



## Florida Department of Transportation Research

### Landscaping of Highway Medians at Intersections

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The most obvious benefit of landscaped medians is highway beautification, but they have also been found to enhance safety. Landscaping helps define turn lanes and crosswalks, adding to roadway safety.

Placement and specifications of highway landscaping components are subject to rules that vary among states. Nationally, the Policy on Geometric Design of Highway and Streets from the American Association of State Highway and Transportation Officials (AASHTO) provides general guidance on landscaping and requires an unobstructed view for drivers. In Florida, detailed highway landscaping practice is governed by the Florida Department of Transportation (FDOT) Standard Index 546 (SI-546), which serves as FDOT's interpretation of AASHTO policy.

FDOT's policy of context-sensitive design has led to a significant increase in median landscape installations, prompting this review of the safety aspects of SI-546 by University of South Florida researchers. The researchers focused on current landscaping criteria, performing an empirical study of the safety performance of SI-546, and developing a computational procedure to analyze landscaping configurations.

Of 29 states reviewed, 16 states had landscaping guidelines relevant to Florida's, and five were selected for detailed review: California, Michigan, Ohio, Oregon, and Tennessee. Also, SI-546 requirements and their historical development were reviewed in depth. SI-546 was found to be the leading critical standard for tree setbacks and detailed spacing requirements on highway medians near intersections. Tennessee and Ohio cited SI-546 and the AASHTO handbook for their intersection sight distance requirements.

To validate SI-546, landscaping field data were collected at 72 Florida intersections and combined with historical crash data to evaluate the safety performance of and compliance with SI-546. The



*The safety and aesthetic contributions of median landscapes must be balanced against unobstructed views for drivers.*

latest two years of crashes within 300 ft from the centerline of the intersections, excluding right-turn crashes, were used. Results indicated that trees on highway medians near intersections may reduce crash number and severity level when the landscaping plan provides proper visibility.

A visibility simulation tool was developed to evaluate different landscaping configurations. Using parameters like observer location, vehicle profile, vehicle trajectory and speed, tree position and spacing, and threshold distance, the simulation yielded several performance measures, including average visibility, total time of unobstructed visibility, and maximum time of unobstructed visibility. The simulator can be adapted to produce other measures of interest.

Results of this project support the safety contributions of well-planned median landscaping. The project also extended this work and provided important new tools for advancing safety goals within context sensitive design, offering more attractive, efficient, and safer roadways.