

Basic tests to select snow-removal vehicles and to determine how snow piles affect passing vehicles、 toward the adoption of roundabouts in Japan

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Roundabouts are increasingly adopted on road systems around the world for the safety effects they provide、 which stem from the reduced number of potential traffic conflict points involved and the smooth flow and economic benefits that result from the elimination of traffic signals. Roundabout installation in Japan has so far been limited、 although related guidelines are being established and empirical data on test road are being collected. It is also necessary to discuss winter management issues in order to support the promotion of roundabout construction in Japan、 where cold snowy regions account for approximately 60% of the national land area. However、 few studies have so far focused on winter maintenance methods for roundabouts.[*]Against such a background、 this study focused on snow removal operation for roundabouts in cold snowy regions. The feasibility of driving typical snow-removal vehicles for this type of operation was checked using a model roundabout (outside diameter of circular path: 26 m) to provide basic data for the future construction of roundabouts in such regions. The question of how snow piles generated by removal affect drivers was also examined.[*]To this end、 snow-removal vehicles were run in summer and winter、 and their running paths and points of passage were monitored using the real-time kinematic Global Navigation Satellite System (RTK-GNSS). Simulated snow piles with different heights were also created in summer、 and a questionnaire survey was conducted to evaluate the degree of hindrance they caused based on the subjective views of car drivers using the

roundabout. Variations in driving behavior (specifically speed differences) were also monitored using a data logger with a built-in GPS unit.[*]From the results、 the central island diameters with which each type of vehicle could be used were verified. The degree of driver hindrance caused by different snow pile heights/positions and the extent to which different heights affected driving behavior were also quantitatively evaluated.[*]This paper gives an overview of the tests and the results obtained.

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