

UNSIGNALIZED INTERSECTION SAFETY STRATEGIES



Clear Sight Triangles on Stop- or Yield-Controlled Approaches to Intersections

WHERE TO USE

Unsignalized intersections with restricted sight distance and patterns of crashes related to lack of sight distance, where sight distance can be improved by clearing roadside obstructions without major construction.



Photo by: Texas Transportation Institute

DETAILS

Adequate sight distance for drivers at stop- or yield-controlled approaches to intersections has long been recognized as among the most important factors contributing to overall safety at unsignalized intersections. Recent research has established design requirements for Intersection Sight Distance (ISD) based upon driver and vehicle functional requirements. *NCHRP Report 383: Intersection Sight Distance* provides design guidelines that have been implemented in the current edition of the *AASHTO Policy on Geometric Design of Highways and Streets*. *NCHRP Report 383* provides a gap-acceptance-based approach to sight-distance requirements based upon actual driver behavior at intersections. Since, at least at high-speed intersections, the recommended sight distances are shorter than those in previous policies, they are more practical to achieve in the real world. Sight distance improvements can often be achieved at relatively low cost by clearing sight triangles to restore sight distance obstructed by vegetation, roadside appurtenances, or other natural or artificial objects.

Intersection sight-distance-related crashes include angle- and turning-related crashes.

KEY TO SUCCESS

Effectively diagnose whether a specific crash pattern observed at an intersection is, in fact, related to restricted sight distance. Currently this is a judgment made by an experienced safety analyst.



ISSUES

The most difficult aspect of this strategy is the removal of sight restrictions located on private property. The legal authority of highway agencies to deal with such sight obstructions varies widely.

TIME FRAME ●○○○

Projects involving clearing sight obstructions on the highway right-of-way can typically be accomplished in 3 months or less, assuming the objects are readily moveable. Clearing sight obstructions on private property requires more time for discussions with the property owner.

COSTS ●○○○

Costs will generally be low, assuming that in most cases the objects to be removed are within the right-of-way.

EFFECTIVENESS

TRIED: There is no research that adequately quantifies the effectiveness of improving sight distance at unsignalized intersections. Based on existing literature, it has been estimated that if the available sight distance in any quadrant of an intersection is less than or equal to the design sight distance for a speed of 12 mph less than the actual 85th-percentile speed of the approach, then the frequency of related crashes at the intersection would be increased by a little under 5%. Thus, a project may be 0 to approximately 17% effective in reducing related crashes, depending upon the severity of the existing sight restriction and the number of intersection quadrants affected.

COMPATIBILITY

This strategy can be used in conjunction with most other strategies for improving safety at unsignalized intersections.

SUPPLEMENTAL INFORMATION

This strategy should be incorporated in highway design policies, highway maintenance manuals, and educational materials for the public.

Unsignalized intersections with sight distance restrictions in one or more quadrants are common. Since highway maintenance operations are often independent of safety operations in a highway agency, it is important that both groups be apprised of the need to protect sight triangles and that there be coordination between them.

For more details on this and other countermeasures: <http://safety.transportation.org>

For more information contact:

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