

# **Development and Implementation of Bridge Management System in Aomori Prefectural Government**

Motoi SOMA\*

## **Abstract**

Aomori Prefecture is located at the north end of Main Island of Japan, surrounded by sea on three sides and known as one of the heavy snow area in Japan.

In the western region facing to Nippon Sea, severe salt damage has been observed on the bridges on the coastal roads due to the salty wind from the sea, or occasionally due to the sea water splashed directly to the bridges. In the eastern region facing to the Pacific Ocean, severe frost damage has been observed on the concrete members of the bridges.

Even though the average age of road bridges is still 30's in Aomori, many of them are deteriorating, and it is estimated that a large amount of financial need for rehabilitation or replacement will be necessary in the future if we do not take appropriate actions now.

On the other hand, the financial situation of Aomori is becoming worse due to the economical depression of the region, and it will become harder to secure large amount of budget for the rehabilitation or replacement of the bridges in the future. Therefore, we determined to develop and implement Bridge Management System to decrease LCC for the bridge preservation and execute efficient road management within the limited financial resources.

The Asset Management of the road bridges is consisted of five steps. As the first step, we establish the principal strategy for the total bridge management. The second step is to establish maintenance strategies for each bridge by taking environmental condition, health condition and importance in the road network into account, and to calculate LCC. The third step is to sum up LCC of all the bridges and execute budget simulation reflecting the budget constraint such as budget equalization, and find out the best long-term budgetary plan. The fourth step is to establish the mid-term bridge preservation plan, and the last step is to evaluate the result of the execution of our bridge management plan and take necessary actions.

We developed BMS in 2 years, 2004 and 2005, and established a "Five-year Bridge Management Action Plan" starting from 2006 fiscal year. In order to execute the action plan, it is necessary to secure enough budgets and to establish an organizational system.

After the examination of many combination of bridge preservation plans by utilizing the budget simulation function of our BMS, a long-term budgetary plan which is very effective in terms of LCC reduction and also suits our financial condition. The mid-term budget was secured by cutting out some from the budget for new road construction.

Since it was necessary to educate engineers who participate in bridge preservation activities, we planned and executed seminars and workshops for in-house engineers, engineers of consulting firms and construction companies. After such efforts, we were able to carry out the first year of our Five-year Bridge Management Action Plan in a satisfactory manner, and the annual report on the Bridge Management in 2006 was published.

---

\*Chief Engineer, Road Management Division, Aomori Prefectural Government