Gorski Consulting Website

Archived News - 2013 - July

July 27, 2013

Six Fatalities in Lloydminster Crash – But Did They Drown?

We appreciate it is still early and the facts may not be fully developed with respect to the tragic collision in Lloydminster, Saskatchewan, this morning where six persons in a vehicle were killed following a collision with a tractor trailer. But the tone of the reporting articles continues a similar plot in previous incidents where drownings of vehicle occupants are not revealed or discussed. Only now, has CTV news disclosed that the car in which the six deaths occurred was found submerged “in a small body of water”. How much water is a “small body of water”? Was it large enough that the occupants of the vehicle drowned or were their deaths related to the impact. We would not be so suspicious of these reports if we had not previously reported on this website the number times we have observed drownings from vehicles entering bodies of water near a road and those drownings are downplayed so as not to question why the drownings had to occur.

Until we hear otherwise, we remain suspicious about this story as well.

Beware of Blinding Dust Clouds in Newly-Opened Northbound Lane Of Highbury Ave North of Fuller in London, Ontario

The curb lane of Highbury Ave in London, Ontario has been closed off for a number of weeks and was opened this week for regular traffic. However, someone did not realize the danger of the accumulated dirt/sand that remained on the surface of the road. In dry weather the dirt/sand became a dust cloud that rose into the line of sight of drivers as shown in the photo below.

View, looking south along Highbury Avenue, toward the newly re-opened, northbound curb lane where dirt/sand is stirred up into a blinding cloud.

The dust cloud can be unpredictable, sometimes being minimal while at other times becoming blinding as different vehicles and different vehicle paths make the results unpredictable. In many cases drivers can pass by safely but a sudden blinding cloud of dust which develops at a time when a driver needs to detect some unexpected obstacle can result in a dangerous situation.

Transient existence of a dust cloud can catch drivers by surprise or prevent them from seeing important obstacles ahead.

In wet weather the dirt and sand can cause the road surface to become slippery, especially in this vicinity where there is a substantial downgrade in the road.

In all, persons responsible for such construction areas are not always aware of the problems that can be created if they are not familiar with understanding safety needs of the driving public.

Modified, Motorized Recumbent Cycle A Danger On The Road

This week we observed that someone had motorized a recumbent cycle and was driving this on roads in western London, Ontario, as shown in the photo below.

View of motorized, recumbent cycle travelling through a construction zone in west London, Ontario.

This is a very dangerous action. The cycle appeared to be travelling at a speed similar to the vehicles around it but it would be extremely difficult to detect because of it very low profile. The rider was wearing no helmet which would be extremely dangerous because the height of his head would be very close to the height of the bumpers of most vehicles and it is well-known that bumpers are the stiffest portions of a vehicle. Any contact between this cyclist and another vehicle would certainly result in major head injuries.

Another view of the motorized, recumbent cycle.

Closer view of the rider and cycle.

The rider certainly did not appear to be young, yet we wonder if he truly understood the danger he was in.

Details of Small Evidence Can Say Big Things

Years of experience in examining evidence in motor vehicle collisions can have its benefits in being able to identify facts that would not be possible without that experience. Small bits of evidence that may appear to be inconsequential to the average eye, can speak volumes.

As an example, while examining the site of a recent intersection collision we found a small bit of evidence in the grass at the final rest position of one of the vehicles as shown below.

View of sliding tongue from a seat belt system lying on the ground at the final rest position of a collision-involved vehicle.

A closer view of the evidence is shown below and we can see that this is a “sliding tongue” or latch plate from a seatbelt system.

Closer view of sliding tongue.

Because the final rest positions of the two vehicles were substantial distance apart it is reasonable to believe that this piece of evidence was from the particular vehicle at this rest position and not from the other one.

We might wonder how this evidence came to be located here. For example, such a tongue does not just fall off a restraint system because its webbing passes through the access hole of the tongue. Thus, in order for the separation to occur there has to be some kind of separation of the seatbelt webbing. This separation could be from the collision forces but that would be rare. It takes tremendous force to cause a separation, or there

could be a sharp exposed piece of metal that could cause it, but those are extremely rare in the vicinity of a vehicle occupant where modern safety standards would prohibit such a happening. So, it is far more likely that the separation occurred because emergency personnel used their knife or scissors to cut the webbing to gain access to an injured occupant for transportation to an ambulance.

It is also highly likely that collision forces did not cause the webbing separation because this extreme force would exhibit itself in markings on the restraint system and particularly on this sliding tongue. And this leads us to the next area of discussion…loading marks on restraint systems from collisions forces.

But before that, look at the condition of this sliding tongue. It has dirt caked all over it. We can state that we examined this site only a few hours after the occurrence. So the evidence should be fresh. However, if you are aware of collision evidence you will be aware that, as this evidence sits for longer periods of time weathering occurs in the form of debris and dirt progressively lying over the evidence. So why is this tongue so caked with dirt? A likely conclusion is that, after cutting the seatbelt webbing emergency personnel spent some time at this location, tramping on the earth and stepping on this sliding tongue. So there was some concentrated action going on in the vicinity.

It is interesting to read the comments of many newer accident reconstructionists who become more and more reliant on the information contained in event data recorders ("Black Boxes") to tell them whether a seatbelt was worn to the point where they have no clue about how to look at a restraint system for evidence or what that evidence might mean. While we have made some initial steps to gain the interests of some of these persons it became clear that the issue passed over their heads as they delved back into the depths of their EDR reports. Anyway, our point is that this simple and singular piece of evidence can provide a large amount of information about the collision that occurred, how it occurred and what happened to the occupant who was wearing this restraint system.

The photo below shows the "front" surface of the tongue. There is no special reason to call it so but we use this as a convention to separate the discussion from the "back" surface. The front surface is the one that, when the seatbelt is buckled, is orientated away from the occupant's body.

View of front surface of sliding tongue.

Many years ago someone will little understanding of loading marks made reference to the metal portion of the tongue which is inserted into the buckle as the location where one should look for loading marks. This fairy-tale was bounced back and forth in the community of reconstructionists for many years until further research papers in the 1990s began to appear from researchers who actually had some reasonable experience and began to set the record straight. The place to look for loading evidence on a sliding tongue is at the rectangular access hole through which the seatbelt webbing passes. What you should be looking for are diagonal striations in the melted plastic of the tongue which occur when the loaded seatbelt webbing applied a large force through that access hole during the impact.

Below is a closer view of the bottom corner of the front face of the sliding tongue showing a loading mark with a slight angle to its striations.

View of loading mark on the bottom corner of the front face of the sliding tongue.

The reason why there the striations in the loading mark on the front face of the sliding tongue are at a diagonal are several, but the most common reason is that the loaded torso (shoulder) belt comes to the access hole at an angle as it travels from the D-ring and across the occupant's torso. One can tell whether the tongue is from the driver versus the right front occupant by noting the angle of the striations because they will be (generally) at 90 degrees to each other. But there are many caveats.

For example, not all such loading marks will be at a diagonal for several reasons. One reason could be that the torso belt was not loaded or was not oriented at the expected angle. Reconstructionists should pay very close attention to such a condition as it may relate to misuse of the restraint. At other times the impact force might be experienced directly to the side of the vehicle and the occupant travels directly sideways to the vehicle interior. In other instances the webbing might actually slip along the access hole, again indicating some complications that must be evaluated.

With respect to this intersection collision, it is generally observed that vehicles approaching at 90 degrees to each other from different roadways will collide in a fashion where one vehicle sustains frontal damage (called a “Front-Impacting Vehicle”) and one will sustain side damage (called a “Side-Impacted Vehicle”). Obviously that is not always true but in a large percentage of cases it remains true. So keeping in mind similar pre-impact momentums, the loading evidence on seatbelts from a Side-Impacted Vehicle will be different than those of a Front-Impacted Vehicle.

The photo below shows the backside of the sliding tongue.

View of backside of sliding tongue.

And the photo below shows a closer view showing the loading mark at the “upper” corner.

Closer view of the loading mark visible on the backside of the sliding tongue.

We do not want to prolong the discussion but, for the time-being, you should recognize that the loading mark you see in the above photos is from the driver's restraint system. But it would be difficult to recognize that it came from a vehicle that was struck in its side. Partly because this vehicle had a substantial forward speed producing a substantial deceleration along its longitudinal axis, thereby mimicking the conditions of a vehicle struck in its front end.

In general, experience is identifying small bits of evidence, and understanding what the evidence means, provides the investigator/reconstructionist with valuable information about how a collision occurred. Sometimes, when there are two or more vehicles to examine along with a large area of evidence at a collision site the investigator can be overwhelmed by the evidence, focusing primarily on the large facts, while failing to recognize the importance of little details.

July 25, 2013

Rollover Fatality On Highway 402 at Colonel Talbot Road

It is reported that a fatality occurred on Highway 402 near Colonel Talbot Road when an eastbound Suzuki rolled over. Police say the 24-year-old driver was not wearing his seat-belt and reminded motorists of the importance of buckling up.

In a very large percentage of cases the conclusion that someone was not restrained by a seatbelt because they were ejected in a rollover collision is valid. However, rollover collisions are a special problem and investigators can sometimes be misled by assuming the ejection automatically means non-use of a seatbelt. The conclusive judgment should be made by examining the markings, or lack thereof, on the restraint and other tell-tale signs. In the vast majority of rollover collisions “witness” or “loading” marks are not found simply because there is an insufficient acceleration to cause them. Even an event data recorder can mis-report the status of the belt use. So one must use caution and be very familiar with markings on the restraint system as well as the general evidence before concluding whether a seatbelt was worn or not.

We will likely examine the collision site later today and have further comments.

UPDATE: July 25, 2013; 1800 Hours

We have now had a chance to examine the collision site this afternoon and have the following to report.

The collision events commenced at the Colonel Talbot Road overpass of Highway 402. It would appear that the Suzuki was in either of the two eastbound lanes but the first evidence of its location was in the form of tire marks that travelled into the centre median. The Suzuki then rotated clockwise back onto the road surface and then continued to rotate clockwise until it slid into the south ditch where it rolled over.

The photo below shows a westward view of the eastbound lanes of Highway 402 from just east of the Colonel Talbot overpass which can be seen in the background. The Suzuki was travelling toward the camera and exited the pavement just in the foreground of this view.

View, looking west, from the median side of the eastbound lanes of Highway 401 at the location where the Suzuki travelled off the pavement surface and into median.

It is noteworthy that the entrance ramp from Colonel Talbot Road onto Highway 402 is located here and therefore there is a strong possibility that a vehicle entering the highway may have contributed to the interference of the Suzuki, causing the driver to take evasive action, resulting the Suzuki entering the median.

The photo below shows an eastward view along the eastbound lanes of Highway 402 from a similar position as the photo above. The tire marks from the Suzuki are not readily visible at the edge of the median at this location but they will become visible shortly as we move further eastward. Our vehicle is parked on the south roadside in the distant background and the Suzuki travelled into the south roadside just in front of the parked position of our vehicle.

View, looking east, along the median side of the eastbound lanes of Highway 402 at the point where the Suzuki travelled off the pavement surface and into the median.

As we move further eastward along the median, the photo below was taken looking back toward the west where now the tire mark from the Suzuki should be visible in the grass. This tire mark is actually widening into two marks from the two left side tires of the Suzuki as it is beginning its clockwise rotation.

View, looking west, along the median next to the eastbound lanes of Highway 402 where a tire mark is visible in the grass indicating the exit of the Suzuki from the road surface.

The photo below shows a view looking east just slightly further east from the position shown in the photo above. Now the tire marks from the two left side tires of the Suzuki should be plainly visible in the grass as they diverge, indicating that the vehicle is rotating clockwise.

View, looking east, along the median next to the eastbound lanes of Highway 402 showing the tire marks, from the left side tires of the Suzuki, visible in the grass.

What is not readily apparent in the above photo is that there is a steep slope to the grass median that would normally pull the vehicle into the centre of the median. It is surprising therefore that the driver was capable of bringing the vehicle back out of the steep slope and back toward the road surface while the vehicle continued to rotate clockwise.

View, looking west, from a distance further east, along the median next to the eastbound lanes of Highway 402. Now the two tire marks from the left side tires have diverged substantially indicating the increased pointing angle of the Suzuki as it is rotating clockwise and out of control back toward the road surface.

If we turn around again to face eastward the photo below shows how the Suzuki continues its clockwise rotation as indicated by the diverging of the two tire marks caused by the two left side tires, and indicating that the vehicle is now returning toward the eastbound lanes of Highway 402 as it will soon cross the lanes and rollover in the south roadside.

View, looking east, as the two tire marks diverge, indicating the continuing clockwise rotation of the Suzuki as moves back onto the eastbound lanes and heads across the lanes to its point of rollover on the south roadside.

In the above photo you can see the position of our parked vehicle which was visible in the distant background of the previous photos. It is now easy to visualize how the Suzuki's motion toward the south roadside was just in front of our parked vehicle.

In the photo below we show another westward view taken from a position where the tire marks from the Suzuki can be seen crossing back onto the road surface as the vehicle heads toward the south roadside.

View, looking westward, as the tire marks from the Suzuki are crossing the eastbound lanes of Highway 402 and approaching the camera as the Suzuki is rotating clockwise and travelling toward the south roadside.

And the view in the photo below shows how the tire marks continue to cross the eastbound lanes of Highway 402 as the Suzuki heads toward the south roadside where it rolls over.

View, looking northwest, showing the tire marks of the Suzuki as they cross the eastbound lanes of Highway 402 and the vehicle travels toward the camera on its way to rollover in the south roadside.

The photo below takes us to the south side of the eastbound lanes where we can see the tire marks exiting the eastbound lanes and heading toward the south roadside.

View, looking east from the south shoulder of Highway 402 showing the tire marks as they exit the road surface and travel toward the south roadside where the Suzuki rolled over.

The photo below shows where the Suzuki entered the south ditch and began to roll over just after crossing into the grass area. The Suzuki would have been sliding sideways and leading with the driver's side when this roll began.

View of south roadside where the Suzuki entered the ditch and rolled over.

The photo below shows the first of several gouges produced in the earth as the vehicle impacted the rising side of the ditch and then settled on that rising bank.

View of the first of several gouges in the earth where the Suzuki rolled to rest.

The photo below shows the final rest position of the Suzuki.

View of gouges and debris on the slope of the south ditch at the final rest position of the Suzuki

One can obtain a general indication of the speed of the vehicle and the severity of the rollover event by measuring the distance that the vehicle travelled during the rollover. The photo below shows how an assistant holds the zero end of the measurement tape at the end of the visible tire marks at the edge of the grass and we extend the tape to an intermediate point on the slope of the ditch.

View showing measurement taken from the beginning of the rollover to an intermediate point on the sloped bank.

We can see below how the distance to the intermediate point is 18.5 metres.

View showing a distance of 18.5 metres read on the measurement tape at the intermediate point as we measure the distance of the rollover.

We then take a second measurement from that intermediate point to the final rest position of the vehicle as shown in the photo below.

View showing the assistant holding the zero end of the measurement tape at the intermediate point while the tape is extended to the vehicle final rest position in the foreground.

We can see in the photo below that the distance from the intermediate point to the Suzuki final rest position is about 18.2 metres.

View, showing a distance of 18.2 metres from the intermediate point to the Suzuki final rest position.

Adding the two measured distances (18.5 + 18.2) indicates that the vehicle travelled a distance of about 36.7 metres. This is no longer a low speed rollover but gets into the moderate range. Using a tumble number for the deceleration rate would provide a speed of about 68 km/h at the beginning of the roll.

However we must remember that prior to this rollover the vehicle was in a yaw for a considerable time and distance as it passed through the median and crossed the eastbound lanes. Normally, in an official investigation we would take detailed measurements and determine the precise distance of that travel along with its level of deceleration. But since this is simply an educational exercise that detail was not obtained. But from just walking through the evidence we expect that something like 100 metres of pre-crash yaw marks would not be unreasonable. With an average deceleration rate of about 0.3g over that distance, the speed loss would be in the range of 87 km/h. And when we combine the speed loss from yaw and roll (68 and 87) we

obtain an initial speed in the range of 110 km/h. So this would be the approximate speed of the Suzuki as it left the roadway and entered the median as shown at the beginning of this article. Obviously this is not an exact calculation but it simply illustrates the process that we would follow to evaluate the collision.

Because of the location where the Suzuki entered the median with respect to the entrance ramp from Colonel Talbot Road, it would be advisable for police to research the possibility that another vehicle was involved which might have interfered with the Suzuki's travel and causing the driver to take evasive action to avoid a collision.

UPDATE: July 26, 2013; 0950 Hours

It is being reported in the official news media that the name of the 24-year-old driver who died in this rollover was Joshua Alderton of Sarnia Ontario.

Nothing has been stated however whether police are looking for a second vehicle that might have been indirectly involved in this crash.

July 24, 2013

Two Elgin County Teenagers Injured When ATV falls off "7 Metre Deep" Washout

View of a typical 2-seater ATV. The type of vehicle involved in the present incident is unknown.

Questions sprung out when we read the London Free Press news article indicating two teenagers were injured when their ATV was travelling along a "well used" trail but fell into a "washout" that was 10 metres across and 7 metres deep. That sounds like a very large wash out to occur without anyone being aware of it when that trail would appear to well used or traversed by a sizeable number of persons. The collision reportedly occurred at approximately 2020 hours last evening, Tuesday, July 23, 2013 although the location of this occurrence was not noted. At that time the lighting conditions would be daylight as the sun would not set until close to 2100 hours.

Of further concern is that the ATV reportedly caught fire. Again, whenever a vehicle catches fire in an incident the details of the happening should be investigated and reported to Transport Canada so that the safety of the vehicle can be evaluated. There could potential be a safety-related defect in the manufacture of these units that could eventually cause someone's fiery death, so it is not as situation that should be taken lightly. However, very frequently, local police do not understand that importance and do not realize that they should be notifying Transport Canada. It is a persistent problem.

July 23, 2013

Female Driver Found in Submerged Car on Town Line Road Was Local Fire Inspector Marlene Juttens

The Chatham Daily News newspaper is reporting that the unidentified female who was found in a submerged car in the ditch along side Town Line Road in Dover Township on Sunday, July, 2013 was the Inspector for the Chatham-Kent Fire Department, Marlene Juttens, 55.

While the article discussed how Juttens will be missed by her family and co-workers nothing was mentioned about the safety of the accident site, such as whether there were proper barriers installed between the roadway and the water. This is despite the fact that three separate drowning incidents have occurred in that vicinity in just over a year.

On March 31, 2012 two passengers died when a vehicle tumbled into a roadside ditch at 487 Altiman Road. On April 22, 2013 another driver was found in a submerged vehicle on Stewart Line.

July 22, 2013

Drownings at Roadside Ditches, Ponds & Creeks Continue Without Any Publicity of the Danger

Ditches, Ponds and creeks near highways are unpublicized dangers that lead to many fatalities in southern Ontario.

In the most recent case of a driver drowning, an unidentified female driver was found at approximately 0015 hours on Sunday, July 21, 2013 in a roadside, water-filled ditch along Town Line Road in Dover Township, near Lake St. Clair. News agencies made no mention of any special danger or concern, as if this should be a natural hazard acceptable by all.

Similarly, on March 31, 2012, Francis Myers was driving a GMC Jimmy SUV in the darkness of 0515 hours when he stopped in a driveway at 487 Altiman Road near Walpole Island, to drop off some passengers. While reversing the vehicle's wheel slipped and the vehicle rolled into a water-filled ditch next to the driveway. Two of his passengers died as a result of the vehicle being submerged.

Meanwhile, On April 29, 2012, two bodies were pulled from the Niagara River in Fort Erie, Ontario after a vehicle was found in the water at the intersection of Netherby Road and the Niagara River Parkway. Carlos Mejia, 30 and Joseph Holiko, 39, were the

deceased persons found in the vehicle. Again, nothing was mentioned in any news agencies of the danger posed by this nearby water.

Meanwhile, on April 22, 2013, 66-year-old, Alan Knowles of Wallaceburg died when his Dodge Ram 2500 Pick-up truck was found upside down in a water-filled ditch on Stewart line just north of Wallaceburg, Ontario. Again, no publicity of the common events that have occurred in the past year or two.

In fact, in a news article we wrote here on this website on March 30, 2013, we were concerned about these incidents and reported the following:

"We have described a number of collisions recently where a group of teenagers are in a vehicle that exits a roadway and their vehicle has been submerged in water resulting in multiple drownings. Six fatalities in Warren, Ohio; three fatalities in Alliston, Ontario, two fatalities on Highway 401 at the Nith River (but not teenagers), and so on. In the most recent incident in Toronto, Ontario there were five occupants in an Acura SUV that plunged into the Don River (Keating Channel)on Friday, March 29th, 2013. One of the teenagers was not able to get out of the vehicle and drowned."

A common theme in most of these incidents is that there are no barriers, or there are substandard barriers that allow vehicles to enter into these waters. Yet, historically, there have been decades of research identifying the need for roadside barriers to keep vehicles away from such dangers.

It would appear as if our website is the only one linking these incidents and revealing their common danger. There appears to be absolutely no informative help being provided by either the police who investigate this matters or the official news media who should be acting as the public's guardian watchdogs.

July 21, 2013

Fatal Rollover on Eastbound Highway 401 East of Colonel Talbot Road, South-West Outskirts of London, Ontario

Details are still sketchy but an eastbound Chevrolet Equinox SUV rolled over in the south ditch of Highway 401 at approximately 2030 hours on Saturday, July 20, 2013.

One of the five occupants of the vehicle died in hospital while the driver has reportedly been charged with a number of criminal charges.

Further details will be forthcoming shortly.

UPDATE: July 21, 2013; 1440 Hours

We have now had an opportunity to examine the collision site this afternoon. Unlike its reported location of "just east of Colonel Talbot Road" the actual site was quite a bit further east. The final rest position of the Chevrolet Equinox was about 1.1 kilometres west of the Westminster Driver overpass. That would place the vehicle about 5 kilometres east of Colonel Talbot Road. So the description was not much help if one was actually trying to locate the site.

The event occurred shortly before sunset so there was evidence that police had placed flares in the driving lane about 200 metres west of the vehicle's final rest position while likely keeping the passing lane open. We believe this simply because of the outline of flare deposits that was left on the roadway at that location.

Before reaching the actual collision site where the physical evidence was located we want to make note there can be a variety of physical evidence on a roadway that may or may not be related to the actual collision but because, we have only the site evidence to examine, we cannot be certain whether relatively fresh evidence is related to the actual event. So, for example we observed a relatively fresh tire mark in the eastbound driving lane from a vehicle that likely made a rapid exit onto the south shoulder, as noted in the photo below.

Tire mark located several hundred metres west of the rollover site indicating a vehicle had rapidly moved off the highway and onto the south shoulder.

Of course, this could have occurred when the eastbound driving lane was already shut down by police and some un-observant driver performed this action due to not recognizing stopped or slowed traffic – this is very common. Or it could be completely unrelated. You can appreciate, when we only have the site evidence to examine, these details must be kept in mind until resolved.

Anyway, as we proceed further east toward the actual collision evidence, the photo below shows a view from about 200 metres west of the final rest position (FRP) of the Chevrolet Equinox. Our car is parked off the south shoulder in the background next to the FRP of the Equinox. We placed four orange cones at 50 metre intervals westward from the Equinox FRP and so the cone at the right bottom corner of the photo is the 200 metre cone.

View, looking east, from about 200 metres west of the final rest position (FRP) of the Chevrolet Equinox.

Just further in the background you should be able to see the white deposits in the driving lane produced by the flares that were set up by the police as they continued their over-night investigation. The photo below shows a closer view of those deposits.

Closer view of white deposits in the eastbound driving lane of Highway 401 demonstrating where the police blocked off the road for their investigation.

Attention to these deposits is helpful in that they help to establish where the police determined the edge of the relevant, visible evidence. For example, if they had found tire marks or other evidence west of that 200 metre distance then they certainly would not allow traffic to drive over the evidence and the line of flares would have been set up further to the west.

Next, we draw your attention to the position of a measurement wheel that we had placed on edge of the south ditch as shown in the photo below.

View of measurement wheel referencing the location of the first small piece of red taillight lens found the south shoulder.

This measurement wheel references the location where we found the most-westerly piece of red, taillight lens on the south shoulder. There were many more pieces of this red lens material scattered further eastward from this location within the south shoulder and edge of the south ditch. Why we mention this is because the lens material looked like it had been deposited there very recently. Furthermore we will see shortly that the Chevrolet Equinox was likely, at least, partly in the driving lane in this approximate location. If you look in the background of the above photo you should be able to count that there are two orange cones visible and, since the cones are spaced 50 metres apart, the measurement wheel and the first deposit of red lens material are about 125 metres west of the FRP of the Equinox.

The photo below shows a lateral view, from the measurement wheel, looking north toward the eastbound lanes and you will be able to see a small piece of red lens material at the edge of the pavement.

View, looking north, from the position of the measurement wheel out to the south pavement edge where the first piece of lens red material is located.

The photo below shows a closer view of that pavement edge where the lens material was located.

Closer view of south asphalt edge where the first piece of red lens material was located.

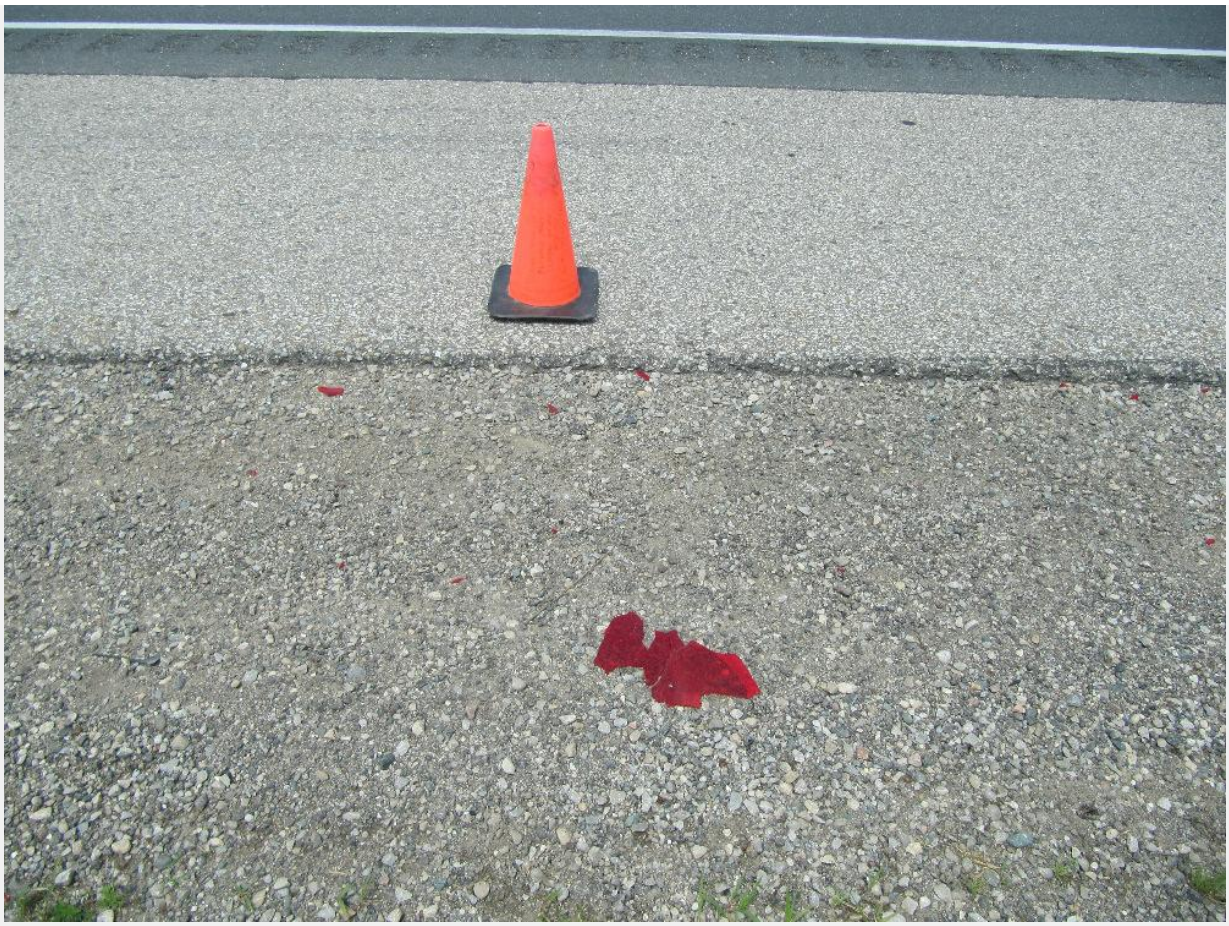
The photo below shows a close view of the actual lens material.

Close-up view of the most-westerly deposit of red lens material.

As we look further to the east the photo below shows the deposit of many more pieces of red lens material and the 100 metre cone is visible in the background.

View, looking east, with the 100 metre cone visible in the background, showing the larger deposits of red taillight lens material lying on the south shoulder.

For example, the photo below shows one of those larger areas of deposit of the red lens material.



View of larger deposit of red lens material located immediately at the 100 metre cone.

Of course, as discussed in our other website articles, it is possible to assemble such deposits to re-create the broken lens as shown below.

View, showing partial reconstruction of broken lens fragments.

The photo below shows the first evidence of a yaw mark in the eastbound driving lane which provides the first evidence of the motion of the Equinox as it began to rotate clockwise to its eventual departure into the south roadside. If you look you can see only one cone in the view so the tire mark must have commenced before at 50 metre cone.

View, looking east, showing the first evidence of yaw mark in the driving lane.

If we turn around to face westward, the photo below also shows the beginning of that yaw mark with the 100 metre cone shown on the left side of the view.

View, looking west, showing the beginning of the yaw mark in the foreground and the 100 metre cone on the extreme left edge of the photo.

And, if we recall, the first evidence of red taillight lens was at about the 125 metre location. So, is this a coincidence? Well obviously we have no other evidence to say yes or no other than what we see on this site. But in our opinion, the freshness of the evidence and its location suggests that this could all be related.

So we are prepared to state the following: It is possible that a rear end impact occurred on Highway 401 where the front end or right side of the Equinox came into contact with the left rear of a vehicle in the driving lane, or perhaps mid-way between the two lanes. This impact could have occurred in the vicinity 125 to 150 metres west of the final rest position of the Equinox. Obviously, this is a hypothesis, and it cannot be proven without further information. If we were officially retained on this matter we would have that “further information” but as we are simply performing this work as an educational exercise we are unlikely to be able to state anything further as to the cause of this collision.

However, we can examine the rest of the evidence with respect to the vehicle's exit into the ditch and its rollover. The photo below shows a view of the yaw mark further to the east and you can see it as it passes the 50 metre cone. Of course, you can recall that the vehicle came to rest adjacent to the parked position of our vehicle in the background.

View, looking east, along the yaw mark as the vehicle rotates toward the south roadside.

We would want to be careful at this point because, although the tire mark evidence indicates that the vehicle is rotating clockwise, the evidence is not exactly typical of what you would see. Typically, you would see at least three, curved, yaw marks and perhaps a faint fourth coming from the right rear tire. But that is not the case. There is only one prominent mark and there is also a very short tire mark alongside the prominent one as shown in the above photo.

If we were officially retained we would have a total station or laser scan of the site which would allow us to plot a scale diagram of the vehicle through the evidence. We would also conduct an analysis of the speed reduction of the vehicle as it passed through the

site. And obviously, our examination of the collision-involved vehicle would provide much valuable evidence. But that is not the case. So we have to be careful when we see evidence like this that is not exactly typical of a single-vehicle, loss-of-control event. Obviously, the unusual evidence could be explained if there indeed was a rear-end impact which then caused the Equinox loss-of-control.

As we move further eastward the photo below shows how the loss-of-control tire marks become visible as the vehicle exits the pavement and travels into the south roadside.

View of tire marks as they exit the pavement and enter the south roadside.

And the photo below shows the tire marks of the Equinox in the grass of the south ditch indicating that it is still upright at this point.

View of loss-of-control tire marks in the grass of the south roadside.

But as is typical, once the vehicle reaching the bottom of the ditch and the tires dig into the earth the vehicle is tripped and it begins to roll. One might detect the location of the initial gouging of the earth in the above photo although is it not particularly clear.

The gouging is more clearly visible in the photo below when we look back toward the direction from which the vehicle came.

View, looking north-west at the gouging of the earth at the end of the tire marks where the vehicle began to rollover at the bottom of the south ditch.

The photo below shows that, after the Equinox began its rollover it came to a halt after only a short distance as indicated by the area of trampled grass and debris in the photo below.

View, looking east, along the trampled grass of the south ditch where the Equinox rolled and then came to a halt.

Although we typically do not take detailed site measurements in situations like this we decided to conduct a general evaluation by anchoring a measurement tape to the furthest eastward evidence of the Equinox final rest position (FRP), as shown in the photo below, and this allowed us to take some general measurements of the location of some of the more prominent facts.

Measurement tape anchored to post at FRP of Equinox so that measurements can be taken to various points of interest.

As seen in the photo below we pulled the tape over to the gouges where the vehicle first began to rollover.

View, showing how the distance was measured from the Equinox final rest position to the gouges in the earth where it first began to rollover.

As shown in the photo below, that distance was about 18 metres.

View showing a reading of 18 metres on the measurement tape when measuring from the Equinox FRP to the point where it began its rollover.

If we used a tumble number (0.5g) to represent the rate of deceleration of a soft roll over the distance of 18 metres then we could say that the vehicle's speed was approximately 48 km/h when it began to roll. In fact this is an exaggeration since we took the measurement to the furthest eastward evidence for the FRP and other measurements were taken of other gouges which would place them in the range of 15 to 18 metres. So, overall, the vehicle's speed would certainly be less than 48 km/h when it began to roll. Not a low speed rollover but certainly not a high speed rollover either.

We also stretched the measurement tape from the Equinox rest position to the point where its tire first entered the grass ditch as shown in the photo below. That distance was 39 metres.

View of measurement tape stretched from the Equinox FRP to the tire marks at the edge of the grass of the south ditch.

If we applied an overall deceleration rate of 0.4g over that entire distance we would obtain a speed of about 63 km/h for the vehicle as it entered the grass ditch.

And if we applied an overall deceleration rate of 0.3g for the entire distance from the beginning of the yaw mark at 100 metres from the Equinox FRP then we would get an initial speed of about 87 km/h. This approximation is rather crude but it demonstrates that the vehicle speed in the vicinity of where it produced the initial yaw marking on the road was not unusually high. That does not negate the possibility that it was speeding much faster somewhere prior to the production of those visible yaw marks.

As a final exercise, we found some red taillight lens lying on the ground at the Equinox FRP and it is reasonable to believe that it came from that vehicle, as shown below.

View of broken taillight lens debris obtained near the Equinox FRP.

As a comparison we took that material over to the 100 metre cone where we showed you the other red lens material earlier in this article, as shown below.

View of lens material taken from Equinox FRP being taken over to the lens material at the 100 metre cone to make a comparison.

The comparison of the two samples is shown in the photo below.

View of comparison between two lens samples.

The characteristics of the two samples do not match as can be seen from the detailed photo below.

Close up view of comparison being made between the two samples of red lens material indicating that they do not match.

So whatever caused the red lens material to be strewn across the south shoulder of the highway is not known but we know that it did not come from the taillights of the Equinox. Obviously there could be numerous explanations for the existence of this evidence but we hope this is an interesting exercise to demonstrate what can be done to reconstruct motor vehicle collisions.

This is a typical part of our daily work when we examine a collision site or vehicle where we are involved in an actual assignment. There are a variety of activities performed depending on the what type of assignment is involved.

UPDATE: July 22, 2013; 0910 Hours

The London Free Press is reporting that the driver of the Equinox was James Lugela, 25, of Calgary, Alberta. He has been charged with impaired driving causing death, impaired driving causing bodily harm, failing to provide a breath sample, dangerous driving causing death and dangerous driving causing bodily harm.

There appears to be no mention of an actual impact with another vehicle and the newspaper article refers to a "single-vehicle crash". So one would get from this discussion that the red lens material we found on the shoulder was not related to the collision events. We agree that this could be possible but it is quite a coincidence. The yaw mark evidence is not typical of a simple single-vehicle loss-of-control. Rather it would be better explained if there had been a rear-end impact in the vicinity of 125 to 150 metres west of where the Equinox came to rest. But there is a limit to what we can conclude from just looking at the accident site without having the ability to examine the rest of the evidence.

UPDATE: July 22, 2013; 1300 Hours

Further news media reports indicate that the fatally injured passenger of the Equinox was Londoner, Mohamed Koko, 24.

July 18, 2013

Publicity Given To Fortunate Result In Rollover But Nothing Said About Freshly Graded Soft Shoulder That Might Have Caused Crash

Yesterday afternoon, July 17, 2013, a 2005 Kia SUV was northbound on Perth Road 23 just south of Mitchell, Ontario when the vehicle reportedly "…flipped end over end and landed in a wheat field" (Stratford Beacon Herald newspaper).

The publicity focused on the fortunate result that both occupants of the vehicle "…basically walked away from it" quoting OPP Constable Kees Wijnands. Constable Wijnands was then quoted as saying it was a "beautiful example" of automotive safety technology at work.

Well thankfully, the automotive technology did its job, but that is not the real story. Nothing was mentioned about what caused the collision and the 58-year-old female

driver was charged with “careless driving”. But based on what? Simply because the vehicle rolled over in a field? Why did the vehicle enter into a state of loss-of-control? Surely the police experts should have an opinion. Well, we examined the site this afternoon and we came to a different conclusion.

From the moment we parked our vehicle on the shoulder next to the location where the vehicle left the roadway we could tell from the marks left by the tires of our vehicle on the gravel shoulder that the news article and police were not telling the full story.

The photo below was taken from several hundred metres south of where the Kia rolled over. This northerly view of the east shoulder shows only one prominent tire mark in the gravel which is from the left side tires of our vehicle as we drove along it searching for the location where the vehicle rolled over.

View, looking north, along the east shoulder of Perth Road 23 (Same travel direction as the Kia) from several hundred metres south of the location where the Kia left the road surface and rolled over.

In fact, you can see our parked vehicle in the background and the point where the Kia exited the pavement is just in front of our parked vehicle. If you had studied any of our discussions about tire marks left on freshly graded gravel shoulders then you would immediately recognize what we recognized based on the visibility of the marks produced by the tires of our vehicle as we rode slowly along this shoulder. But let's look further…

If the previous photo was not obvious enough for you then the following photo should be even more revealing. Look how visible the tire mark is produced by the left side tires of our vehicle as we slowly rode along the shoulder searching for the collision evidence.

View, looking further northward along the east gravel shoulder toward the location where the Kia left the roadway.

Let us ask this question: If this shoulder had been left alone for six months or a year, through the cold of our Canadian winter, etc., and if you drove your vehicle onto to this shoulder after that length of time, would you expect to see such visible tire marks?

Having conducted extensive observations of tire marks on freshly graded shoulders our response is definitive: NO. A typical gravel shoulder that has been undisturbed will be hard-packed over that length of time and tire marks will not be that visible. This gravel shoulder was freshly graded, probably within a day or two of the collision date. But let us move on…

Interestingly, as we approached closer to the area of the Kia's roadway departure there was an obvious braking skid mark from a tandem-axled truck in the northbound lane as shown in the photo below.

View, looking north, showing a set of truck skid marks in the northbound lane of Perth Road 23.

Although we have seen a great deal of physical evidence over the years we are not magicians and there is no way for us to know whether these tire marks have anything to do with the collision events. For example, the Kia could have been passing the TT and it

could have lost control during that process causing the truck driver to apply hard braking. There is no way for us to know this without having some kind of knowledge of what drivers and/or witnesses observed at the time of the collision. We can form some opinion however when there is some observable evidence on the collision site but that does not take place until very shortly before the Kia exited the roadway.

View, looking north along Perth Road 23 at a point just south of the parked position of our vehicle and just south of the yaw marks produced by the Kia as it rotated counter-clockwise off the east (right) side of the road.

The earliest evidence produced by the Kia was in the form of yaw marks which began to be visible just north of the parked position of our parked vehicle, as shown in the above photo. The photo below shows a closer view of the beginning of those yaw marks in the northbound lane.

View, looking north in the northbound lane of Perth Road 23 showing the beginning of the yaw marks caused by the Kia rotated counter-clockwise and into the east (right) roadside.

The presence of these yaw marks and the vehicle's travel into the field where it rolled over is of less interest to us than the fact that the gravel shoulder was freshly graded and therefore its character could have played a role in causing this vehicle's loss of control. So let us leave the collision evidence for the time being and focus on those tire marks left by our vehicle as we travelled forward while we initially searched for the location where the vehicle left the roadway.

In the photo below it can be seen how we had been travelling forward along the shoulder and, upon discovering the loss-of-control tire marks of the Kia, we stopped our vehicle, placed it in the reverse gear, and backed-up our vehicle a few metres. Look how clear the tire marks are which show that motion.

View, looking along side of the parked position of our vehicle toward the tire marks produced by that vehicle as it moved forward and then was reversed backward to its parked position.

The photo below is another view of the tire mark produced by the left side tires of our vehicle at a location just in front of the final stopped position of our vehicle. Look how clearly the tire mark is visible showing that motion of moving forward, stopping, and then backing up on the gravel.

View of tire mark just in front of our parked vehicle showing how the vehicle had rolled forward to halt and then was reversed on a slightly altered path before coming to a final halt behind the camera.

Is this the kind of imprinting you could expect from a gravel shoulder that has been hardened by months of environmental conditions? And look again in the photo below which is looking back at our parked car and our tire mark visible in the foreground.

View, looking southward, showing the tire mark produced by our vehicle as it was backed into its parked position on the east gravel shoulder.

And again below, a closer view of the change in the path of our vehicle as it was being reversed, revealed by the details exhibited in the visible tire mark.

View of details visible in the tire mark of our vehicle's reversing into its parked position. This is a classic indicator that the gravel shoulder was soft and freshly graded.

You can clearly see our tire mark in the distant background behind our vehicle and also the change in direction in the foreground. This evidence is classic of a soft shoulder condition created by fresh grading of the shoulder.

So where is the important news informing the public that this shoulder was soft and could be dangerous if travelled at highway speed?

Even more misleading is the title of the newspaper article claiming the vehicle "…flips end over end two and a half times…". That is totally false. Not only is it that end-to-end "flips" almost never occur, but the physical evidence at the site clearly showed that the vehicle rolled from side-to-side, like almost all roll-overs do. So who gave this mis-leading information? Did the news journalist just make that up? Possible, but we doubt it. Why are police providing such false and mis-leading information?

The caption leading to the news article in the London Free Press is entitled "Couple lucky to survive rollover". No, another sensationalization. Yes, every rollover has an element of unpredictability, but to conjure up the story that this was some kind of high speed rollover that was more severe than most is completely misleading and is damming of the evidence provided by both the police and news media. This was a "soft" rollover (barrel roll) at moderate speed. Nowhere is it indicative that the vehicle was travelling at high speed.

More importantly the police and news media have a responsibility to inform the public of true dangers that exist on the roadway. Absolutely nothing was posted on the roadside informing the driver of this vehicle that the gravel shoulder was freshly graded, soft and dangerous to enter at highway speed. The Manual of Uniform Traffic Control Devices (MUTCD) is the standard followed throughout North America to ensure that all traffic signage is consistent. In that manual it clearly identifies a "Soft Shoulders" sign (Wa-29) which should be erected under the following conditions:

"*The 'Soft Shoulders' sign shall be used where soft shoulders present a hazard to vehicles that may leave the pavement.*

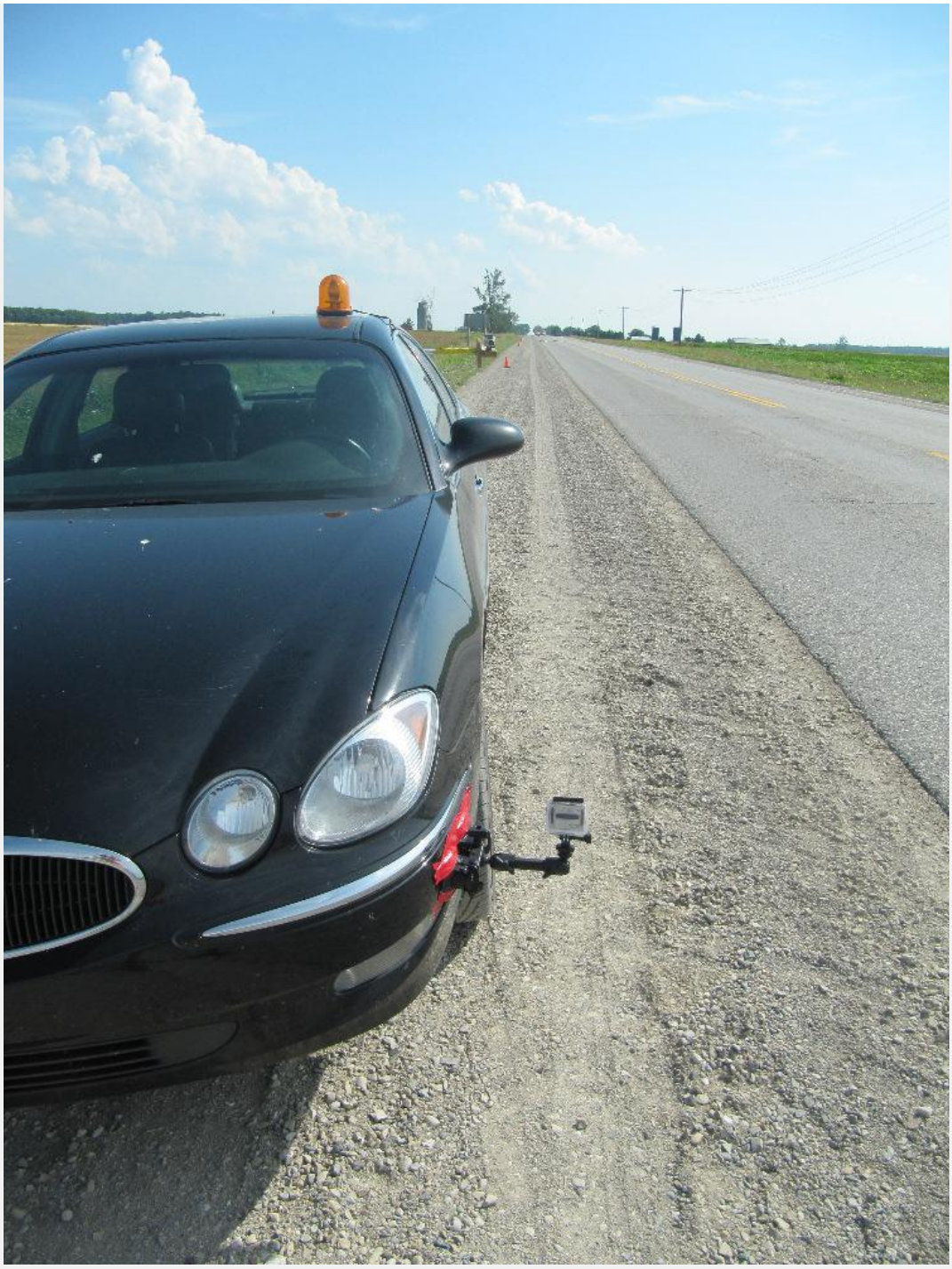
This sign should be erected at regular intervals (about 300m apart over short stretches and 900m apart on long sections) and beyond major intersections. The sign is intended for temporary application only, and shall only be in place as long as the soft shoulder condition exists. It should be removed after the shoulders have become thoroughly compacted."

Where were the police when it was required to determine whether this sign should have been posted? Where were the police in informing the news media that the public should be especially aware that travelling along this stretch of highway could be especially dangerous if a vehicle should stray off the paved road? Where were the police in requesting that a “Soft Shoulders” sign should be erected immediately along this stretch of road? If it was deemed that the sign was not needed where is the testing the police performed to determine so? What investigation did police perform by simply calling the local roads authority and determining when this shoulder was graded?

In addition to our observations at the site we decided to set up our vehicle for testing of the safety of the shoulder. In our traditional way we set up a number of video cameras on our test vehicle. For example, cameras were set up showing the right and left tires. The photo below shows a camera pointing to the right front tire.

View of GoPro camera pointing at the right front tire of our vehicle in preparation for testing.

The photo below shows a similar camera pointing backwards toward the left front tire.



View of GoPro camera pointing backwards at left front tire of our test vehicle.

We also attached a camera to a bike rack behind the vehicle to show a forward view of the vehicle's left side as shown in the photo below.

View of GoPro camera anchored laterally from a bike rack and the back of our test vehicle to point forward showing the left side of our test vehicle.

We also attached a camera in the foot-well area of our vehicle pointing at the brake and accelerator pedals so that we could document the application of these pedals during the testing, as shown in the photo below.

View of GoPro camera pointing to the brake and accelerator pedals with flashlights anchored in the area to brighten the view in this otherwise dark area.

We also attached a camera pointing at the speedometer/tachometer to show its condition during the testing, as shown below.

View of GoPro camera pointing at the speedometer/tachometer of our test vehicle.

We also attached a camera to the centre dash area, pointing forward through the windshield (not shown here).

Finally, we had a camera pointing at the “Gyro” app displayed on our iPhone as shown in the photo below.

View of GoPro pointing at the “Gyro” app displayed on our iPhone.

You might recall from our previous articles that the Gyro app provides a running display of six parameters:

1. Angle of the test vehicle along the X-axis indicating the vehicle’s pitch.

2. Angle of the test vehicle along the Y-Axis indicating the vehicle’s roll.

3. Angle of the test vehicle around its Z-axis indicating the vehicle’s yaw.

4., 5. and 6. Rates of change in the above three parameters in degrees per second.

So this app provided a fairly detailed description of what is happening to the vehicle body as it travels over the gravel shoulder in question.

We then began performing testing by first travelling northbound fully in the northbound lane of Perth Road 23 so we could demonstrate what the reactions of the vehicle would be. We then commenced a variety of tests at various speeds by dropping our right side wheels over the asphalt edge and by travelling partly and fully on the loose gravel shoulder. The details of this testing are too lengthy but these may be reviewed in a separate article in the Articles page of this website.

But the bottom line is that our exit onto the shoulder at 80 km/h proved dangerous. So much so that we immediately had to abort the test by lightly applying our brake, without any steering inputs, and gently reducing speed to a reasonably safe speed. Even at 70 km/h we were able to complete our test but still found it precarious and it required our full attention to maintain vehicle control. Finally, at 60 km/h, we could maintain control but this would be the maximum speed that could properly be maintained but still requiring our full attention not to induce any significant steering inputs.

So this shoulder was a danger to any driver who might wander onto it at highway speed. The fact that that more loss-of-control events did not occur here was just a roll of the dice. The fact that the couple who "walked away" from this collision were lucky is also likely due to the fact that the driver was likely not travelling at an abnormally high speed and that is evidenced by the distance the vehicle travelled after it exited the road and the moderate extent of damage visible to the vehicle perimeter. The police and the roadway authority are to blame for this event, not the driver. Police should be making certain that, when shoulders are being graded, there are warning signs posted to inform drivers of the danger posed by soft shoulders. Road authorities should also be posting these temporary signs but are not doing so.

And when news reporters come to interview investigating police it is absolutely unacceptable that police should not inform them of the soft shoulder so that the public can be warned of that danger.

Greying of Distinctions Between Vehicle Types/Pedestrians, New Hazards & A Dire Need For Our Critical Thinking

July has seen a sudden increase in the number of fatalities in the vicinity of South-Western Ontario. In the region of London Ontario there has been a spike in the number of fatal and serious injury collisions involving motorcycles, bicycles and pedestrians.

While the causes of these events are numerous and complex, it is noteworthy that the historically clear distinction between vehicle types is no longer so clear. SUVs seem to look like station wagons, motorcycles develop two-wheeled rear axles that mimic micro cars and bicycles develop engines that make it difficult to determine whether they should be classified as motorized vehicles.

As an example, the photo below shows two types of bicycles using as busy street in London, Ontario.

Traditional bicyclist riding ahead, near the curb, and bicyclist with trailer riding in middle of busy travel lane.

The bicyclist ahead is what we have traditionally grown accustomed to, as the rider stays close to the curb and takes up a narrow portion of the curb lane. The bicyclist behind is a relatively newcomer onto the scene. As the economy leaves a larger portion of poor persons to fend for themselves they become non-taxable entrepreneurs.

Will this unlicensed commercial hauler now be charged with hauling an unsecured load?

In this case the cyclist is collecting scrap metal for which he is likely paid in cash. An invisible part of the underground economy but not an invisible part of the traffic fabric. This new cyclist hauls a wider trailer behind his bicycle and now takes up essentially the full curb lane. There appears to be no particular anchorage of the metal materials he is hauling and if metal falls onto the middle of the lane the results could be interesting at the least.

What will officials do about this new creature? Unreasonable controls will be like squeezing a tooth paste tube – you squeeze one end and it just expands somewhere else. Banning this individual may cause pedestrians to start hauling this scrap in their own hands such as the pedestrian shown crossing the road in the photo below.

Scrap hauler minus his bicycle: How much safer is it to have this person walking in traffic?

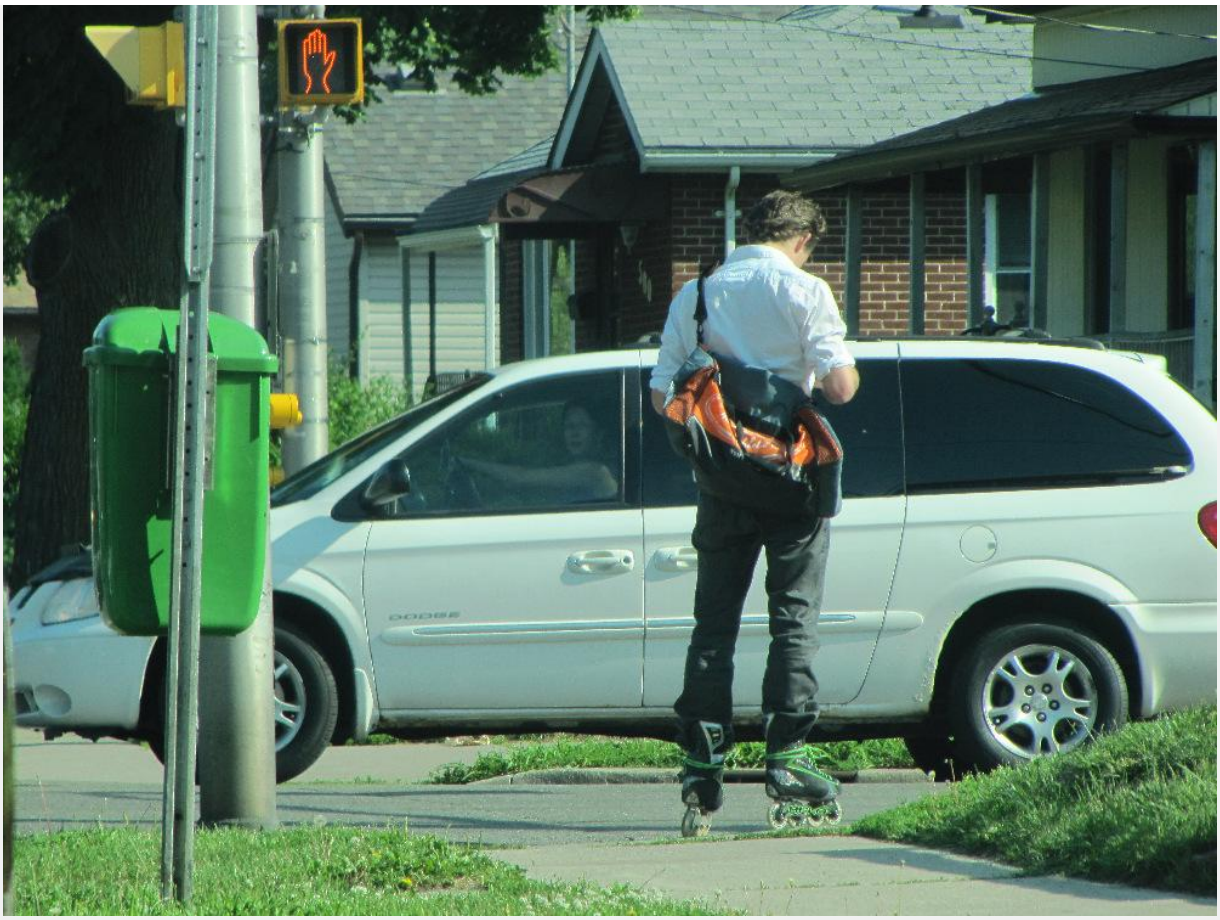
Will this result in any safety benefits?

On a similar note, pedestrians are now also becoming different creatures. As our population ages the number of less-rigorous persons existing near fast-moving traffic has increased as shown in the photo below.

Will we ban the weak and infirm from our roadsides to save costs?

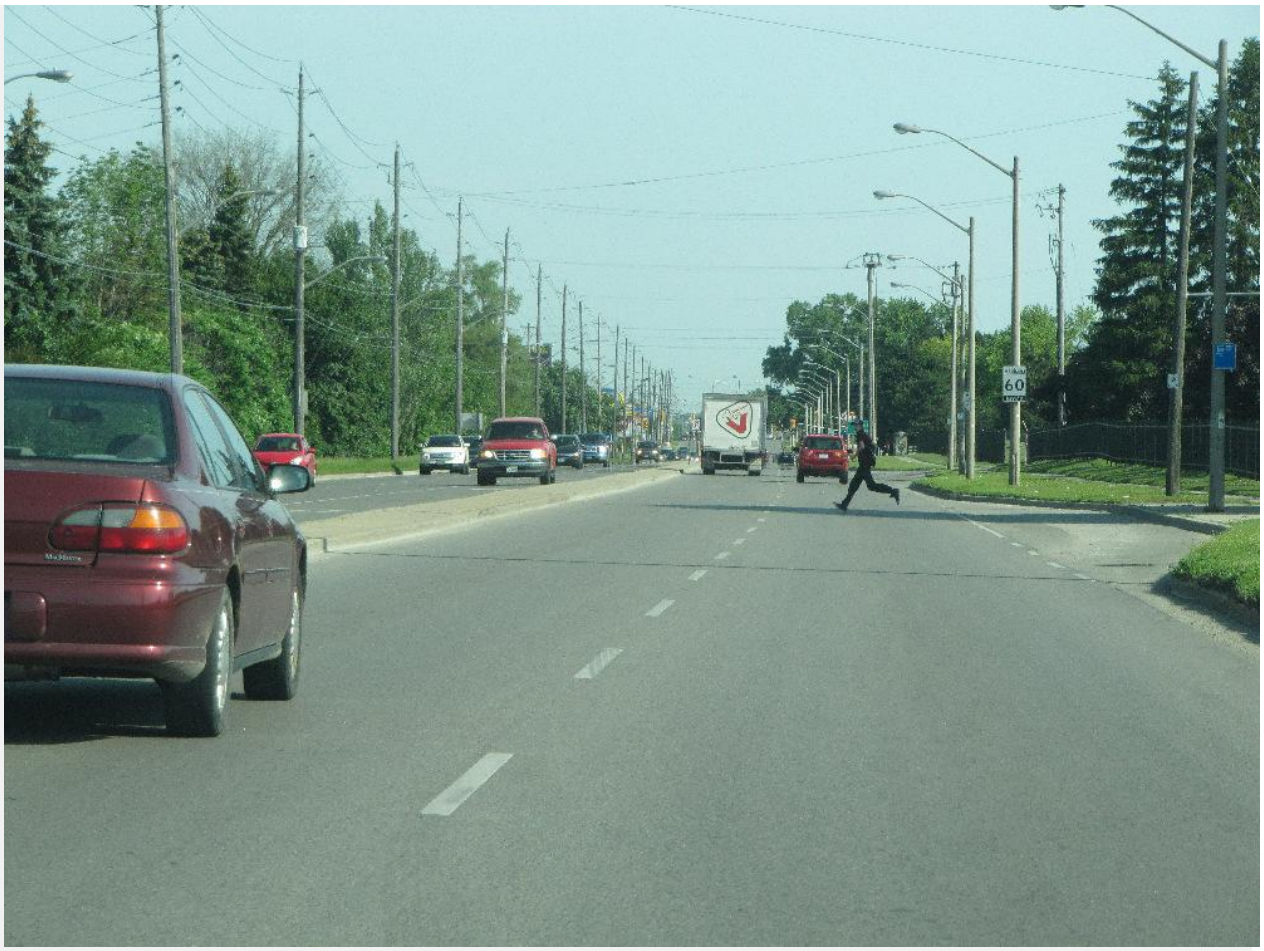
Will the risk management intellectuals now ban these persons from our roadsides as a cost-saving measure?

Pedestrians are now riding on roller blades and skate-boards, looking down and deeply into the face of their smartphones while listening to the music blaring through their ear-phones. Will we ban these persons too?



Some “pedestrians” are riding on roller blades and skate boards while looking down at their cell phones and listening to music coming through their earphones.

While others believe they are invincible, capable of reaching unheard of speeds, as they accelerate through traffic at the speed of sound…



Running into high speed traffic is a dangerous game of Russian roulette.

We also work very hard to protect our children and pets from harm…

Children and pets rely on our wisdom, experience and caution.

Yet we seem incapable at times of understanding that leaving a child or pet alone in a vehicle in summer temperatures can lead to an agonizingly painful death.

One individual who had locked his pet in his vehicle claimed that police had previously said it was OK because he had placed a bowl of water in the vehicle. If you believe this is OK we recommend that you put on your winter coat and sit in such a vehicle on a sunny summer day with a glass of water in your hand, even for a few minutes. But notify someone beforehand who can quickly rescue you. Never, never, leave a child or pet alone in a vehicle on a sunny summer day.

What all this discussion leads to is our belief that, as our society and technology is changing, we require ourselves to develop a better level of critical thinking if we are to remain safe while maintaining our precious freedom.

July 17, 2013

A Bad Idea…Enough Said

Ok, some things are such a bad idea that no words are required. Thus we present the following sequence of photos, as the event unfolded in front of us, without further comment.


XTRA
XTRA


XTRA
XTRA


XTRA
XTRA

Cornelius Van Dyk Killed in Motorcycle Collision at Intersection of Littlewood Drive and Carriage Road South-West of London, Ontario

Various news agencies reported on the motorcycle collision in which Cornelius Van Dyk was killed on the morning of July 16, 2013. The resulting photos displaying the vehicle final rest positions were somewhat puzzling at first because they appeared to show a significant head-on impact between a Pick-up truck and van. Below are several screenshots taken from photos/video of the vehicles at the site.

Screen capture of two vehicles involved in a head on collision at the noted intersection.

View of two vehicles involved in a head-on collision at the site of Van Dyk's motorcycle collision

Closer view of two vehicles involved in a head-on collision with Van Dyk's motorcycle lying on the ground next to the vehicles.

Upon an initial glance this is a somewhat peculiar result. Vehicles that come into a head-on collision rarely end up stopped with their front ends pressed against each other. Instead then deflect from each other, rotate and often come to rest within about a 10 metre radius of each other. But then how did this motorcycle get involved in this and why does this motorcyclist die? In the last photo we can clearly see that the motorcycle is lying next to the two vehicles. So how did all this happen?

Well, the police version has it relatively correct. The pick-up truck shown in these photos was headed southbound on Carriage Road and was approaching the intersection of Littlewood Drive. The photo below was taken yesterday (July 16th) afternoon and is showing the view that the pick-up driver would have had as he approached that intersection at Carriage Road.

Southbound view along Carriage Road on approach to the intersection with Littlewood Drive. This is the view that the pick-up truck driver would have had as he approached the intersection.

The view below is similar to the one above only it is closer to the intersection. The van that was in the head-on collision with this pick-up truck was westbound on Littlewood Drive and so it would be approaching from the left side of the photo in the truck driver's view.

Southbound, pick-up truck driver's view as he approached the intersection of Littlewood Drive. The van was at the stop sign of Littlewood on the left side of this view. The Van Dyk motorcycle would have been coming northbound or toward the camera.

The Van Dyk motorcycle was northbound on Carriage Road so it would have been coming toward the camera in the above photos. There is no question that the pick-up truck made a motion similar to a left turn to travel eastbound on Littlewood Drive. This is so because there was an obvious, fresh, gouge in the intersection to the east of the centre-line of Carriage Road where the initial collision occurred between the southbound pick-up truck and the northbound motorcycle.

In the photo below we show a southbound view of the intersection and in the noted gouge is in the foreground.

Southbound view showing east side of intersection with fresh gouge located in the foreground.

The gouge is shown in closer views in the two photos below.

Closer view of gouge.

As the pick-up truck was still in a left-turn motion at impact it continued that motion but was re-directed somewhat by the impact and thus travelled into the front end of the westbound van. The photo below shows an eastward view on the east side of the intersection where the pick-up truck and van collided and also came to rest. The sand-like material on the road surface was dropped there by towing or emergency personnel to soak up the oils and other slippery fluids that escaped from the two vehicles as they rested before being towed away.

View, looking east, toward the final rest position of the Pick-up truck and van (as shown in the initial photos above).

So the initial photos provided a puzzling result as this is something that is not often seen in terms of the head-on impact between the two vehicles in the second impact. The most obvious question is why the pick-up truck driver would have turned into the path of the motorcycle when, at face value, there would appear to be no obvious viewing obstruction. The answer to that question would require the knowledge of much more evidence about what was going on just prior to the crash and only the police have access to that information at this time. They obviously conducted some skid tests south of the intersection as shown in the photo below.

View, looking north along Carriage Road, showing the skid marks produced by police during their investigation. This would be the travel direction of the motorcycle.

We have noted on a number of occasions that police perform these tests in situations when they are not necessary. If the motorcyclist had braked hard and produced a set of skid marks then such testing would be useful as the police would then be able to say something about the speed that was lost and whether the motorcyclist was speeding. In the present case it is doubtful that a motorcycle skid mark existed in the vicinity of the police skid marks as such a skid mark does not continue into the area of impact and there are no indications of scrapes on the road surface that would indicate that the motorcyclist laid his bike onto the road surface as a defensive move.

There was also a visibility obstruction on the south-west quadrant of the intersection produced by a field of corn. That obstruction was likely not related to this collision but if the police had been knowledgeable about these requirements they would notify the road maintenance personnel. From past experience we highly doubt that this was done.

As a final comment, on our way to examine this accident site we were stopped in a line of traffic and noted a bumper sticker on the back bumper of a pick-up truck ahead of us and it had a very important message, as shown in the photo below.

"Save a biker" bumper sticker.

We recognize that this is a complicated thing, but one never knows if a simple reminder like this could save someone's life.

UPDATE: July 19, 2013; 1015 Hours

It is being reported that the southbound driver of the Pick-up truck that made the left turn motion and collided with Van Dyk's motorcycle was Scott Heming. Heming was charged with "making an unsafe left turn".

July 15, 2013

Questionable Motives in Police & Media Reference to "Speed" In Erik Rivard's Deadly Collision With Tree

In the current dynamics of news reporting it is not surprizing that news reporting organizations no longer have the budgets available for investigation of what they are told by police when fatal collisions occur. It is left to independent businesses such as ours to inform the public when all is not what it is reported to be. Such appears to be the case with respect to a collision of an eastbound Volkswagen Golf that collided with a tree on Wednesday evening, July 10, 2013 on Manning Drive, just west of Old Victoria Road, at the south-eastern outskirts of London, Ontario, Canada. The collision took the life of its driver, 19-year-old Erik Rivard of Belmont, Ontario.

Little of substance was mentioned about the collision in the official news reporting. The local London Free Press newspaper provided the typical few sentences describing the basics. It then made one brief comment that was obviously taken from what the investigating police had told them: "*Police now say speed was a factor in a single-vehicle crash that killed a man in south London Wednesday evening"*. No other factor was mentioned. Being busy with our own billable work we were not able to examine this accident site until the evening of Friday, July 12th. However, once we arrived it was clear that the scenario was not quite what was reported.

The photo below shows an eastward view along Manning Drive taken from several hundred metres west of the tree impact. This is the direction that Rivard's Volkswagen was travelling before it impacted the tree on the south (right) side of the road.

View, looking eastward along Manning Drive, toward the area of impact with the tree.

We draw the readers' attention to the quality of the road surface in the foreground. Rather unremarkable, certainly nothing to be obviously concerned about. There are no apparent pot-holes or deviations in the cross-slope. The white lane edge line is clearly visible…and so on. However, as we look further toward the area of impact in the distant background the quality of the road surface changes.

In the photo below we are still standing at the same location as the previous photo but we have used our camera's lens to zoom in toward the area of impact so that the features are compressed and appear closer than they would to the naked eye. In this photo it is possible to see our vehicle parked on the right roadside and the impacted tree can also be seen just to its right. However, it can also be seen that there are obvious disturbances in the quality of the road surface along the path of the Volkswagen before it struck the tree.

View, looking east, with the camera lens zoomed in to show the poor quality of the road surface along the path of the Volkswagen just before it struck the tree.

And in the view below we have zoomed in even closer to show a clearer view of the quality of the road surface.

View, looking east along Manning Drive, with the camera lens zoomed in to reveal the quality of the road surface just before the Volkswagen struck the tree.

Yes, the road surface has been patched in spots and there is even a larger area in the vicinity of the parked position of our car where the full width of the eastbound lane has been patched. No doubt, when approached, the City of London will claim that they followed their responsibilities according to the Minimum Maintenance Standards (MMS) that were established with the co-operation of the Province of Ontario to shield it from liability. But there is stark difference in quality of the road surface between what is visible in the first photo at the top of this article versus what is shown in the next two. Any reasonable person would conclude that the reason why this Volkswagen left the road surface and struck the tree could be related to the condition of the road surface and not just the speed of the vehicle. But that is not what was reported to the public.

As we get closer to the point where the Volkswagen left the road surface the photo below provides a closer view of the areas of patching.

View of poor quality of road surface in vicinity of where Volkswagen exited the road.

And the photo below provides a closer view from a position near the road surface. Note, for example, that the white-painted edge line is no longer present as the pavement near the edge has been crumpled into minute debris as the width of the effective lane has been reduced.

View of patches in roadway from a position close to the road surface.

Any reasonable person would conclude that the extent of patching of this road is to the extreme and not consistent with the intended purposes of patching small areas of pot-holes. When one patch is simply being placed over top of another patch to cover yet another patch then this is time to consider a complete re-surfacing of the road.

The question remains: Why would police not inform the London Free Press newspaper that this problem existed? We could partly understand why the Free Press reporter would not investigate for his or herself because we have come to understand that this is a question of economics in this age where newspapers do not have the money to spend on investigation like they used to before the age of the internet. But the police are the only ones with full and exclusive access to the evidence and they need to be trusted to investigate objectively. We have stated this before, but when those police are paid by the very same municipality (City of London) that could be sued over the conditions of a road there is reason to understand why roadway problems like this would not be reported. It is only when an independent agency such as ourselves, that his no stake in the outcome,

that the true nature of these problems can be revealed, even if only to the limited audience of readers on this website.

Unfortunately, we are limited in terms of what evidence we are exposed to as our only access is to the site evidence and that is sometimes altered by the activities of police and emergency responders. Sometimes it requires special evaluation to separate those portions of evidence used after the collision from those that are relevant to its cause. And obviously, if we had access to the other evidence that would exist on the vehicle, witnesses, etc., our job would be much easier. But it is an interesting challenge.

A second issue relates the actual comments that speed of the Volkswagen was a factor in this crash. Well, yes, speed is always a factor. If the Volkswagen had been stationary there might never have been a crash. And if all vehicles were stationary there would be no crashes, but then we would not get anywhere. The point is, what evidence would there be to confirm that this speed was the primary issue?

One common way for police to determine pre-crash speed is to download data from an event data recorder on the involved vehicle. This Volkswagen would not have such accessible data so that is not an option.

Police could also have found some pre-crash yaw marks and, using the features of those marks, they could also calculate speed. Although we were delayed (two days) in attending the site we did not observe any such yaw marks and we would expect those to survive for at least two days following a crash. So we strongly doubt that police had that information.

So the next step would be to sum up all the areas of loss of kinetic energy that was possessed by the Volkswagen and was transferred, or dissipated, into bringing the vehicle to a halt. Recall that, by virtual of the vehicle's motion, the mass of this vehicle possesses kinetic energy in the form of "1/2 mv squared". The "m" is the mass and the "v" is the velocity. The loss of the that kinetic energy is visible in many forms on the accident site and in the deformation of the vehicle. We cannot calculate the small amount of energy dissipated from vibration, sound, suspension issues, etc., but those are generally excluded due to their very small contributions.

It does not matter from which direction we start from so long as we include all those portions of energy dissipation. Before examining this let us look at some further photos that can be used to evaluate that energy loss. Due to the taller roadside grasses it is more difficult to show the tire marks of the Volkswagen as it exited the road but the photo below shows the location where that exit occurred. In the background you can see the damage to the tree where the impact occurred.

View of tire marks in roadside indicating the location where the Volkswagen left the road surface.

And the view below takes us along those tire marks closer toward the struck tree.

View of tire marks leading toward the struck tree.

And below is a view of the evidence at the struck tree.

View of evidence on approach to the struck tree.

And rotating around, the photo below is a view looking back from the tree toward the tire marks of the Volkswagen as they exited the road.

Turning around, this is a view from the struck tree back toward the tire marks as they left the roadway and approached the tree.

In examining the views of these tire marks our objective is to determine a distance when those tire marks are visible (we did not take any site measurements), as well as an estimate of the deceleration that might be generated during that travel. As an example, we can assume the distance is about 30 metres, but what rate of deceleration would we chose? This is dependent of the angle of the vehicle's travel as well as the extent of its undercarriage contacts and the height and density of the roadside grasses. The quantity of relevant research on this specific scenario is scant so where could police obtain a reliable source for that rate of deceleration?

Let us assume for the moment that there is a smaller angle between the travel direction and pointing angle of the vehicle. The taller grasses would lead to a higher deceleration, and there is a lack of major undercarriage contacts. I would assume a rate of deceleration in the range of 0.4g. Over a distance of 30 metres of speed loss would be about 55 km/h. So let's move on…

Let us ignore the issue of the tree impact for the moment and examine what additional distance was travelled by the vehicle from impact to rest. The next photo shows a view from the impacted tree along the path of the Volkswagen as it travelled toward its final rest position.

View, looking south-east, past the tree impact toward the path taken by the Volkswagen, through a grain crop, toward its final rest position.

Based on the observed evidence, the vehicle was vaulted into a counter-clockwise rotation after the glancing impact with the tree and it then commenced a rollover that terminated with the vehicle coming to rest on its wheels. The driver was ejected from the vehicle and came to rest roughly halfway along the vehicle's post-impact travel path. The final rest position of the vehicle is shown in the photo below.

View, looking south-east, at the final rest position of the Volkswagen in the grain field.

The view below is taken from the final rest position and looking back toward the tree impact.

View, looking north-west from the final rest position of the Volkswagen toward the tree impact in the background.

Again, we want to estimate how far the vehicle travelled from impact to rest and apply a reasonable rate of deceleration. For argument's sake we have selected a distance of 30 metres and a deceleration rate of 0.5g to take into account the "tumble number" of a soft rollover. This would lead to a speed loss of about 62 km/h. By combining the squares of the two speed losses (55 and 62 km/h) under a square root sign we get a combined speed of about 83 km/h. This speed estimate is absent the speed loss from impact.

Estimating speed loss from impact is not an activity that police are trained to do. A few more experienced police reconstructionists might attempt this in a long-form, manual fashion by writing out the algebra or even creating a Excel spreadsheet to obtain that speed from crush. But most economically, this is done through the use of a computer program such as CRASH. But even so, the measurement procedure can be tricky let alone being familiar with the program to a sufficient degree to obtain valid results. The bottom line is that police generally cannot perform this procedure and we are doubtful that in this particular investigation the calculation was performed. Particularly when

you consider how quickly it was announced by the news media that police believed that speed was a factor in this crash. So no, we do not believe that police performed that calculation and that, if something was said, from an objective side, it was a simple guess because of the extent of crush that would have existed at the driver's seating area.

Given the evidence at the site we would expect that there would be substantial intrusion onto the driver's seating area and that is what could trick police into believing that the speed loss was relatively high. But this was a relatively glancing impact of the tree. We can also stand at the final rest position of the vehicle and look back at how the vehicle was redirected by the impact and conclude that this re-direction was not large, even through the impact force was not applied to the centre-of-gravity of the vehicle. So again, facts such as these lead to a general expectation of the change-in-speed (Delta-V) of the vehicle.

If we said that the change-in-speed from impact was about 50 km/h, and if we combined this with the other two speed losses (55, 62 km/h) we would come up with an overall speed estimate of about 97 km/h. This would be the general estimate of the vehicle's speed as it left the road surface. Ok, 97 km/h is about 17 km/h above the speed limit so, yes, speed was a factor. But really, how unusual is that?

Our speed studies indicate that, on average, drivers may travel about 10 km/h above the posted speed limit on any given road. We have also observed that about 12 to 20 percent of drivers will be found travelling above 100 km/h on a highway posted at 80 km/h. This is just how all of us function, not just a few bizarre individuals. We only like to appear "holier than though" when no one can prove otherwise. But when our collective actions are exposed objectively we are collectively revealed to be speeders. While we are guilty of that, surely we should not expect to pay for it with our lives.

But some would say exactly this: "If you speed, too bad, you suffer the consequences". Never mind that our society also has a responsibility on the flip side to maintain roads to an expected, predictable standard so that we are not surprised or caught off guard.

Our position is that we have a responsibility to protect the large number of us who are not perfect and who travel faster than the speed limit. The society that some of us would want to create, where small guilts are paid for by multiple deaths, is not a society that we would want to expose even those who might deserve it.

July 3, 2013

Ambulance in Head-on Collision on Queens Line Near Tilbury Ontario

It is being reported that an ambulance was involved in a head-on collision with a van on Queens Line north-east of Tilbury, Ontario. The collision reportedly occurred in the mid-morning of July 3, 2013. Photos of the two vehicles at the site show a very typical scenario where both vehicles slid to opposite sides of the road and the debris would suggest that the impact was on the paved road surface. This was an off-set impact with the left portions of the vehicles' front ends and this is typical and common.

Although photos by news media have not shown a full view of the damage to the Ambulance the damage to the front end of the van was visible and this showed substantial direct contact extending along the left front and toward the driver's seated position. For damage to exist along the van's left side requires that the vehicle not rotate away and this is a sign of the direction of force being applied more centrally to the van's centre of gravity. This is usually an important finding when determining who was at fault and who had crossed the roadway centre-line. But the most telling evidence will be the existence of gouges on the pavement and this should be conclusive.

Frequently emergency vehicles attempt to reach the area of a crisis in a hurry and therefore drivers of these vehicles often take risks such as passing through stop signs and red traffic signals, or passing other vehicles on a rural highway.

View of a typical ambulance passing through a red traffic signal in London, Ontario. Such actions are sometimes necessary while at other times they pose unnecessary risk to the occupants of the emergency vehicle and those within its proximity.

Rarely does the public get a full and correct explanation of what occurred when an emergency vehicle is involved in a collision. This makes it difficult to develop corrective action when those facts are withheld.

Whatever happened in the present incident is unknown. The roadway where the accident occurred is straight and level thus allowing for passing motions to occur by vehicles approaching from either direction on Queens Line**.** The van driver reportedly sustained life-threatening injuries. Hopefully some further information will be available soon.

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