The ability to identify a road design issue as a contributing cause to a collision could mean the difference between a million dollar payout and a settlement for a fraction of that amount. Road design is often overlooked as a potential source of subrogation in seemingly “clear-cut” motor vehicle collisions. Inadequate stopping sight distance, curve radius, spiral design or lane widening are just a few examples of road design inadequacies that are difficult for police and adjusters to identify during site examinations. Nevertheless, these road design issues can be a significant contributor to serious collisions involving fatalities or catastrophic injuries.

Police reports typically do not address road design issues, even when a detailed investigation is conducted. There are two primary reasons for this seemingly counter-intuitive fact.

Firstly, the officer’s primary responsibility is to attend to the injured and document the scene (vehicle rest positions, debris, skid marks, point of impact, etc.). The focus of the police investigation typically centers on driver and pedestrian actions or inactions. Brief additional comments by the officer such as “lost control on curve”, “speed too fast for conditions”, or “failed to stop in time” could be a red flag for contributing road design factors that have not yet been investigated.

Secondly, road design standards are numerous and complex, requiring both a thorough familiarity with the guidelines and a detailed analysis of the site measurements. Non-compliance and relevance must both be demonstrated. As a result, road design inadequacies are often subtle or difficult to identify visually.

The presence of potential road design issues can be established by a qualified forensic engineering firm during a preliminary site examination. This preliminary analysis can help the claim adjuster make a quick and informed decision regarding liability exposure, without committing to a full-scale investigation. If warranted, the adjuster can proceed with a subrogation of loss investigation in an effort to substantially reduce the cost of the claim. If not, the adjuster can proceed with the confidence of knowing that all avenues have been explored without a large investment of time or money. Claims adjusters should also keep in mind the legal deadlines for putting municipalities on notice.

Tight curves, inadequate lane widening and inadequate stopping sight distance are just a few prime examples of road design factors that should not be overlooked.

• An overly tight curve is a common occurrence. The lateral force exerted on tires when negotiating a curve is proportional to the road curvature. For any given speed, the tighter the curve, the closer a vehicle gets to losing traction. Furthermore, the destabilizing force is proportional to velocity squared, so the faster the vehicle is moving, the more critical it is that the radius and side-slope of the pavement be properly designed.

• Inadequate lane widening on curves can be critical when tractor trailers are involved in a collision. The rear trailer wheels, often more than 53 feet behind the front wheels, can encroach into the oncoming or adjacent lane as a result of ‘off-tracking’ if the lane is not
sufficiently wide. What may initially be a “who crossed the line” issue may in fact be a road design issue. Design standards provide clear guidelines as to the amount of lane widening required for particular road geometry/speed combinations.

- Inadequate stopping sight distance refers to a driver’s inability to safely perceive and react in time to a hazard due to reduced visibility. The visibility obstruction may be a result of a sharp curve, a sharp crest, roadside foliage, inappropriate placement of warning signs, or a combination thereof. Road design standards require stopping sight distances of greater than 200 m (650 feet) at higher speeds.

At first glance, one might not expect to find many ‘sub-standard’ road designs in Ontario. However, road design standards provide both ideal recommendations and minimum guidelines for geographic or other constraints. If those constraints require that a component of the road be constructed near or below minimum guidelines, the road designer will have to weigh the risk of increased collisions against the cost of major construction. In ideal conditions, a single substandard road component can usually be negotiated by drivers without difficulty, due to the factor of safety in the design guidelines. However, collisions often occur in less than ideal conditions.

Another important reason for the existence of ‘sub-standard’ roads is the gradual updating of road design standards over time. It is not practically or economically feasible for all roads in Ontario to be redesigned to current guidelines. For existing ‘sub-standard’ roads, the use of properly designed warning signs is a practical and feasible alternative to road reconstruction.

In summary, road design inadequacies can easily be overlooked in the initial stages of a claim investigation. In large loss collision investigations, it is critical for any potential road issues to be identified early by a qualified expert, to properly assess exposure to liability and subrogation opportunities.

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