

Distribution of vehicles' lateral position at curves from pavement management perspective

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Lateral position of vehicles at horizontal curves and roundabout circles has been studied. It has been observed that drivers tended to straighten their travel path as much as possible when negotiating these bends in a corner-cutting fashion. In addition to early skid resistance loss, this behaviour results in the early scuffing and removal of road markings. Preliminary data were collected in Northern Ireland at eight different sites over 15 lanes in total. It was found that the expected geometrical location of the wheel path is not the same as the actual observed location at certain sections of highways. On horizontal curves, the most travelled wheel-path is shifted toward the convex side of the curve, and this shift increased with decreasing radius, such as at roundabouts where it reaches a maximum displacement. This shift was about 140 cm in the outer circles of roundabouts and about 60 cm in the inner circles. For horizontal curves the figure was in the region of 30-40 cm. In addition, statistical analyses in terms of the Chi square tests were carried out to quantify the loss of normality for each lane of each site. The main reason behind these shifts is the bend effect of the road. Also, cross-fall, curve type, kerb height and vehicle speeds are likely to have an effect on the vehicles' lateral positions, and will be scrutinised as ongoing work. It is, however, interesting to state that the skid resistance related tests must be carried out carefully by taking into account the findings of the present paper.