

Research Trends and Results

Bicycle traveling space mixing bicycles and automobiles

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1. Introduction

Since November 2012, when the Ministry of Land, Infrastructure, Transport and Tourism and the National Police Agency released the Guideline to the Creation of Safe and Pleasant Bicycle Utilization Environments¹⁾ (below called, “the Guideline”), the creation of bicycle traveling spaces has been beginning in earnest in throughout Japan.

Under these circumstances, the NILIM has analyzed the effectiveness and problems revealed by fact-finding surveys of the use of bicycle traveling space which has actually been created, and this report introduces part of these findings: research on mixed vehicle lanes (a form in which bicycles and automobiles share a traffic lane), which is one form of bicycle traveling space.

2. Bicycle traveling space called a mixed vehicle lane

Past provision of bicycle traveling space has often been carried out by installing bicycle paths, which physically separate bicycles and automobiles, or bicycle lanes, which are separated visually, on roads with relatively wide extra space. But looking at overall roads shows that on many roads, heavy bicycle traffic requires the provision of bicycle traveling space where there is no extra road width. Regarding such roads, the Guideline recommends that because of automobile traveling speed and automobile traffic volume etc., even on a road where structural or visual separation is desirable, if restrictions on width makes the provision of such separations difficult, a mixed vehicle lane can be studied as a temporary form. But, few mixed vehicle lanes have been established, and it cannot be said that our knowledge about the traffic behavior of bicycles and automobiles is adequate. And methods of placing road surface indicators showing the locations of mixed vehicle lanes for use by bicycles have not yet been specifically established.

3. Description of the research

The NILIM is now conducting the following studies at actual locations of mixed vehicle lanes in order to



Photo. Example of a Mixed Traffic Lane

clarify the traffic behavior, safety, and comfort in mixed vehicle lane type bicycle traveling space.

(1) Analysis of bicycle/automobile traffic behavior

Change of bicycle traveling line (bicycle pedestrian paths or traffic lanes) after provision, behavior of bicycles and automobiles when close together or when an automobile passes a bicycle, and whether or not conflict occurs were surveyed and traffic behavior was organized to analyze safety.

(2) Study based on a traffic micro-simulation

Based on the traffic behavior so obtained, a traffic micro-simulation capable of reproducing behavior of an individual bicycle or automobile was done reproducing the state of traffic on a mixed vehicle lane, and at the same time, sensitivity analysis was performed based on the change of bicycle and automobile traffic volumes to clarify problems which could occur according to traffic conditions.

(3) Survey of consciousness of users

A questionnaire survey of users was performed to examine mutual consciousness of bicycle and automobile users regarding travel on mixed vehicle lanes, and the visibility and comprehensibility of road surface indicators, to analyze the effectiveness of providing mixed vehicle lanes and problems they cause.

4. Future activities

Results of research on mixed vehicle lanes will be regularly released by announcing reports of these results. And we will continue to accumulate and organize knowledge about the provision of bicycle traveling space, and publish this information as technical documents to be used to support the provision of bicycle traveling space now underway in various parts of Japan