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16. Abstract

A nighttime field study was conducted to assess how several attributes of personal safety garments affect pedestrian conspicuity. Three types of ANSI/ISEA 107-1999 compliant Class 2 and Class 3 garments, like those frequently worn by road construction workers, were examined. Participants drove an instrumented research vehicle on a closed track, through simulated construction zones with naturalistic sight distances, and indicated when they first detected a pedestrian wearing one of the garments. The independent variables included trim intensity (R_A), ANSI/ISEA garment classification/configuration, color of the trim, location of the pedestrian within the work zone, driver age, and driver gender. The distance at which each garment could first be detected served as the measure of garment conspicuity.

The results show that garment classification/configuration, trim color, location of the pedestrian, and driver age all had significant effects on the distance at which garments could be detected. Over the ranges examined, neither the intensity nor the amount of trim material affected conspicuity. However, placement of the trim had a significant effect on conspicuity. Specifically, placing retroreflective trim on the arms of a Class 3 jacket, when compared with a Class 3 vest, significantly increased conspicuity of a pedestrian in motion. Nevertheless, any amount of retroreflective trim—regardless of its placement on the garment, color, or intensity—improved detection distance by as much as a factor of 7.8 when compared with a darkly clad pedestrian.

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