

SPECIAL WATER-USE FOR SNOW REMOVAL AND SNOW MELTING AND ITS
FEASIBILITY IN BUILT-UP AREAS OF SNOWY CITIES IN JAPAN

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No other country at the same latitude as the Japanese Islands has heavier snowfalls than Japan. In winter, about a half of the Japanese Islands is covered with a lot of snow. In the snowy cities and towns of Hokkaido, Tohoku and Hokuriku districts (north Japan) along the coast of the Japan Sea, owing to the monsoon type snowfall, the maximum depth of snowcover usually exceeds one meter. At regions between mountains of Yamagata Prefecture and Niigata Prefecture, snowfall sometimes exceeds three meters.

As for snow removal on roads to maintain traffic routes, several methods, such as snow conveyance with machinery or gutter system and snow melting by sprinkling ground water on runways, are coming into wide use in the built-up areas. Among them, gutter system and sprinkling ground water are worth noticing as a unique utilization of water resources. After the oil shock in 1973, the gutter system has taken a favorable turn for the advent of the energy saving age.

As the gutter system is a device to remove deposited snow by means of running water, it is needed for introduction of this method to make a thorough investigation of natural environment and to discern its application for snow removal in the built-up areas. In this presentation, the water balance of the Shinjo Basin was calculated as an example, and the amount of water needed for snow removal in the Shinjo built-up area was estimated with application to the experimental result of the snow conveyance capacity by the gutter system. Consequently, it has become clear that ample water for the gutter system exists in winter.