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Comparative Operating Speed and Speed Differential Day and Night Time Models for Two Lane Rural Highways

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Abstract : Speed is the independent parameter which plays a vital role in the highway design. Design consistency of the highways is checked based on the variation in the operating speed. Often the design consistency fails to meet the driver's expectation which results in the difference between operating and design speed. Literature reviews have shown that significant crashes take place in horizontal curves due to lack of design consistency. The paper focuses on continuous speed profile study on tangent to curve transition for both day and night daytime. Data is collected using GPS device which gives continuous speed profile and other parameters such as acceleration, deceleration were analyzed along with Tangent to Curve Transition. In this present study, models were developed to predict operating speed on tangents and horizontal curves as well as model indicating the speed reduction from tangent to curve based on continuous speed profile data. It is observed from the study that vehicle tends to decelerate from approach tangent to between beginning of the curve and midpoint of the curve and then accelerates from curve to tangent transition. The models generated were compared for both day and night and can be used in the road safety improvement by evaluating the geometric design consistency.

Keywords : operating speed, design consistency, continuous speed profile data, day and night time
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