A STREAMLINED AND AUTOMATED PROCEDURE FOR IDENTIFYING NO-PASSING ZONES USING EXISTING RESOURCES AVAILABLE TO THE NEVADA DEPARTMENT OF TRANSPORTATION

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Key Points:

Project Number:
638-16-803
Start Date:
November 1, 2016
Duration:
18 Months
Project Cost:
$140,540
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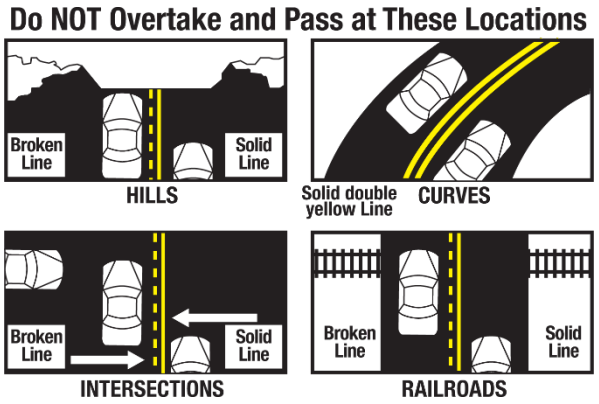
PROBLEM

NDOT is in need of a new system that can automate the process of locating no-passing zones. Existing research on automating the process of computing sight distance, key to locating no-passing zones, have focused on establishing procedures and small-scale field tests. Fortunately, research has matured and allows the research team to propose creating software for NDOT that identifies locations throughout the state that should be marked as no-passing zones.

OBJECTIVE

The technical objective of the proposed research is streamlining/automating the no-passing zone identification process. The objective will be achieved by creating a software tool that implements analytical procedures capable of finding line of sight obstructions along a roadway model. The roadway model definition is created using GPS traces from the improved LiDAR/Photolog van (or similar vehicle) that are combined with information about shoulder and lane widths.



METHODOLOGY

Task 1: Policy Establishment

NDOT staff will be contacted to identify policies that should be implemented in the proposed software. Policies to be established by NDOT include a prioritization scheme to decide how segments flagged as not having sufficient sight distance are ranked for further review.

Task 2: Dataset Assembly and Procedures Identification

The research team will work with NDOT staff to understand how their roadway assets information is stored and accessed. Testing and development of dataset assembling procedures will also happen

in Task 2 and includes creating a software module that takes one or more inputs from a NDOT dataset and prepares it for a statewide or route -level no-passing zone evaluation.

Task 3: Analysis Tool Creation

The mathematical foundation described in the previous sections will be implemented in the form of a module part of the proposed software.

Task 4: Testing and Verification

The output of the analytical models used by the tool will be evaluated using a combination of field visits and aerial images analysis. A comparison between the start and end of no-passing zones flagged by the tool will be made by looking at field-measured locations.

Task 5: Interface Modifications

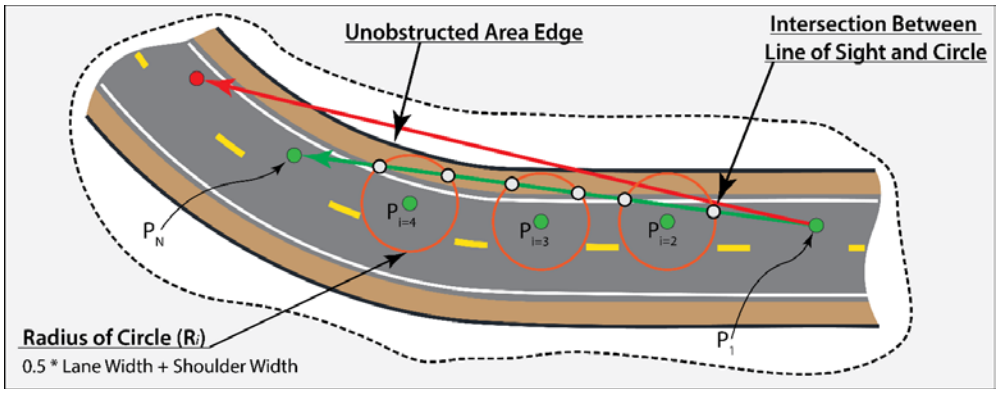
Task 5 will focus on making improvements to the software interface. Feedback on the software received during previous tasks will be compiled and documented.

Task 6: Final Report Preparation

The implementation plan section of this proposal contains a task for the preparation of the final report which will include a detailed implementation plan.

IMPLEMENTATION POTENTIAL

Given the number of two-lane highway miles in Nevada, locating no-passing zones accurately is an important safety issue. Therefore, the proposed project strikes a balance between the cost benefits associated with the research implementation and the urgency of obtaining associated benefits. Costs of implementing the proposed research for the department are negligible after the initial implementation. Once implemented, potential cost savings will be the result of: reduced trips for no-passing zone identification, associated person-hours, and vehicle expenses.



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