Abstract

This nighttime field study addressed the relative visibility of retroreflective pavement markings from trucks and cars. To do that, both low-beam headlamp mounting height and observer eye height were varied. The task involved detecting the presence of a strip of retroreflective pavement marking that was moved towards a stationary observer. The main finding is that headlamp mounting height had a statistically significant effect on detection distance. Increasing the mounting height from the lowest tested level (0.6 m) to the highest tested level (1.2 m) resulted in a 19% increase in detection distance. On the other hand, there was no effect of eye height over the range tested (1.2 m to 2.4 m). Because truck headlamps are generally mounted higher than car headlamps, the present findings imply that retroreflective pavement markings are more visible (and thus more effective) for truck drivers than car drivers. Furthermore, these findings are in support of higher headlamp mounting height for all types of vehicles. However, higher headlamp mounting heights lead to more glare for both oncoming drivers and preceding drivers via rearview mirrors. Consequently, determining an optimal headlamp mounting height would require a complex weighing of both visibility and glare considerations.