Gorski Consulting Website

Archived News - 2016 - July

July 26, 2016

Fatal Head-On Collision on Glendon Road, West of London, Ontario

This photo submitted on the OPP twitter account shows the final rest positions two vehicles that resulted in fatal injuries to one of the drivers.

A head-on collision on Glendon Road west of London, Ontario has led to fatal injuries of a car driver whose vehicle collided with the silver SUV shown in the above photo.

In previous discussions it has been demonstrated that real-life, head-on collisions occur in a common manner such that there is an approximate 50% overlap of the striking front ends, followed by rotation and sliding to final rest often for a short distance of about 10 metres. Obviously individual collisions will vary such that factors such as mass, speed, direction of travel and pre-crash yaw will alter these general findings.

Yet it is extremely rare to see the type of final rest situation shown in the above photo whereby it would appear that there was 100% overlap of the front ends and no post-impact rotation. We have not attended the accident site to determine where the vehicles came to rest with respect to a point of impact (POI) however it would be even more rare if the vehicles came to rest precisely where they collided.

We often say that the federal government's barrier crash tests do not replicate real-life collisions precisely because they involve a full-frontal impact where all the kinetic energy is dissipated in the crash such that the final rest position is also the point of impact of the vehicle. Well, this is one incident where the real-life collision would match the crash test.

In the 1980s we were involved in a Transport Canada funded "Fully-Restrained Occupant Study" in which we searched for real-life, severe, frontal impacts that would match the government barrier impacts. The rationale for this was to study the injuries sustained by the real-life victims to see if they matched the forces documented by the instrumented dummies in the controlled tests. This brought to focus the difficulty in finding such a head-on collision as essentially every head-on collision involved some form of partial overlap and post-impact rotation. However, the present collision would match the research very well.

The news media provided some useful photos of the two vehicles which have provided an opportunity to study the performance of the vehicles in the current tragedy. Even though this frontal impact was obviously quite severe, modern vehicles have many additional safety features that were not available in the 1980s. Most importantly air bags, seat-belt pretensions, knee bolsters and more efficient frontal impact energy dissipation by the vehicle structures. This is evident when we see the amount of frontal crush in the car of the deceased. We also note that the A-pillars of the car appear to have remained generally un-displaced. Such a finding is desirable as it provides some general clue as to the extent of structural intrusion into the occupant space and if the vehicle's safety features were given an opportunity to perform before any significant structural component reached the driver's seated area. Generally we do not see any obvious concerns about failures.

Thus we must ask, why did this driver sustain fatal injuries? Frailty due to age or illness could be a contributing factor. Delay to delivery of the deceased to a proper medical facility could be another factor. And of course, the severity of the collision might have been higher than the typical 30 to 40 mph (50 to 60 km/h) barrier impact where survival is more likely than not. It is these questions that should be answered whenever a fatality occurs because it is meaningful to the next instance where we might be able to make a meaningful change and actually prevent that future fatality.

July 25, 2016

Vehicle Fires - An Increased Threat To Transportation Safety?

This collision involving a school bus fire after striking a tree was not a trivial matter. While students in the bus reportedly escaped without injury the situation could have been much worse.

If new threats develop in highway safety is it likely that the public will be provided with sufficient warning to request further action by politicians and officials?

That question is posed with respect to the lack of quality information and investigation that becomes lacking as independent news-gathering agencies collapse into fewer and fewer sources and control over what becomes publicized is laid in the hands of fewer and fewer media power brokers.

Recent developments in the lack of detection of motor vehicle and roadside defects also leads to that question. Major recalls such as the General Motors ignition switch, or the Takata air bag, were delayed for years while the public was not informed of any problems even though, in the General Motors case, hundreds of innocent vehicle occupants perished.

As an example of our concerns, in the last couple of months there have been an unusually large number of vehicle fires, mostly in collisions, resulting in a number of lives lost in southern Ontario. Here is a small sample of the occurrences that have come to the attention of Gorski Consulting recently.

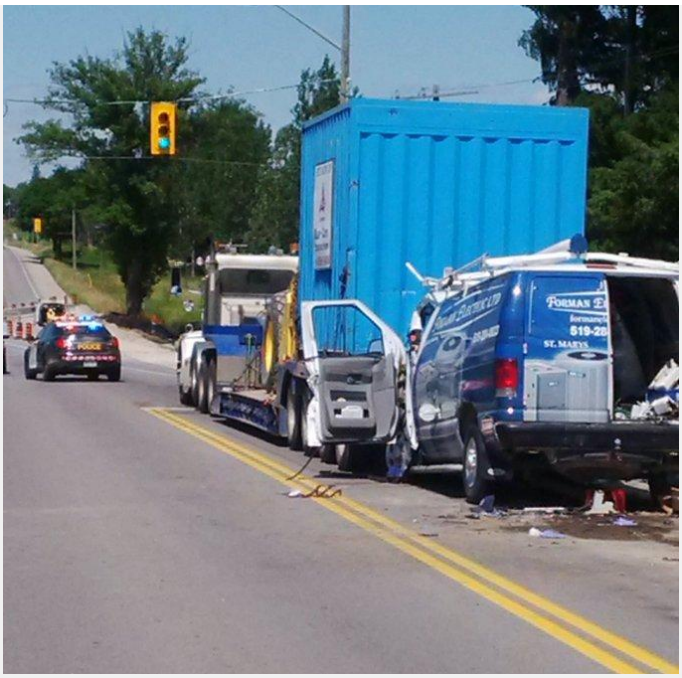
1. June 6, 2016, Line 86 Dorking, Ontario. A crash between a tractor-trailer and car caused fire that engulfed both vehicles. A female driver was pulled out of the car in serious condition but no specific information was provided whether the injuries were related to the fire.
2. June 6, 2106, Line 41 east of Road 104, Perth County, Ontario. A school bus carrying six students struck a tree and caught fire. The students were uninjured however the bus driver sustained injuries that were not specified if related to the fire. Most of the front end of the bus was consumed by the fire therefore it relationship to the injuries needed to be evaluated.
3. June 6, 2016, Highway 427 & Finch Avenue, Toronto. A tractor-trailer caught fire on the roadside but it was not clear what incident may have been the cause. Police did not indicate whether anyone was injured in the fire.
4. June 27, 2016, Highway 402 east of Colonel Talbot Road near London, Ontario. One person was killed and five persons were sent to hospital after a "multi-vehicle" collision. It was not made clear whether the fire had anything relevance to the death or injuries.
5. June 2, 2016, Riverside Drive bridge into downtown London, Ontario. A head-on crash resulted in a vehicle catching fire. A passerby helped a driver get away safely from the burning car. The driver reportedly suffered a minor head injury but it was not clear whether that injury was related to the fire.
6. June 24, 2016. A multi-vehicle crash involving a large fire on Highway 400 near Sheppard Avenue resulted in the deaths of 4 persons. While police blamed the actions of a transport truck driver for causing the crash no mention was made whether the fire caused the deaths or whether that fire could have been prevented.
7. June 19, 2016, Highway 401 near Drumbo, Ontario. A tractor-trailer hauling cinnamon buns caught fire. The truck was fully consumed by the blaze. The fire was blamed on an "electrical malfunction in the engine" but no further details, including in injuries were involved, were provided.
8. July 22, 2016, Fanshawe Park Road west of Wonderland Road in London, Ontario. A U-Haul truck caught fire causing burns to the driver's legs. The driver reported that flames commenced from the engine area as he was in the process of driving. No information was available with respect to the cause of the fire.
9. July 2, 2016, Queen's Quay East & Parliament Street, Toronto, Ontario. A Porsche struck a building and caught fire. A female occupant sustained life-threatening injuries while a male was taken to hospital with unknown injuries. The female subsequently died a few days later. No information was provided whether the fire was related to the injuries, how the fire was started or whether the fire could have been prevented.
10. July 24, 2016, Highway 407 in Brampton, Ontario. A bus collided with a vintage 1948 Chevrolet resulting in a fire in the car and the death of three of the car's occupants. No information as provided as to the cause of the fire or whether it could have been prevented.

The common thread amongst these incidents in the lack of any useful information provided to the public about what caused the fire and whether it could have been prevented. Just because a collision occurs it should not be accepted a that fire is an acceptable consequence. Indeed, motor vehicle safety standards exist to prevent that occurrence. With the increased use of electronics in vehicles it becomes vitally important to determine whether such devices and systems could be contributing to increases in the numbers of vehicle fires. Will there be a delay of several years before a line is drawn through these dots and someone suddenly announces that a problem existed for a number of years relating to vehicle fires? Clearly such a delay would not be acceptable.

More information must be made available to the public regarding how and why fires occur on our roadways. However, that goes to say about any aspect of collision causation where quality information is simply not reaching the public. Safety problems that are held in secret by a small group of individuals can lead to instances of lack of early reporting for a number of reasons; a conflict of interest being just one. Gorski Consulting continues to express the opinion that open channels of information exchange must be a primary requirement whenever members of the public are fatally injured.

July 21, 2016

Fatal Rear-End Collision At Highway 23 Construction Site Near Woodham, Ontario



This photo was provided by the OPP with respect to their investigation of a fatal collision whereby a northbound commercial van drove into the back of tractor trailer on Highway 23 near Woodham, Ontario in the afternoon of July 19, 2016.

The Ontario Provincial Police provided a photo (shown above) on their twitter account showing the final rest positions of two vehicles that were involved in a rear-end collision at a construction site just north of Woodham, Ontario on the afternoon of July 19, 2016.

Very little was mentioned about the collision by local news media. Curiously, the closest, larger, news outlet, the Stratford Beacon Herald newspaper, had just published an article the day before, July 18, 2016, about 3 separate collisions where motorists failed to stop for a stop sign but the collisions were of limited consequence. Yet, the fatal collision on Highway 23, which happened a day afterward and arguably involved a similar instance of a driver failing to detect a traffic control device, did not receive similar attention.

Meanwhile, CTV News in London provided very little information about the collision, only confirming that a fatal crash occurred but "It's not clear who is involved or how the accident happened, just the OPP confirmed the crash is fatal".

The Stratford Beacon Herald eventually provided some basic information. Perth County OPP were quoted saying that the collision occurred at approximately 1350 hours just north of Woodham with the additional quotation:

"Police said a float tractor-trailer unit was travelling northbound on Road 164 when the driver came to a stop for a red light controlling traffic at the south end of a construction zone. Moments later, a northbound Ford Econoline van collided with the rear end of the stopped tractor-trailer unit."

Such minimal reporting of the facts of the case is as good as not reporting it at all because the public should have been informed about what factors might have been at play.

Gorski Consulting visited the site on the evening of July 20, 2016 with the following findings.

The collision-involved vehicles were both northbound (i.e. travelling toward Mitchell, Ontario). Below is a view along Highway 23 from Woodham while approaching the collision site at a point where the first construction warning signs begin to be seen along the right side of the road.

While approaching the site this is a view looking northward from Woodham and some orange construction signs begin to be seen along the right side of the road.

One can appreciate that there is a down-slope on the northward approach to the site because only the top portion of the oncoming traffic can be seen in the distance. As we approach closer that on-coming traffic is more visible in the photo below and we note that one of those approaching vehicles is a tractor trailer. Thus one can sense that, from the long viewing distance of Woodham, there is a limited line of sight toward the point where the impact occurred.

The extent of the down-slope on approach to the collision site can be appreciated by noting that the approaching tractor trailer is not readily visible in the previous photo while it becomes visible here.

The head of a traffic signal begins to be visible in the above photo although not much else can be deciphered about what exists in the vicinity of that signal.

As we approach closer the photo below now begins to show the content of the various signs, which are rather numerous. Still, we are unable to see what lies at the bottom of the down-grade where the traffic signal exists.

On approach northward to the collision site a number of signs are seen along the right. The traffic signal can be seen in the distance however the road surface in the vicinity of that signal and what exists around it is still not visible.

As we approach still closer to the collision site we begin to see the bottom of the down-grade in the photo below.

As we approach closer the bottom of the down-grade begins to be visible as construction is taking place of a small bridge. In the foreground one can see the skid marks from testing conducted by police to estimate the road's co-efficient of friction.

In the above photo we can also see the skid marks from 4 braking tests performed by the police investigators. Such testing is performed by a police cruiser to determine the co-efficient of friction (or aggressiveness) of the road surface. Such testing is useful in speed calculations when an investigator wants to know how much speed might be lost if a driver applied maximum braking at a specific location or time before impact. Thus the above skid marks have nothing to do with the actual collision as they were created by police after the collision event.

In the above photo we can see a black and white regulatory sign indicating "Stop Here On Red Signal". In fact, from this vantage point, the "Here" is not visible as the location of any white, traffic, stop bar is not visible due to the extent of the down-slope.

As we proceed further north we can see the area of construction in the photo below and we can also see the traffic signals on the far side (north) of the construction with the white, traffic stop bar that has been created.

This photo provides an indication of the area of construction at the small bridge.

Turning around to face southward, the photo below shows the layout with the bridge in the foreground and the collision site in the background. Note that the truck approaching the stop bar is travelling down a downgrade and, once stopped, northbound drivers would have a limited view of its presence over the hill crest. The traffic signals are also in the valley of the downgrade and the signal heads would also be in a "low" position with respect to the approach of northbound drivers.

Turning around to face south, this photo shows the layout of the area of impact which is in the background, beyond the bridge. Note that the stopped, northbound vehicle is on a downgrade and northbound vehicles approaching the area would have a limited view of its presence.

Returning to face northward again, the photo below shows the likely area of impact. At the bottom of the photo below we can see the deep gouges that were likely caused at the point of impact whereas in the short distance ahead is where the striking Econoline Van likely came to rest.

View of deep gouges in the foreground likely indicate the point of impact between the vehicles whereas the fluid stains in the background likely indicate the striking Van's rest position.

It was noted that the gouges were approximately 27 metres south of the white, traffic, stop bar. A tractor trailer would likely be slightly shorter than that distance therefore it is likely that the front end of the truck was close to the stop bar when its rear end was struck. However, although there are a number of braking marks in the area, none of these match the type of evidence that would suggest that the driver of the Econoline Van applied any maximum braking before impact. This might be viewed as unusual.

A driver stopped and informed us that there had been another collision at this site only a couple of weeks ago involving southbound traffic. This driver also provided an explanation for the current fatal collision: Texting while driving.

While inattention caused by use of a smart phone could be one explanation for why there was no evidence of emergency braking before impact, it is not the only

explanation. There can be subtle influences in the causation of a crash that may not be immediately obvious. As an example, the photo below shows a northbound tractor-trailer approaching the collision site. We can see the construction sign that says "Prepare To Stop" but it does not indicate where the stop needs to occur. Is it 50 metres ahead or is it 500 metres ahead? A driver travelling at 80 km/h could apply emergency braking on dry asphalt and come to a halt in less than 40 metres. Why would such a driver find it greatly important to hover over the brake pedal if the distance to the required stop location is 500 metres away? It would not make sense. So the warning sign is of some benefit but only marginally so. But also, notice the height of the tractor trailer as it approaches the traffic signal and think about the height of the eyes of a driver that might be following the truck.

A view of a northbound tractor trailer approaching the area where northbound traffic is supposed to come to a halt while waiting for the traffic signal.

The photo below shows the tractor trailer as it travels further toward the location of the traffic signal. Note now how the height of the truck blocks the view of the traffic signal, partly because that signal is located down in the valley where it is out of sight of the driver travelling behind the truck.

View of the northbound truck as it comes close to the stop location at the traffic signal. The height of the trailer blocks the traffic signal head in the truck's lane.

Yet, that does not provide a full explanation, as demonstrated in the photo below. Even though the northbound truck is blocking the view of the traffic signal in the northbound lane it should still be possible to see the other traffic signal that is above the southbound lane. So there should not be a problem, or not?

As the driver is approaching the tractor trailer from behind, the one traffic signal is blocked from view by the trailer yet the other traffic signal in the other lane is still visible so one would conclude that the signal should be visible.

Re-examining the above photo, what if there was another tall vehicle, such as another tractor-trailer travelling southbound in the above photo? Could such a southbound truck block the view of the other traffic signal? Examine the top edge of the trailer in the above photo and follow a straight line across to the other traffic signal. The top of the trailer, if it was moved into the southbound lane, would block the other signal. As an example, the photo below shows a southbound tanker truck whose height blocks the view of the traffic signal.

View of a southbound tanker truck whose height would block the view of the traffic signal in the southbound lane.

So if there were two tall vehicles in the vicinity of the traffic signals then both of those signals could be blocked from view by a northbound driver.

However, that still does not provide enough justification. Even if both traffic signals were blocked, surely, a clever lawyer would argue, the very large truck stopped in the northbound lane should have provided ample warning that it was stopped and the driver of the Econoline Van should have been prepared to stop. So whether the driver was texting on a cell phone or not, the Econoline Van driver was still inattentive.

This is the line of argument and reasoning often provided in court. That a driver must be cognizant of events ahead such that, if a collision like this occurs, it is clearly the fault of the driver who did not recognize the obvious hazard. The argument seems quite

plausible as the stopped transport truck would appear to be an obvious and very large hazard.

However, in accident reconstruction and safety research we attempt to avoid these simple and obvious conclusions while recognizing that the cause of real-life events can be complex and cleverly difficult to illuminate. The ability and opportunity to detect a hazard is plagued by factors that often exist at the time of a crash but become difficult to reveal. And those factors could be multiple, such that one their own they might not appear to pose a significant problem however, in combination, they may represent a large part of the reason why a collision becomes fatal.

Thus, as scientists we want to study the environment to which the driver was exposed. When the driver of the Econoline Van was looking ahead did he do so at an inappropriate time such that he was not looking toward the stopped truck at a time when he could have detected its status?

What about the characteristics of the truck such as its brake lights? Could the bright sun be shining on those brake lights thus reducing the difference in reflected light than what would typically be the case on a cloudy day? If there were a hundred bright flashlights surrounding the brake lights would it be as easy to detect their illuminated status than if the brake lights were surrounded by the darkness of the underside of the trailer? When there is bright sunshine it can sometimes create a condition similar to those bright flashlights such that the observer's visual senses have greater difficulty in distinguishing the status of the brake light.

What was the contrast between the back of the trailer and its background? If the back of the trailer was of a similar shade of blue as the sky which might have formed its background it might be difficult to detect it in a reasonable time. Even if the truck could be seen, was there enough information for the Econoline driver to detect that the truck was stopped?

There are numerous factors that need to be considered and this often makes a proper conclusion more time consuming. The world's bar stools are filled with expert pundits who know precisely what occurred in any given situation because to them everything is obvious and needs little consideration. Unfortunately, this same mentality lives amongst some in the investigative and judicial community where certain persons have seen it all and they do not need to learn anything more because they learnt it all long ago. This is the very attitude that many of us as teenagers had toward our parents, only realizing adulthood that our parents became much smarter and they grew older.

July 17, 2016

Fatal Rollover on Highbury Ave North of Commissioners Road in London, Ontario - What is Known From the Site Evidence

View, looking north, along the northbound lanes of Highbury Ave, north of Commissioners Road. A northbound Chrysler Sebring rolled over on the right shoulder in the distant background.

A northbound Chrysler Sebring was travelling on Highbury Avenue at approximately 2314 hours on Saturday, July 16, 2016 when the vehicle rolled over on the east (right) shoulder resulting in the death of its female driver. A female passenger was transported to hospital however the extent of her injuries is not known.

The final rest position of the Sebring was located on the right shoulder just south of the parked vehicle shown in the background of the above photo. This photo was taken at approximately 1020 hours on Sunday, July 17, 2016, or about 10 hours after the occurrence.

The uncommon fact about the site evidence is that there was no tire mark evidence on the paved portion of the northbound lanes even through the vehicle was in a state of an advanced counter-clockwise rotation as it moved onto the east shoulder. Given this

advanced state of rotation it would be expected that the vehicle would have travelled at least 100 metres, in a "state of emergency" action, before it left the first signs of tire marks in the east shoulder. Lack of such tire mark evidence on the pavement often occurs when a roadway is wet or damp thus preventing the rubber of the tires from imprinting onto the pavement. However, the weather conditions at the time of the crash were clear, with no report of any precipitation.

Tire mark evidence is most easily deposited on the painted edge lines of a lane such that, even if the road surface is wet or damp, such tire mark evidence is often deposited on the painted lines and the vehicle's path can still be determined. However, examination of the painted lines in the vicinity of where the vehicle would have passed over them revealed that no such tire mark evidence existed.

View, looking north, along the east shoulder of Highbury Ave in the vicinity where the "yaw" tire marks of the Sebring first became visible as the vehicle travelled off the pavement.

As the Sebring exited onto the east gravel shoulder it was rotating counter-clockwise as it continued to travel toward the grass roadside. Eventually, as the vehicle approached a sideways orientation, its rear wheels entered onto the steep grassy slope next to the shoulder and the right rear wheel dug into the earth. This was the likely the primary mechanism that commenced the vehicle's rollover.

View of the tire marks visible on the east roadside next to the shoulder where the Sebring entered into a sideways orientation prior to beginning its rollover.

View, looking back, southward, at the tire marks in the east roadside where the Sebring was rotating counter-clockwise prior to commencing its rollover.

View, looking north, at the approximate location on the east roadside where the Sebring began to rollover. It came to rest in the foreground of the parked vehicle shown in the background.

View, looking north, along the east shoulder of Highbury Ave, showing a dark stain at the pavement edge where the Sebring came to rest.

View, looking south, showing the dark stains at the final rest position of the Sebring.

In total, the Sebring travelled approximately 40 metres along the east shoulder and roadside before commencing its rollover. It then rolled for approximately 37 metres before coming to rest. Under such conditions the Sebring would have been travelling approximately 69 km/h when it commenced its rollover and about 88 km/h when it entered the east shoulder. This does not indicate the true travel speed of the vehicle because the vehicle decelerated an additional, unknown, amount prior to entering the east shoulder.

Evidence at the site indicated that, at least, one of the occupants was ejected from the vehicle during the rollover. Although the rollover speed was significant, an occupant can be relatively safe provided that he or she remains in a vehicle. Decelerations in the range of 0.5g are typical during such rollover events therefore these can easily be tolerated by a seat-belted occupant.

Although there were likely ejections involved in this incident that does not necessarily mean that the occupants were not wearing their seat belts. There are uncommon situations where a roof may be crushed in a lateral direction such that it is moved away from the head area of a driver or passenger thus exposing the occupant's head to the outside environment. There are also uncommon situations where a seat belt develops "slack" or extra webbing in the system such that it does not restrain the occupant properly. A detailed study by an experienced reconstructionist would include close study

of the roof side rails for specific indications of occupant head contact. It should also involve detailed study of the seat belt for signs of its improper functioning.

All the facts from this collision cannot be determined from just the examination of the collision site. However, what the public can learn from this tragedy is that it is important to stay inside the protective cage of a vehicle during a rollover and that tragic circumstances take place when an ejection takes place. Ejection cannot always be avoided, however proper seat belt use is a vital factor. "Proper" seat belt use includes paying attention to the amount of "slack" or extra webbing and ensuring that the seat belt webbing is tight to the body. One should also make sure that there is no interference of any objects or cargo with the proper functioning of the seat belt. Modern vehicles contain "pre-tensioners" that are small explosive devices that contract the webbing slightly when a threshold acceleration is sensed. This greatly improves the chance that a seat belt will lie tight against an occupant's body as a collision event is commenced. Equally, side-curtain air bags will deploy at the commencement of a rollover thus protecting the occupant from possibly exiting the protective cage of the vehicle. Thus one should consider buying a newer vehicle because of the advanced safety features that are currently available.

July 16, 2016

Do We Really Understand the Meaning of Bicyclist Safety?

The headlines read that pedal-cyclist fatalities have been on the rise in the last year or so. But Why?

While in the past bicycles were used for recreation in mild conditions, lately they are used for essential transportation in less than ideal conditions as shown in the above example.

In London, Ontario there are many on-road bicycle lanes that assume the road width will allow for side-by-side travel of bicycles and motor vehicles with the assumption that the road width stays constant. However with the advent of persons using bicycles for essential transportation there are an increased number of cyclists found on city roads in less than ideal conditions. Snow that cannot be removed from city streets ends up covering a portion of the lane where cyclists travel and the lane becomes narrowed, resulting in potential dangerous interactions. A new provincial law requires that motorists give cyclists a lateral width of one-metre clearance when passing and this results in further confusion and potentially dangerous conditions.

In warmer weather City officials have deemed that motorized and pedal-powered traffic will follow lines of newly-painted "green zones" which are strictly designated for cyclists. This belief would appear to be remarkably flawed as shown in the three photos below.

While travelling southbound on Hyde Park Road in the west end of London, Ontario motorists are expected to detect the thin line of a pedestrian "green zone" ahead where the cyclist lane suddenly veers into the driver's lane.

The sudden veer of this cyclist "green zone" into the curb lane of southbound Hyde Park Road means that drivers will have very little warning that cyclists will be moving into their path which requires motorists to change lanes if they intend to proceed further along the road.

Skid marks from the dual wheels of heavy trucks within the cyclist "green zone" reflect the fact that conflicting conditions exist, as would be expected with this unusual design.

It is no wonder and that a cyclist would receive fatal injuries from impact by a large truck when that cyclist blindly believes that it is safe to veer into the path of a large truck because the painted lines "say" it is safe.

July 15, 2016

Porsche, Paul Walker & Latest Fiery Death In Downtown Toronto

The well-known star of the Fast & Furious movie series, Paul Walker, died in this fiery crash of a Porsche on November 30, 2013.

On November 30, 2013, the famed actor, Paul Walker was killed in a fiery crash of a Porsche sports car on an industrial Road in Santa Clarita, California. Subsequently, Walker's family sued Porsche with respect to its design in lacking the prevention of a fire that could not be extinguished in time to save the actor.

Fast forward 2 1/2 years to downtown Toronto, and a fiery crash of a Porsche at Queen's Quay East and Parliament Street on the evening of July 2, 2016. A Porsche caught fire after striking a building. The male driver sustained unknown injuries whereas a 35-year-old passenger sustained life-threatening injuries that resulted in the pronouncement of her death on July 15th.

While the causes of these crashes may be debatable, the manner in which information about the Toronto crash was made available is revealing. Although there was a significant fire involved, absolutely no comment was made whether the fire led to the occupants' injuries, how the fire was started, or how the collision might relate to the civil suit in the Walker case.

Whether there is a genuine defect in the design of the Porsche or not, the public needs to be kept informed of such developments so that they can make informed decisions about the proper functioning of the reporting of events that lead to their deaths.

July 14, 2016

Serious Injury In Head-On Impact of Tree On Gainsborough Road in West London, Ontario

News media reported that at approximately 1315 hours on Wednesday, July 13, 2016, a vehicle collided with a tree on Gainsborough Road, east of Hyde Park Road in the west area of London, Ontario. No specifics were provided other than a female sustained serious injuries and the road was closed for further investigation. As there was no mention of an involvement of a second vehicle Gorski Consulting decided to attend the site as part of our continuing research into the causes of loss-of-control collisions. By the time we attended the site just before 1900 hours the road had already become reopened to the public.

The detection of a significant collision with a tree is not difficult and one can usually locate the site by simply examining the nearby trees while travelling along the road. This was the case as we passed westward on Gainsborough Road and observed the fresh damage to the tree on the south roadside. Turning around and parking on the south roadside west of the site gave us an opportunity to prevent any additional spoilage of the evidence since it was clear that the striking vehicle had been travelling westward. The photo below shows an easterly view of the stuck tree a short time after we entered onto the site.

View looking east along the south shoulder of Gainsborough Road with the impacted tree visible in the foreground on the right portion of the view.

One can generally observe a straight and level roadway and the pavement surface is in generally good condition.

In a large majority of tree impacts on rural roadways the pre-impact conditions are such that the involved vehicle begins to rotate about its vertical axis (begins to yaw) and the subsequent impact is with the side of the vehicle. It is uncommon for an impact to involve the front end of the vehicle. Yet, a brief study of the evidence suggested that a front end impact occurred.

The photo below shows a view of the struck tree looking west.

View looking south-west at the struck tree on the south roadside of Gainsborough Road.

Normally, when a vehicle has entered into a yawing rotation, the tires will be sliding sideways and they will rip out the grass along the path of the tires toward the tree impact. Thus the path of the vehicle along with the path of the individual tires can be clearly observed in the curved lines of the torn grass. One can note in the above photo that no such paths of torn grass are visible. This would be common when the vehicle is moving straight ahead and the tires are rolling over the grass.

Furthermore, substantial braking or acceleration would also produce tears in the grass as the slippage of the tires would cause the visibility of the tire marks. Again no such evidence is visible.

We might then proceed further backwards along the vehicle's path to explore any evidence that might exist of how the vehicle exited the paved road surface. The photo below shows another westerly view from the middle of Gainsborough Road.

View looking west. The second large tree on the south roadside was the one that was struck.

A vehicle that is rotating out of control will usually deposit curved yaw marks on the pavement. But no such evidence is visible in the above photo.

Another typical fact is that, where a tree is struck on the south side of a road, in a large percentage of instances, a vehicle's right side tires will have wandered onto the right (north) gravel shoulder and it is possible to detect "whiter" curved marks on the otherwise grayer portion of the gravel shoulder. The photo below shows a view of the north shoulder of Gainsborough Road from several hundred metres east of the tree impact. No such yaw marks are visible.

View looking west showing the north gravel shoulder where "whiter" yaw marks are often created when a vehicle yaws during pre-crash rotation.

Granted, various emergency vehicles, witness vehicles and curious bi-standers would park their vehicles on the shoulders and it is not uncommon to have such delicate yaw-mark evidence destroyed shortly after a collision event. Yet, someone who is experienced at looking at a large amount of such evidence can become quite proficient at detecting such marks even when they have been run over and apparently made invisible to the common eye.

Examination of the type of debris lying around the struck tree, and past it, also led us to believe that pre-crash yaw likely never occurred and that the vehicle struck the tree with its front end. Subsequent news media photos of the site were published and these showed partial glimpses of a vehicle with apparent damage to its front end.

Such events become more intriguing as they do not follow the typical scenario. In the old days when vehicles did not become so sophisticated one could raise a high probability that, if a vehicle struck a tree with its front end, the driver was attempting to commit suicide. Pre-crash medical conditions (i.e. heart attacks) were not as commonly raised as a possible cause and other incapacitations (sleep and drug impairment) were also less often raised as possible causes. However, vehicles have become much smarter.

It used to be that traction control was the initial and only smart thing that a vehicle could do. So if a slippage of a tire was sensed the force to that tire was reduced until

traction was regained. But then came Electronic Stability Control (ESC), radar and video.

As of 2011 all light vehicles manufactured for the Canadian market must be equipped with ESC. What ESC does essentially is to prevent the yawing (rotation about the vertical axis) of a vehicle by regulating the tire force at each tire to keep the vehicle pointing in the direction that it is heading. In many instances that is a tremendous safety advantage. However, the tragic fatal collision involving Princess Diana in a Paris tunnel in August of 1997 demonstrated that keeping a vehicle pointing straight ahead does not always prevent a collision, in fact in some instances, it can increase the severity of an impact. In the case of an impact with a narrow object such as a tunnel pillar or a tree, it can be beneficial to cause the force of the impact to be applied further away from the vehicle's centre-of-gravity thus inducing more post-impact rotation and post-impact spin-out. By causing a vehicle to remain pointing in the direction that it is travelling there is a larger chance that, when an impact occurs, the direction of force will be closer to the vehicle's centre-of-gravity and therefore the collision will be of greater severity.

Safety researchers have an answer to that: by believing that there is much more structure at the front of the vehicle than at its side, various safety devices can be deployed to manage the additional collision severity when the impact is to the front end. But tell that to the occupants of Princess Diana's vehicle. Sometimes the pill is deadlier than the poison.

Returning the collision on Gainsborough Road, what is it that actually occurred there? If the vehicle was of a newer vintage then it might be equipped with an event data recorder (EDR or "Black Box") which might include information about the activation of any ESC system. It is not possible for us to know from just examining the evidence at a collision site, although changes in the characteristics of yaw marks can provide some clues. In those instances where we are officially retained to examine such a collision we would have access to all the police investigation documents and the outputs from the downloads of any EDRs. But much depends on the quality of the police investigation because once the evidence is destroyed it becomes much more difficult and time consuming to retrieve it from secondary sources.

The U.S. National Highway Safety Administration has recently been publicizing the fact that fatality rates have been rising since the 4th quarter of 2014. Preliminary data from 2015 indicates a rise of about 7.7% over 2014. At a time when vehicles are becoming smarter and fatality rates have been dropping for many decades, this sudden rise should be treated with serious inquiry. As usual the information about the Canadian experience is stuck in some black hole. It is unlikely that the Canadian public will ever get any useful information about what is happening with collisions in Canada. In the present collision on Gainsborough Road, news media could only obtain distant photos of the striking vehicle without any useful information from which to deduce what factors might have been at play. Even so, news reporters can hardly be expected to inform the public with any degree of expertise about what might have occurred. Lack of information, or

the withholding of information, about how occupants of vehicles are being killed and injured is not a way to determine how we might change the new course of events.

July 11, 2016

A Lot of "Grey Matter" In Motorcycle Collisions

Another motorcycle collision occurred yesterday, Sunday, July 10, 2016 on White Oaks Road in the south of London, Ontario, resulting in serious injuries to the rider. There are always injuries to motorcyclists, that is a given. However, why these collisions occur is a case of "grey matter". It is a case where the "grey matter" in the rider's brain is an important component. In other words, much of whether a collision occurs is dependent on the thinking, or thinking ahead, by the rider.

When a collision occurs there is also another definition of "grey matter" in that the reason why the collision occurs in not black and white, but very much grey. In other words, it is not that easy to place the blame on one thing with any large degree of certainty.

In the case of the collision on White Oaks Road, the southbound rider approached a curve to the left that also contained a T-intersection with another road. In this complex geometry the road surface is banked, or super-elevated, for the curve, but then that super-elevation must be removed in the vicinity of the intersection to allow a smooth transition between the roads. Thus an unsuspecting, in experienced, or inattentive rider can spill the bike in this changing cross-slope, as was likely the case in the present collision. But that is not solely due to the carelessness of the rider but that the environment, and perhaps bad luck, might also have played a part. Scrape marks could be seen on the pavement within the intersection where the motorcycle fell on its side and slid for 16 metres before striking the curb on the south west quadrant of the intersection. The motorcycle was then launched into an narrow, steep-sided ditch, where it slid an additional 29 metres, colliding with the end of a culvert, where it came to rest.

View, looking south along White Oaks Road toward the T-intersection at Blakie Road. A motorcycle travelling around this left curve went out of control and spilled into the right ditch in the background.

Looking south, the motorcycle fell onto its side and slid toward the lamp post in the centre of this view.

Dark scrape marks seen on the pavement in the foreground indicate where the motorcycle came down before striking the curb in the background.

Dark markings on the curb indicate where the contact was made.

After exiting the road surface the motorcycle travelled into the right ditch where it collided with the end of a culvert in the background.

Fresh damage at the end of the culvert indicates where the motorcycle came to rest.

Minus the deceleration from the noted impacts, the total, known deceleration distance was about 45 metres (16 + 29). Using a deceleration level of 0.5g would result in a known speed loss of about 76 km/h. This would be slightly under the posted speed limit sign at the culvert which indicated that an 80 km/h zone was just commencing at that point.

But what do you do about the speed loss from the impacts? What was the additional speed loss from striking the curb? Well slightly higher that simply sliding along. So not a big issue. But the culvert impact could have been more dramatic as the corrugated metal pipe was bent and scraped and the earth around it was displaced. What kind of speed loss could be assigned to this? Since police have laid a charge of "careless driving" against the rider they will undoubtedly have an explanation at trial. But in reality there is much "grey matter" here. There is no definitive answer to the speed loss in such an instance.

Ultimately, a motorcyclist faces the price whenever he or she climbs onto the machine. There is no guarantee that any fancy maneovering or extensive training will get you out of serious injury because of the extreme vulnerability that every rider is placed on the roadway. No, large and noisy tailpipes will not help. Heavy leathers will only prevent the scrapes, but not the fractures or internal injuries or brain injuries.

So it really is a case of "grey matter" for the rider. When you decide to ride you can reduce your risk by thinking ahead and being constantly vigilant. That takes a lot of "grey matter".

July 1, 2016

Hidden Transportation Defects - Terrorists Are Not The Only Ones Who Hide Land Mines In Public Places

An Associated Press article (published yesterday) described the concern expressed by the U.S. National Highway Traffic Safety Administration (NHTSA) that owners of old Honda products are in great danger because they have not taken their vehicles in to repair faulty Takata air bag inflators. U.S. Senator Bill Nelson was quoted as saying "These vehicles are death traps".

However NHTSA and vehicle manufacturers are not new players in the defects game. They know fully well that when a defect is announced there will be a percentage of vehicles that will never be brought in for repair. Thus these vehicles become old land mines, placed in public vehicles, sometimes undetected by purchasers of used vehicles. It is well known that when a defective product enters into the general market it is not easy to remove it. Thus where such defects are massive, involving millions of products, the potential of future deaths becomes that much more significant. Thus a reasonable

person would recognize the importance of detecting the existence of the defective product before it becomes a massive cancer of enormous proportions. But there is evidence that a number of recent transportation defects remained hidden for many years, allowed to grow to encompass a large population of the transportation environment before the whistle was blown.

Takata air bag inflators are just one example. While inappropriate explosions occurred there was no one with the technical ability to detect the problem. The technical information needed to identify that an air bag defect exists is hidden primarily with the product manufacturer. Even the installation of event data recorders causes many independent investigators to scratch their heads and possibly suspect that something inappropriate might have occurred but no solid proof can be found. For example the possibility that police investigators would have sufficient knowledge and training to detect that an air bag deployment was defective is highly unlikely, yet police are the primary investigators who have exclusive access to the evidence which is subsequently not preserved and/or destroyed. Takata air bags existed as far back as 2001 in some Honda products yet in 2016 NHTSA and the manufacturers are now scrambling around trying to locate the owners of these vehicles, fifteen years later. But Takata air bags are not an isolated problem.

A similar problem existed with General Motors ignition switches. Again, air bags failed to deploy for many years but no one had the technical expertise to raise a proper warning. Hundreds of drivers died because the defect was allowed to spread, cancerously, for many years into a large percentage of the vehicle population. When the lack of an air bag deployment occurred the "experts "said "Oh, it was likely because the collision was not severe enough: you need to know what acceleration pulse was experienced by the sensors and control module before you can question the performance". But few had the technical capability to conduct these investigations. Where was NHTSA when all these events were happening? Did General Motors know that the defect was occurring? Yes, it was a case of constructive blindness. Many meetings were held at General Motors and there was more concern about hiding the events than protecting the public. Eventually the problem was related to the switch of a simple part blamed on a single engineer, yet General Motors was just as responsible for failing to act. Again, millions of vehicles were sent out into the public domain and the "land mines" kept exploding while investigators kept their blinders fully secured to the bridge of their nose. But that is also not an isolated event.

Moving away from motor vehicle defects, a roadside highway product also reached the public's concern. A whistle-blower alleged that Trinity Highway Products of Dallas Texas had made adjustments to their ET-Plus guardrail terminal such that it would jam up and fail to collapse in the controlled manner of the original design. This product had become installed on almost every major highway in North America before these allegations were raised. Meanwhile the U.S. Federal Highway Administration (FHWA), which was responsible for insuring that safe products were installed on the highway, announced that the ET-Plus was never tested in real-life conditions, it was approved only via controlled tests in a perfect, laboratory environment. Only after a federal jury

found Trinity liable did the FHWA ask various agencies to supply them with real life collision data so they could make a determination, post-hoc, whether the ET-Plus was defective. While the FHWA appointed panel determined that there was insufficient evidence to suggest that the ET-Plus was performing poorly, the quality of the data upon which that conclusion was drawn was sketchy at best.

In all these incidents, and likely many more, products entered into the market place and remained there for many years while information about their performance was never gathered or it was simply kept secret. In some instances the relationship between the defective product and the deaths and injuries of numerous persons could be directly traced. In others, likely due to the lack of gathering quality information, that relationship may never be properly determined. The common denominator is these events is the existence of dangerous products hidden from the public's eye and the attempts to hide the existence of these dangerous conditions by many persons who were never brought to justice. Hundreds of innocent users of the transportation system were killed and injured because of this secrecy.

When someone knows that a product has been placed in a public place and that product will likely lead to the deaths of many innocent persons, how much different is that from a terrorist who places a land mine on a busy street? The terrorist knows that eventually someone will run over the land mine and someone will be killed. When a government official or corporate executive knows that a defect is proliferating he/she knows that it will eventually kill an innocent person. But when the terrorist is caught is he/she then let go because that person is a member of a large corporation or a government official? Is that how this democracy thing works?

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