

# Research Trends and Results

## Consideration of arrow feather road markings, indicating traffic space for bicycle users

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### 1. Introduction

In a case where cycleway space is prepared for a "shared use road," where bicycles and cars share a roadway, the "Guideline for the preparation of a safe and comfortable environment for bicycle users" (announced jointly by the Road Bureau of Ministry of Land, Infrastructure, Transport and Tourism, and the Traffic Bureau of the National Police Agency in November 2014) stipulates that road markings indicating a cycleway should be prepared as needed, to show the traffic space for bicycle users and call this space to a car driver's attention. The guideline introduces arrow feather road markings as an example, but specifies no concrete dimensions and installation procedures such as an installation interval. Therefore, each road manager individually considers how to prepare road markings.

The NILIM is developing a method to design a cycleway space that considers the operational characteristics of cars and bicycles. In this document, we introduce the result of a driving test that we conducted to consider the recommended dimensions and installation intervals of the arrow feather road markings prepared for shared use roads.

### 2. Outline of driving test

Various dimensions and installation interval patterns were prepared, including four types of arrow feather widths (40 cm, 60 cm, 80 cm, and 100 cm) and four of arrow feather installation interval patterns (5 m, 10 m, 20 m, and 30 m), for a total of 16 (4 × 4) combinations. We temporarily prepared the arrow feather road markings of each pattern at an NILIM site, and constructed test roads.

In the driving test, a bicycle rider and car driver drove on each test road separately and together (the car passed the bicycle). At that time, we watched the driving conditions through a video camera, and conducted measurements. After the test, we sent out questionnaires to the test subjects to ascertain the visibility of the arrow feather road markings, and their feeling of insecurity and drivability while moving side by side.

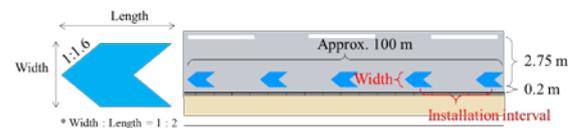


Figure: Illustration of test road



Photo: Test scene

### 3. Test result

Based on the questionnaires, the widths of 80 cm and 100 cm, and the installation intervals of 5 m and 10 m, were appreciated for their high visibility. From the perspective of a feeling of insecurity in bicycle users and drivability in car drivers while moving side by side, the widths of 80 cm and 100 cm received comparably high evaluation marks. However, when the width of the arrow feathers was 100 cm, the car drivers reported a feeling of pressure because the width was too large compared to the roadway width. While watching the driving condition in the test, we found that the bicycles tended to run over the roadway center when driving alone in the road with arrow feathers that were 40 cm or 60 cm wide. Even in this case, when the cars passed the bicycles, they maintained a constant distance from the bicycles, and passed safely.

As previously mentioned, considering the visibility and feeling of insecurity of bicycle users, and the drivability of car drivers, the recommended arrow feather width is around 80 cm, and the recommended installation interval is around 5 m or 10 m.

### 4. Closing remarks

We will continue to consider methods to design an ideal cycleway space to promote the preparation of safe and comfortable cycleway spaces in various regions.