

A Study on Introduction of Two-stage Crossing Facility for Helping Safe Crossing of Pedestrians

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OHASHI Sachiko (Ph. D.), Senior Researcher, SUGIYAMA Daisuke, Guest Research Engineer, NODA Kazuhide, Guest Research Engineer, KOBAYASHI Hiroshi (Ph. D.), Head
Road Safety Division, Road Traffic Department

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1. Introduction

The number of fatalities from traffic accidents in Japan is 3,532 for 2018 and about one-third of these accidents occurred during walking. Of the fatal accidents involving pedestrians, many of them occurred while pedestrians were crossing roads and about a half of them occurred on basic road sections. This is one of the issues requiring countermeasures. As one of the possible countermeasures for accidents during crossing the basic road section, there is a method of installing a traffic island at the center of the road so that pedestrians can cross the road in two stages while paying attention to vehicles (Fig. 1). For installation of such two-stage crossing facility, in order to discern the possibility of introduction as a new traffic safety measure in Japan, NILIM has been studying its effectiveness and organizing technical points of attention in introduction. This paper reports the study on the desirable structure of two-stage crossing facility and analysis of the impact of facility installation on traffic smoothness.

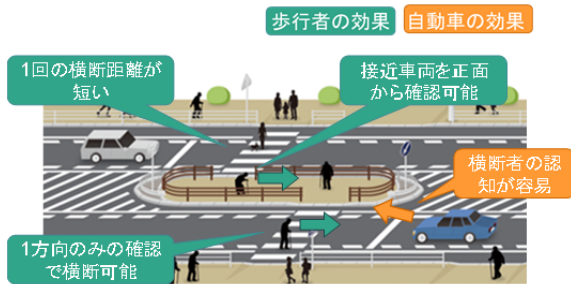


Fig. 1: Characteristics of two-stage crossing facility

2. Study on the desirable structure of two-stage crossing facility

Considering installation in a limited road space, we researched the possibility of installation with different cross-section structures by on-premises experiment, with focus on simple facility assuming installation by reviewing only the width structure of roadway section (Fig. 2). Consequently, the conditions of cross-section structure considered usable in safely, etc. could be confirmed. Based on these findings, we are organizing the cross section structure of the desirable two-stage crossing facility.



Fig. 2: Traffic experiment with a temporarily built two-stage crossing facility

3. Analysis of impact of facility installation on traffic smoothness

With focus on the traffic smoothness of automobiles / pedestrians by installation of two-stage crossing facility, the waiting time of automobiles / pedestrians was calculated with traffic flow simulation. As a result, improvement in traffic smoothness was found, including decrease in waiting time as compared with a case of no two-stage crossing facility (Fig. 3). Based on results of these calculations, we are studying the effective traffic volume in which installation is effective, etc.

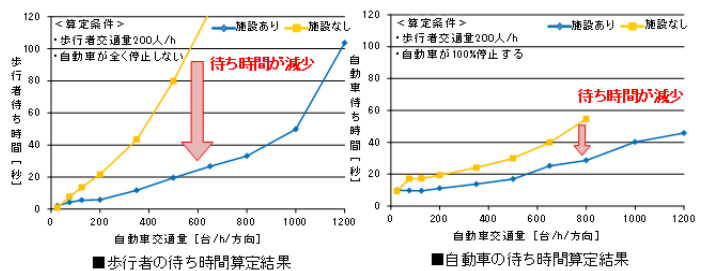


Fig. 3: Effectiveness of two-stage crossing facility (smoothness)

4. Conclusion

In addition, we have been conducting organization of domestic and overseas cases, literature survey, characteristic analysis of the sites involving crossing pedestrians, etc. Including results of these studies, we intend to organize the method of using two-stage crossing facility applicable in Japan and technical points of attention concerning installation.