MIDWEST SMART WORK ZONE DEPLOYMENT INITIATIVE

MwSWZDI

FHWA POOLED FUND STUDY

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Vertical Safety Cade Barricade

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Supplemental Notes

Abstract
The devices were easily deployed and appear to provide more positive guidance that standard reflectorized drums. Lane distributions were monitored upstream of the taper, and no significant difference was observed between the time period when the SafetyCade units were used and when the taper was delineated by barrels alone, supporting the device as being as effective as drums. When used in areas noted for wind or where highway speeds are prevalent, the weighted boot should be used.

VERTICAL SAFETYCADE BARRICADE

WLI Industries

Evaluation Team

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Description

The Vertical Safetycade Barricade, a narrow type II barricade (23"w x 39"h) with reflective sheeting, was used to replace barrels in a temporary taper.

Study site

I-70, Shawnee County. This study site is shown in Figure 3-14.

From milepost
To milepost

ADT = 19800 vpd Is this ADT directional? NO
T = 8%
D = 60/40
$V_{current}$ = 70 mph
$V_{construction}$ = 60 mph
$V_{advisory}$ = NA

Performance Measures

The objectives of this application and the associated performance measures are shown in Table 3-12..

TABLE 3-12 Vertical Safetycade: objectives and performance measures.

Objectives	Performance Measures
Channelize drivers (guidance)	1. Lane distribution 2. Speed variance
Reduce labor	3. Stability 4. Portability

Experimental Design

Study type: before and after.

Data Collected

Lane distribution at locations 500 ft, 1000 ft, and 1500 ft upstream of taper

Collection method: pneumatic tubes and automatic traffic recorders
Sample size: one 24 hr day before and one 24 hr day after installation.
Analysis technique: comparison of lane distributions before and after installation.

Speed of vehicles upstream of taper

Collection method: pneumatic tubes and automatic traffic recorders
Sample size: one 24 hr day before and one 24 hr day after installation.
Analysis technique: comparison of mean speeds before and after installation.

Device stability and portability observations

Collection method: contractor interview
Sample size: NA
Analysis technique: summary

Evaluation Results

Lane distributions were not significantly different at a 95% confidence level after the deployment of the Vertical Safetycades. Statistics from the lane distribution analysis are given in Table 3-13.

TABLE 3-13 Vertical Safetycade: percent of vehicles in Lane 2.

	Lane 1	Lane 2	Total Vehs	% Lane 2	Avg %	sigma	z	level of significance 0.05	0.01
DAYLIGHT,PASSENGER CARS									
Before	1079	2770	3849	0.7197	0.7175	0.0103	0.4243	1.96	2.576
After	1083	2721	3804	0.7153				**no change**	**no change**
NIGHTTIME,PASSENGER CARS									
Before	428	530	958	0.5532	0.5569	0.0227	-0.3273	1.96	2.576
After	420	536	956	0.5607				**no change**	**no change**
DAYLIGHT,TRUCKS									
Before	198	695	893	0.7783	0.7657	0.0198	1.2374	1.96	2.576
After	230	704	934	0.7537				**no change**	**no change**
NIGHTTIME,TRUCKS									
Before	183	317	500	0.6340	0.6276	0.0313	0.4276	1.96	2.576
After	173	283	456	0.6206				**no change**	**no change**

FIGURE 3-14 Vertical SafetyCade test site.

Conclusions

There were no statistically significant changes in either speeds or lane distributions, indicating that the Vertical SafetyCades were no less visible than drums. Observations of the test site by KDOT personnel before and after the deployment of the SafetyCades suggested that the positive guidance provided by the chevron panel was superior to the guidance provided by drums.

The Safetycades were deployed with the weighted boots. Little movement of the devices due to the wind generated by passing trucks was observed.

Recommendations

The Vertical Safetycade is an effective device for use in work zones in the place of reflectorized drums. It is recommended that for characteristically windy regions, and for all high speed environments, the devices be used in conjunction with the weighted boots.