Installation of Tactile Ground Surface Indicators for Blind Persons on Railway Platforms

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As part of research aimed to facilitate the use of railways by blind persons, we carried out a study for standardizing methods of laying tactile ground surface indicators (TGSIs) on station platforms to warn of the platform edges. In Japan, more and more railway stations are adopting TGSIs in accordance with guidelines of the Foundation for Promoting Personal Mobility and Ecological Transportation. However, since the method for installing TGSIs is not described in detail in the guidelines, it was not uncommon for different stations to use different methods. The unification of installation methods was thus called for.

Under that condition, we, the members of the Study Committee for Improvement of TGSIs (Chairman: Osamu Sueda, professor at The University of Tokushima, Secretariat: the Foundation for Promoting Personal Mobility and Ecological Transportation), carried out various experimental studies (Figure 1). The main items studied are outlined below.

(1) Effect of widening TGSIs which warn of the platform edge

There are cases in which a blind person falls from the platform as he or she steps over a TGSI installed near the platform edge without recognizing it. Needless to say, to prevent such an accident, it is effective to increase the TGSI width. However, this is not always possible because many of the platforms of Japanese railway stations are not very wide. In view of this, we first studied the relationship between the width of TGSI and the rate at which a blind person can recognize the TGSI and stop there safely. As a result, it was found that the rate was 90% for a TGSI width of 30 cm, 95% for 40 cm and 100% for 60 cm. Another important finding was that there must be a distance of at least 80 cm from the front end of the TGSI to the platform edge for a blind person to be able to stop after recognizing the TGSI.

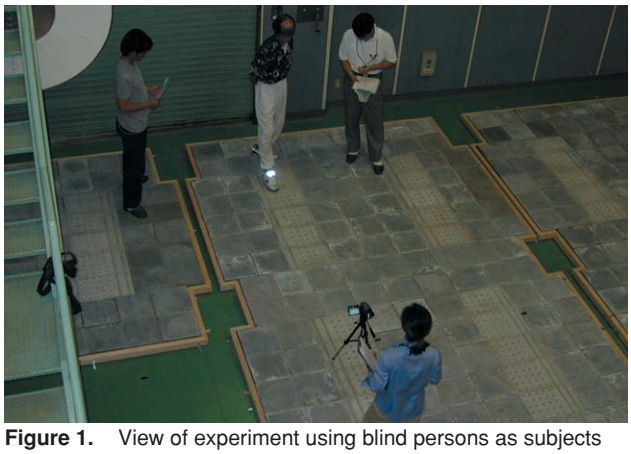

Figure 1. View of experiment using blind persons as subjects

(2) Development of a new TGSI which warns of the platform edge

To warn of the edges of platforms, dot type TGSIs have been commonly used. With these TGSIs, however, although blind people notice that they are near the platform edge by means of dot type TGSIs, they often fail to discriminate the inner side of the platform from the outer side. This is because conventional TGSIs have only symmetrical raised dot patterns, which do not give information about direction. We therefore developed a new TGSI indicating the inner side of the railway platform by means of a linear projection added inside each dot type TGSI, and whose width has been increased in view of the study result mentioned in (1) (Figure 2). The linear and dot projection conforms to JIS standards and the new TGSI has been included in the above guidelines as a TGSI to warn of the platform edge.

(3) Position of installation of TGSIs to warn of the platform edge

There was the only rule concerning the position of installation of TGSIs to warn of the platform edge: "They shall be installed at a distance of at least 80 cm from the platform edge." Because of this, the actual installation position was different from one station to another. Therefore, the unification of installation positions has been called for. On the basis of the results of our experiments, we concluded that TGSIs to warm of the platform edge should be installed at a distance of from 80 cm to approximately 100 cm from the platform edge (Figure 2).

There are various causes for the fall of a blind person from a platform. Therefore, improving TGSIs alone is insufficient. However, we consider that providing platforms with better TGSIs is a minimum requirement to blind persons and that it is effective to improve the safety of blind persons who utilize railways. The present research was carried out at the request of the Foundation for Promoting Personal Mobility and Ecological Transportation and with a subsidy granted by the Ministry of Land, Infrastructure and Transport.

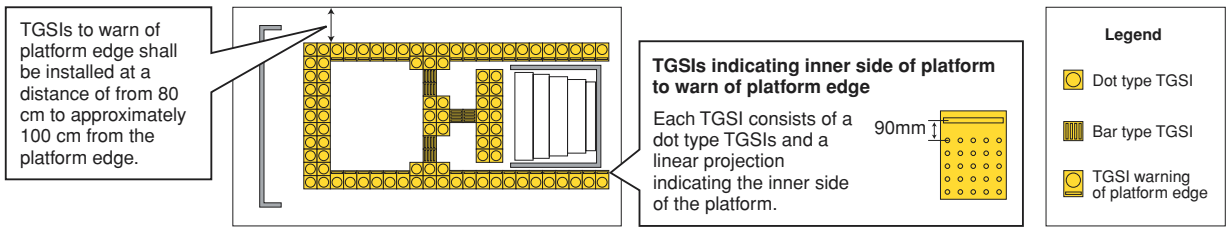

Figure 2. TGSI to warn of platform edge