

A Study on On-Road Parking / Stopping Measures for Safe and Comfortable Bicycle Traffic

(Research period: FY2017 to FY2019)

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Keywords: bicycle traffic space, a bicycle traffic zone, on-road parking / stopping measures, parking / stopping stall

1. Introduction

Under the Bicycle Use Promotion Act (promulgated in Dec. 2016 and enforced in May 2017), the Cabinet decided the bicycle use promotion plan in June 2018. This plan includes "promotion for securing bicycle traffic space by developing off-street parking areas and parking space for cargo handling" as one of the measures that should be implemented.

Development of bicycle traffic space is proceeding across the country, but it is also important to take on-road parking / stopping measures as well as development of bicycle traffic space since some cars parked / stopped in bicycle traffic space obstruct bicycle traffic (See Photo).

Hence, NILIM has been studying the method of setting parking / stopping stalls using part of sidewalks as one of the parking / stopping measures.



Bicycle traffic space

Photo: Example of on-road parking / stopping in bicycle traffic space

2. Structure of planned parking / stopping stalls

Structure of parking / stopping stalls should meet the following requirements since bicycles need to travel safely through bicycle traffic spaces ((1)-(3)) and parking / stopping stalls need to have a shape that meets demands ((4) and (5)).

- (1) Possible to stop the car in the parking / stopping stall without protruding into the bicycle traffic space.
- (2) There is no problem of complication between bicycles and automobiles.
- (3) Automobiles can stop smoothly without occupying the bicycle traffic space for a long time (do not spend much time on stopping).
- (4) Space-saving so that multiple parking / stopping stalls can be set in a limited space.
- (5) Cargo handling space is secured (if necessary).

3. Experiment for studying the fine structure of parking / stopping stall

This paper introduces part of the traveling experiment on the parking / stopping stalls focused on the foregoing requirements (1) and (3) (Refer to Fig. 1 for the image of experiment). In the experiment, the

length of parking / stopping stall was set in stages within the range of 7 to 15 m in full length considering the requirements (4) and (5), and the results of 15 m, 13 m and 7 m in full length are herein reported.

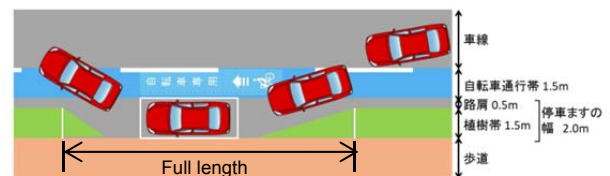


Fig. 1: Image of the driving experiment on parking / stopping stalls

The results of the experiment concerning Requirement (1) showed that more than 90% of cars were able to stop in the parking / stopping stalls, 15 m or 13 m in full length. On the other hand, about 70% of cars were able to stop in the parking / stopping stall, 7 m in full length, but about 30% of them protruded from the stall by 0-50 cm (Fig. 2).

The results of the experiment concerning Requirement (3) showed that time required for stopping was about 20 seconds for the full length of 15 m and 13 m, and about 50 seconds for the full length of 7 m (Fig. 3). Since the time required for stopping means the time when the bicycle traffic space is occupied, it would be necessary to study the applicable length of parking / stopping stalls according to the cycle traffic volume.

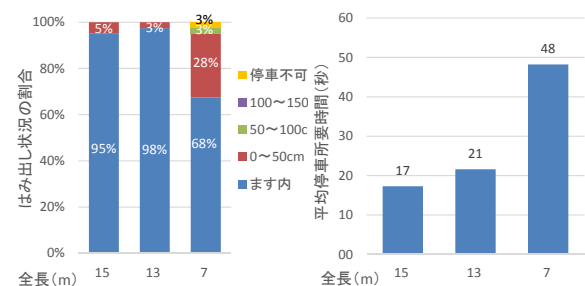


Fig. 2: Result of the experiment on the requirement (1) Fig. 3: Result of the experiment on the requirement (3)

4. Conclusion

In setting parking / stopping stalls, the applicable structure of parking / stopping stalls is considered to differ according to the volume of bicycle traffic. In the future, we intend to organize applicable conditions of parking / stopping stall structures and points of attention in setting.