

New Guardrail with Retroreflecting Bolts as Standard Equipment[†]

1. Introduction

White-painted guardrails are the most-frequently used safety barrier for vehicles. However, these facilities were mentioned as a factor that obstructs the highway landscape during daytime in the guidelines for construction of safety barriers considering landscape, which was published under the editorial supervision of the Regional Road and Environment Division, Road Bureau, Ministry of Land, Infrastructure, Transport and Tourism in 2004¹⁾. Dark brown and similar landscape colors were recommended, and as a result, diffusion of guardrails with landscape colors instead of white has progressed in recent years.

On the other hand, however, because landscape colors are difficult to see at night, reduced visibility by drivers is a problem. At present, visibility is secured by attaching a larger number of reflectors or reflecting tapes to guardrails than in the past.

This report introduces a new type of guardrail which does not depend ? ? epe ors

galvanized finish), which are inconspicuous during daytime. A painting technology which secures an appropriate uniform arrangement of glass beads in the surface layer on the bolt head was also established, as shown in **Photo 2**, realizing reflected brightness approximately 6 times higher than that of ordinary white-painted guardrails.

The reflecting paint film have passed all paint film material property tests, including the salt spray test, accelerated weathering test, etc. provided in the “Paint Standard for Safety Barriers” (Paint: Polyester powder coating) of JFE Metal Products and Engineering and possesses long-term durability equal to that of other guardrail members.



Fig. 1 Principle of retroreflection and structure of developed paint film

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2.2 New Guardrail

As shown in **Photo 3**, these retroreflecting bolts are