

Summary of the Doctoral Dissertation

Conservation of the Honganji-Water Pipelines in Kyoto —Planning of Fire Fighting Water Supply System That Utilizing Historical Water Service—

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Honganji-water pipelines built in 1897, is a fire disaster prevention facility for the Higashihonganji temple which had burned down four times in a period of 76 years. But Honganji-water pipelines has stopped its water supply that the cast iron pipe has been rusted for leaking water. The aim of this paper is to estimate the possibility method of functional conservation and potential of firefighting water supply not only for temple site but also surrounded wooden local district. Based on the results of this case study, the process is for considering the utilization of historical water service conservancy.

First chapter presents the significance of conservation the Honganji-water pipelines for historically outstanding fire disaster prevention facility. Then it discusses conservation needs earthquake resistance condition for future utilizing. Second chapter evaluates the pipe restoration method employed, which involves the insertion of a polyethylene pipe into the existing pipelines. Having to carry a pipe inspection on historical diagnose the corrosion situation in pipelines, it is clarified feasibility of the pipe restoration.

Third chapter analysis effectiveness of regional firefighting water supply plans in the estimated the Honganji-water pipelines in the event of earthquake fire. Firstly, it evaluates the system to supply water to the Higashihonganji temple site and to local residential areas for the three different scales of fire that are required to effectively fight fires. Secondly, it plans the "Water Shield System (WSS)" on south Gion, has its high risk of a fire hazard spreading that wooden densely-urban area. Then it can be reduced to less than half of burned building numbers per hour, in contrast the situation without any firefighting though the possible water supply has hydraulically limited, on Fire Spread Simulation.

In addition, the results of this study organized process of firefighting water supply system that utilizing historical water service.