

Triple Fatal Motorcycle Crash On Wellington Road And Ferguson Line South of London, Ontario

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Motorcycles such as those pictured in this file photo continue to over represent the number of fatal collisions in North America and a fatal collision on Friday evening, August 28th south of London, Ontario exemplifies the problem.

On Friday evening, August 28, 2015 two motorcycles were northbound on Wellington Road and approached Ferguson Line, south of London, Ontario. The driver of a pick-up truck was westbound on stop-sign-controlled Ferguson Line and the truck entered the intersection. The first motorcycle reportedly avoided the truck however the second motorcycle impacted the driver's door. The impact caused the pick-up truck to roll onto its side. The result was that the male rider and female passenger of the motorcycle were both killed, as well as the driver of the pick-up truck.

The four following photos provide views from a westbound vehicle that approaches Wellington Road and the view that might be afforded.



View, looking west along Ferguson Line on approach to the intersection with Wellington Road.



Westward view on approach to the Wellington Road intersection.



View as the driver of a westbound vehicle looks south on Wellington Road toward the location from which the two northbound vehicles approached.



View, looking southward onto Wellington Road from the perspective of a westbound driver on Ferguson Line.

Similarly, the four following photos show views looking north on Wellington Road on approach to the intersection with Ferguson Line.



View, looking northward along Wellington Road from several hundred metres south of the intersection with Ferguson Line.



Northward view along Wellington Road on approach to the intersection with Ferguson Line.



Northward view along Wellington Road on approach to the intersection with Ferguson Line.



Northward view along Wellington Road on approach to the intersection with Ferguson Line.

While the best evidence is available early in an investigation when police close down the area, the identification and interpretation of that evidence relies much on the experience of police and that experience is sometimes limited. Even though we do not have access to the damaged vehicles, or access to the site evidence at a properly early time, information can still be identified that can say much about how the collision events unfolded.

For example, the photo below is a view looking westbound at the intersection of Ferguson and Wellington from a couple of days after the collision. Collision evidence exists in this photo that might not be apparent at first glance. To orient readers to the location of that evidence we first need to focus on a spot of white, flare debris located approximately in the centre of the photo below.



View, looking west within the intersection of Ferguson Line and Wellington Road. The remnants of white residue from a police flare can be seen in the centre of the photo and this residue is located at the west side of the northbound left turn lane of Wellington Road.

Such white powder is typically found at collision sites where police have laid a flare that slowly burns off and leaves the white powder. This spot of white powder is located at the west edge of the left turn lane for northbound vehicles on Wellington Road. In other words, the photo above shows the direction in which the pick-up truck was travelling and this pickup truck would have passed through the northbound right turn lane, then it would pass through the northbound through lane and finally it would reach the

northbound left turn lane. The flare deposit would be located at the far edge of that northbound left turn lane.

The next photo takes us closer to that spot of white flare residue and now we might begin to see a short length of tire mark approximately in the middle of the photo. This short tire mark has some striations within it and it is accompanied by a thin scratch in the pavement. Such striated tire marks occur within the area of impact as a vehicle is struck in the side and it begins to rotate while also continuing its forward motion. Thus we are saying that this mark was likely caused by one of the tires of the pick-up truck in the approximate area where it was struck in the driver's side by the motorcycle.



Closer view, still looking westward, while approaching the spot of white residue from a police flare.



Close-up view of the short tire mark with striations and the thin scratch in the pavement.

Thin scratches in the pavement located next to such a striated tire mark are often caused by the contact of a wheel rim. Thus, at an impact a tire become compresses and the outer edge of its tread and sidewall will produce the tire mark and while this compression occurs the rotating rim also makes contact with the pavement leading to that scalloped, repeated and intermittent scratching as seen in the photo above.

Another similar, short tire mark existed in the northbound through lane as shown in the photo below. One might be tempted to believe that this mark was caused by the right rear wheel of the pick-up truck while the previous one was caused by the right front wheel.



Another short tire marks with striated markings within it was present in the northbound through lane as shown in this view, looking westbound.

These interpretations would need further study of the evidence. Certainly during our examination of the site no measurements were taken and much of the evidence was likely destroyed by emergency personnel and others so as to remove some of the more objectionable results that exist in such multiple deaths.

However the most likely scenario is that the front end of the pick-up truck was likely well into the northbound left turn lane of Wellington Road when the impact occurred. This is not a revolutionary comment, as can be seen when one examines how the northbound through lane of Wellington Road jogs to the right slightly at the intersection as shown in the photo below.



If we imagine the motorcycle travelling straight within the left third of the northbound lane, without steering, this photo demonstrates that the motorcycle would travel into the left turn lane which juts out into the path of the through lane at the intersection.

Thus, by simply travelling straight ahead, without steering, the motorcycle would be placed in the northbound, left-turn lane of Wellington Road, which is where the physical evidence suggests that the impact occurred.

In modern times many vehicles are now equipped with event data recorders (“Black Boxes”) which can be useful in providing evidence about the crash and pre-crash conditions that were often more tedious to uncover in a typical accident reconstruction. As we have no information about what type of pick-up truck was involved in this incident we cannot say whether the police are in possession of such data. If such data exists it might reveal the status of the vehicle up to 8 seconds before impact. As most accelerations into an intersection impact occur in less than that time it could be possible that police may have information about when the pick-up truck commenced its acceleration into that impact.

Judging by the characteristics of this site it would not be surprising that the pick-up truck accelerated for about 12 metres and the time for that action could be at least 5 seconds, although shorter and longer times could also be seen. Assuming that the pick-up truck driver had stopped to survey the area before commencing the motion there could be a considerable additional time, 1 to 3 seconds as an example, where the driver may be looking left, right or ahead before proceeding forward. When you are looking left you cannot also be looking right therefore this is an important matter when considering at what point the driver could have been observing the northbound traffic on Wellington. The head motions and fixations in any particular direction should generally be less than 2.0 seconds but are often much shorter. Assuming a delay of 2.0 seconds to scan the site and the additional 5.0 seconds to reach the area of impact, it could be that the pick-up truck driver's last look to the south could be in the range of 7 seconds before impact.

In 7.0 seconds a motorcycle travelling at a constant speed of 80 km/h (22.2 metres per second) would travel about 155 metres whereas at 120 km/h (33.3 metres per second) the travelled distance increases to 233 metres. It has been appreciated that, even in daylight conditions, the speed of a full-size vehicle becomes difficult to detect in a distance greater than 175 metres because the object becomes so small in the field of view and the change in size of the object is also very small in the field of view. Placing these problems in the context of a dark highway where the headlight of a motorcycle might be the only visible indicator of its presence, the ability of a driver to detect the high speed of a motorcycle in nighttime conditions becomes very limited.

Although police may be able to establish the speed of the pick-up truck from "black box" data, the same is unlikely for the motorcycle. Thus traditional methods must be undertaken. These methods normally dissolve to studying the system momentum and energy. And here is where the problems begin...

Momentum solutions can work well with good site evidence that clearly establish the point of impact, the final rest positions, the deceleration rates between impact and rest, and the pre-impact travel directions of the vehicles.

In motorcycle collisions the post-impact travel direction of the motorcycle can be difficult to determine. That travel direction does not involve the creation of a straight line between impact and rest, but rather, it is a determination of the travel direction shortly after separation from contact with the other vehicle. Where the motorcycle is projected into the air or is snagged into the structure of the other vehicle the calculations become very fuzzy at best.

The smaller mass of the motorcycle becomes problematic as well because it becomes more difficult to produce a narrower range in speed because the status of the motorcycle is hidden by the effects of the much larger mass of the pickup truck.

Similarly with energy calculations, the post-impact speed loss of the motorcycle is often difficult to determine. While sliding on its side a motorcycle may reach deceleration rates of .3 to even .6 g (if there is major gouging into the pavement) that wide range of possibilities can cause problems in establishing an eventual narrow range of calculated speed.

The larger problem with energy calculations can be in estimating the amount of energy dissipated by the deformation/crush of the collision partners. Thus the stiffness of the door of a pick-up truck is not widely available as its value is contaminated in controlled, side-impact tests by inclusion of stiffer areas such as the wheels and surrounding framing of the door. Even if a good value of stiffness can be obtained of the door of the truck, there is essentially minimal useful information for the energy dissipated by the motorcycle structure when it collides at high speed and major components become detached, etc.

The bottom line is that, providing such a challenge to an inexperienced police investigator often leads to misunderstandings and misinterpretations of the evidence and application of standard formulae.

An opportunity might exist to use the fact that the pick-up truck rolled onto its side as establishing the minimum speed of the motorcycle. Again problems exist here also. Usefully accurate values of the vertical centre of gravity of the impacting vehicles is unlikely to be obtained. Consideration of suspension effects, tire deflection, and vertical point of force application can be typical confounds.

Undoubtedly, police will report a definitive conclusion that one or the other party was at fault, as is always the case. However the reality is often much different.

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