



Updated Median Cable Barrier System Safety Effectiveness Evaluation

Problem Description

TDOT has been installing Median Cable Barrier along some highway segments across the state. Among the intended benefits of the cable barriers was the prevention of cross-median crashes which occurs when a vehicle leaves its travel way enters or crosses the median dividing the highway directional lanes and collides with vehicles in the opposite direction. A study completed in 2017 found that the statewide cable barriers safety effectiveness for fatal and injury crashes was 85%. The study further developed Crash Modification Factors (CMF) for median cable barriers in Tennessee. However, this previous study utilized only three (3) years of crash data after the year 2010. The use of 3-years crash data after the cable's barriers were installed need to be updated. It is expected that using 10 years of crash data after the cables were installed will significantly change the previous findings by numbers.

Research Objectives

Objectives of this study include:

- Synthesize a survey questionnaire to relevant states to solicit information related to safety effectiveness of the cable barriers and compare them with performances in Tennessee.
- Recommend improvement Median Cable Barrier Installation guideline for TDOT.
- Rank the Cable Barrier Segments based on crash frequency and crash rate (using 10 years of data).
- Update the Safety Effectiveness Performances of the Median Cable barriers in Tennessee.
- Evaluate how road geometries and traffic characteristics affect cable barrier performances.
- Develop and update CMF for median cable barriers in Tennessee.
- Evaluate and develop the Benefit Cost Ratio for median barriers in Tennessee.
- Compare the results with those from RES2013-28 study that used 3 years of data.

Potential Implementation and Expected Benefits

Findings from the safety effectiveness study are expected to reinforce future expansion of the program as well as respond to the public perception on the program. The findings will inform TDOT safety effectiveness with respect to the reduction in the number of crashes, injury severities and fatalities. TDOT will be provided with an estimated Benefit Cost Ratio for the Median Cable Barriers in Tennessee. The developed CMF for segments with median cable barriers relative to no cable barrier segments will be updated, as well as the impact of different geometric features as well as traffic characteristics to the safety performance of the cable barriers. Recommendations will be given to TDOT for removal of existing cable barriers whose location does not meet installation criteria or unwarranted installation.

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PROJECT SCHEDULE:

August 2022 to July 2024