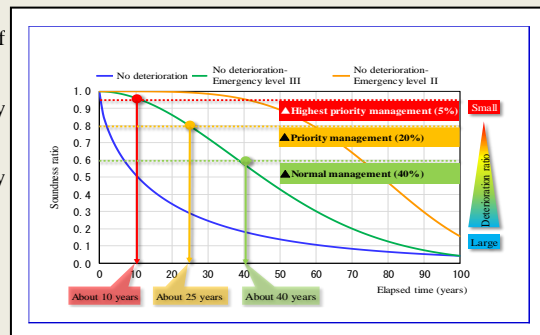


Image of setting the timing of start of inspection surveys (Highest priority management: 10 years, priority management: 25 years, normal management: 40 years)

### Proposal of method for selecting the optimum inspection survey technology by using O&M information

Since various technologies are available for inspection surveys of sewer pipelines, the Water Quality Control Department will propose a method for selecting the optimum inspection survey technologies by arranging the following items:

- Pipe type, abnormality occurrence tendency (abnormality items, occurrence position, etc.)
- Use of operation and maintenance (O&M) information, including past inspection survey data, etc.
- Characteristics of inspection survey technologies (abnormalities that can be discovered, cost, risk, etc.)

Arrangement of points that require attention when selecting inspection survey technologies, to enable the local public bodies that actual perform O&M to select the optimum technique.



Examples of technologies for inspection surveys of sewer pipelines

High efficiency in inspection surveys of sewer pipelines by using O&M information.  
Securing continuous functioning and optimization of the cost of sewer pipeline systems.

#### ☞ Relevant article

- NILIM Press release <http://www.nilim.go.jp/lab/bcg/kisya/journal/kisya20171222.pdf>