Historical Patterns In Loss-of-Control Events At Specific Road Locations

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As demonstrated in previous research by Gorski Consulting, police collision data is not likely to be sufficient to uncover safety problems at specific road locations with respect to loss-of-control events. At the specific location where research has been conducted for the past 8 years, Gorski Consulting has shown that more than 80% of loss-of-control collisions and incidents did not exist in police records of reported collisions. The details of this research can be found in a series of 6 articles posted to the Gorski Consulting website in January through April, 2017.

Alternatively, detailed study of certain collision locations can result in the uncovering of loss-of-control events that would otherwise be lost and undocumented. While it requires some diligence, evidence of collisions and loss-of-control events can be uncovered even though these may be minor and have occurred several days after the occurrence. However proper training is required to develop a familiarity with the physical evidence that would be difficult to detect by an untrained eye. Yet it is possible to develop such skills particularly if instruction is provided to speed up the learning curve.

The present research paper will examine the details of a particular set of loss-of-control events at one location of an S-curve of Clarke Road north of Fanshawe Park Road in the north-eastern outskirts of London, Ontario. This is the site where continuous observations have been ongoing since the fall of 2009. The purpose of this discussion is to explore the common and uncommon evidence that exists while discussing what conclusions might be drawn from the evidence.

Figure 1 shows an aerial view of the site in April of 2008, taken from the City of London website. This shows the two curves of the S-curve such that a northbound driver would first experience a curve to the right, followed by a curve to the left. There is limited housing in the area although several driveways exist between the two curves on the east side of the road.

Figure 2 shows an overall view looking south from just north of the north curve. The horizontal curve to the right is also accompanied by a substantial vertical curve. Southbound drivers are travelling along a down-slope as they approach the right curve and then they also experience a rather abrupt upslope at the apex of the right curve. This results in a challenging experience for drivers who are not familiar with the geometry and especially when the road surface conditions are wet, snow-covered or icy.

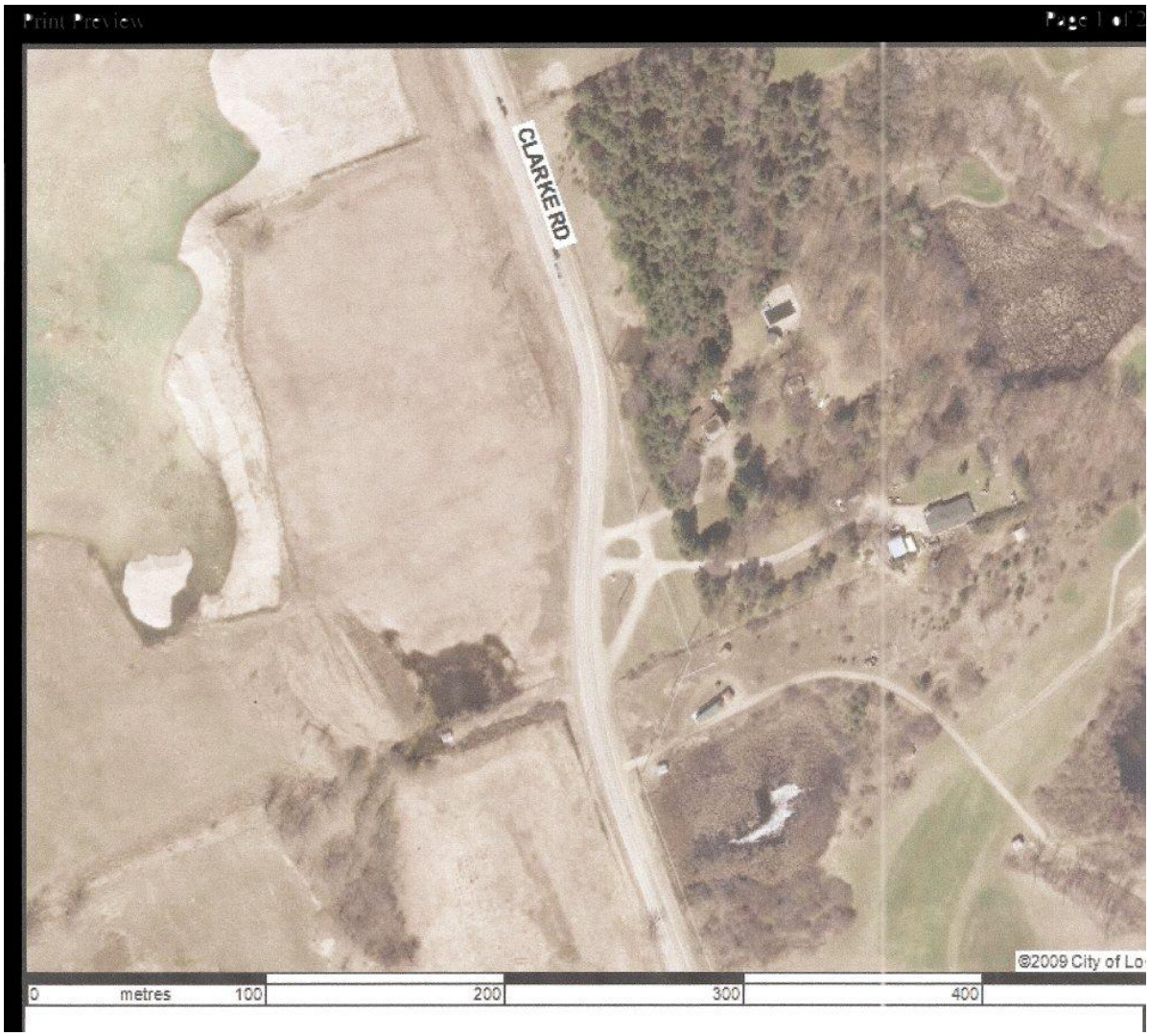

Figure 1: Aerial view of the research site on Clarke Road north of Fanshawe Park Road taken in April, 2008.

Without police involvement in our study Gorski Consulting has been able to determine how many loss-of-control events have occurred at the noted site without actually being present or being called out to such an event as an official investigator. At a later date police data was obtained through a freedom-of-information request and therefore it could be determined to what degree the Gorski Consulting data could be inaccurate by failing to recognize incidents that were officially documented. Indeed such a review has demonstrated that our data has been very successful in identifying those collisions that were officially reported as well as collisions that were not reported but likely should have bee*n* so.

As an example we can select a subset of events involving southbound vehicles. Fifty-three such events were documented. Twenty of these vehicles exited onto the west side of the road, 31 exited onto the east side and two incidents could not be classified by this description.

Figure 2: View of the north curve of the S-curve, looking south, on March 6, 2013.

Figure 3 shows a driver's view as a southbound vehicle approaches the upslope at the north (right) curve. Drivers whose line of sight is at the level of a typical passenger car have a limited view of the road ahead at the apex of the curve yet they must navigate the curve to the right while experiencing the sudden change in vertical alignment.

Figure 4 provides a view from the opposite direction, looking north, from the east roadside between the two curves. Thus southbound vehicles would be travelling toward the camera.

Finally, Figure 5 shows a view looking south at the east roadside between the two curves of the S-Curve.

When a southbound driver loses control of his/her vehicle the data indicates that, more often than not, a vehicle travels across the opposing lanes and onto the east roadside (31 incidents) versus travelling to the west roadside (20 incidents). But this data is with respect to the full length of the S-curve. There could be a number of factors that could lead to that result when the full length of the S-curve is considered. Thus we need to select a smaller subset of these incidents.

Figure 3: View of the line of sight of a typical driver travelling southbound in a passenger car while passing through the north curve of *the S-curve. The view of the road ahead is limited.*

Figure 4: View, looking north at the east roadside between the two curves of the S-Curve.

Figure 5: View, looking south, toward the east roadside between the two curves.

The subset we want to examine are those incidents where a southbound vehicle travelled onto the east roadside between the two curves of the S-curve. This reduces the observations from 31 incidents to 26 incidents. These 26 incidents occurred in the following years:

2010 = 7 incidents

2011 = 5 incidents

2012 = 2 incidents

2013 = 1 incident

2014 = 2 incidents

2015 = 4 incidents

2016 = 2 incidents

2017 = 2 incidents

2018 = 1 incident (only first 3 months)

Given the small numbers of observations one should conclude that natural variation is a likely cause for the higher number of incidents in 2010 and 2011. However we also know that electronic stability control (ESC) became mandatory in Canada for 2011 production-year vehicles and beyond. Thus one might consider if some of the reduction in incidents is related to a larger population of vehicles equipped with ESC.

The observation that a seemingly large number of southbound, loss-of-control vehicles exit the roadway between the two curves can be explored in greater detail.

Many of the documented incidents involved vehicle rotation without any impact and therefore the vehicles left the scene under their own power. Whether a vehicle left the site under its own power did not appear to be related to the severity of the event or the speed at which it travelled. It appeared to be an issue of circumstance or "luck" whether the event resulted in the disablement of the vehicle. If the vehicle was not disabled the physical evidence demonstrated that the involved driver simply drove away. We have selected 8 events that might illuminate some of the issues. The 8 events are noted in the table below.

Event #	Date of Observation	Evidence
1	Oct 16-11	Loss-of-control tire marks with impact through east fence and brush
2	Jul 22-12	Loss-of-control tire marks with impact through east fence and brush
3	May 8-15	High speed without yaw departure of east roadside, grazed utility pole, impacted earth embankment & fence vaulting over top.
4	Oct 2-15	High speed exit with evidence of yaw at point of entrance onto grass, yaw corrected as vehicle heads straight and slides to a halt on grass between driveways; departs under own power
5	Sept 9-16	Yawing rotation into east grass and subsequent regain of control and exit back onto road
6	Mar 22-17	CCW yaw up to 90 degrees slide with no rollover
7	Aug 25-17	CCW Yaw on East Roadside
8	Mar 11-18	CW Yaw corrected into CCW Yaw also corrected followed by high speed vault through fence, Etc.

1. Event of October 16, 2011

In this event the physical evidence indicated that the vehicle exited the paved roadway at a distance further south of the north curve as compared to some other events we will be discussing. The first physical evidence was in the form of yaw marks that were

visible as the rotating vehicle crossed over the yellow centre-line as shown in Figure 6. It was not difficult from the characteristics of the yaw marks that the vehicle was rotating counter-clockwise as it entered into the opposing, northbound, lane. Figure 7 shows the tire marks of the vehicle as it passes through the east roadside and then travels toward a some bushes and a wire fence in the background. Figure 8 shows that the vehicle strikes a telephone junction box that has been subsequently wrapped in a red protective covering. The vehicle actually passed through the fence and bushes as shown in the backside (northward) view of Figure 9. Our further analysis of the police collision data revealed that this event was not officially documented in the police records. As such it is highly likely that the driver of this vehicle managed to extricate it from the roadside either by calling for assistance, or by removing the vehicle under its own power.

It can be noted that the first physical evidence of the yaw marks at the centre-line of the road indicated that the vehicle was already in an advanced stage of rotation. It has been our experience that the actual location where the driver would have encountered his/her difficulties that led to the loss-of-control was a substantial distance north of the visible yaw marks and most likely at the north curve. Rarely is it possible to confirm this conclusion based on the visible physical evidence alone.

Figure 6: View looking south at the black yaw marks produced by the southbound vehicle as its tires crossed over the paint of the yellow centre-line.

Figure 7: Tire marks in the grass of the east roadside show how the southbound vehicle progressed to line of bushes and wire fence in the background.

Figure 8: Tire marks show how the southbound vehicle drove into the bushes and fence and passed through these obstacles.

Figure 9: View looking back (northward) on the other side of the bushes and fence where the vehicle came to rest.

2. Event of July 22, 2012

In this event the vehicle left the paved roadway at a substantial distance south of the north curve, similar to the facts of the first event described above. Figure 10 shows a view of the tire marks on the road however the investigator has to use two fingers to the show the location of the two tire marks because they are so faint.

Figure 11 shows how the investigator uses another finger to point to one of the faint tire marks as the vehicle passes through the gravel of a driveway and then collides with some bushes and a wire fence in the background. The bushes and fence are only a few feet to the west of the impact area shown in first event described above.

Figure 12 shows the tire marks in the grass as the vehicle approaches the bushes and fence. Figure 13 shows the wooden anchor posts of the fence that are knocked over and Figure 14 shows a close-up view of the fresh scrapes on one of the wooden posts indicating that contact was made. Figures 15 and 16 show northward views the tire marks leading back toward the road surface.

Figure 10: View, looking south, with an investigator's two fingers pointing to the location of the faint, yaw marks indicating where the southbound vehicle exited the pavement.

Figure 11: View, looking south, with the investigator's finger pointing to one of the tire marks in the gravel driveway as the vehicle travelled toward the bushes and wire fence in the background.

Figure 12: View of the tire marks in the grass as the southbound vehicle approaches the bushes and wire fence.

Figure 13: View of the wooden posts of the fence that were knocked over by the vehicle's contact.

Figure 14: Close-up view of the fresh scrapes to one of the wooden posts cause by contact by the southbound vehicle.

Figure 15: View, looking northward, toward the tire marks on the grass and gravel as we look back toward where the vehicle exited the road surface.

Figure 16: View, looking northward, showing the tire marks in the gravel as we look back to where the vehicle first exited the road surface.

3. Event of May 8, 2015

This incident demonstrates the difficulty that can sometimes occur when physical evidence of a loss-of-control event is unusual, difficult to detect and has deteriorated due to the surface on which it was created.

Figure 17 shows the tire marks that were detected on the east roadside just south of the north curve. These marks are not easily visible. This could be because they were created an unknown number of days before the date they were detected. This requires further explanation because it is an interested and valuable point.

As the years passed we had commenced a process where the examination of the site was attempted through driving through the site rather than actually stopping and walking through it. The unusual fact is that throughout April 2015 we did not conduct a single examination where we actually stopped and walked through the site. This was not planned it just happened by chance. The first walk through the site was conducted on May 8th when we uncovered the evidence of this event. The photographs taken while driving through the site were at a similar viewing height and from similar locations such that the area where the tire marks existed was not well documented with photos. Subsequently we have examined what photos exist and have come to the belief that these tire marks could be seen in the distant background of several photos taken in late

April. Thus these tire marks could have been created 2, 3 or even 4 weeks before they were detected on May 8th. Now, why is this important?

This finding is important because many road maintenance jurisdictions perform their "examinations" of roadways by driving through them in their inspection vehicles rather than conducting an actual walk through a site. Thus what we encountered demonstrates that important physical evidence of loss-of-control incidents is likely undetected by roadway maintenance personnel because of this method of roadway inspection.

Returning to the discussion of this event, Figure 18 shows that we detected some evidence that indicated the vehicle passed between a utility pole and its guide-wire anchor.

Figure 19 shows that, south of the utility pole the vehicle travelled over a long length of gravel. A gravel surface retains evidence for only a short time as vehicles passing over the gravel disturb the stones and sand. Thus, not seeing anything further, we suspected that the vehicle must have come to a halt somewhere within the gravel area. It did not occur to us to look further south because we had never observed a vehicle travel that far off the road. Even the tire marks in the grass, as shown in the northward view of Figure 20, seemed to disappear only a short distance after they commenced thus indicating the deterioration of the evidence.

It was several months later that we happened to be discussing matters with a neighbor in the area and he informed us that the vehicle had actually passed through the fence south of the noted area and crashed into some infrastructure in the adjoining property. As a result we examined the site more closely on March 24, 2016.

Figure 21 shows a northward view of the location of the tire marks from March 24, 2016 or about 10 months after the marks were first observed. One can still see the faint marks in the grass and this provides an indication of the persistence of some evidence marks that can be detected many months after an occurrence. This provides support for the belief that it would be possible to detect evidence of the collision in the area where we had previous failed to examine 10 months earlier near the south fence.

Figure 22 shown the southward view toward the south fence where the neighbor described that the vehicle passed through and into the adjoining property. If one looks closely it is possible to see the faint tire lines of two tire marks in the grass approximately in line with the right edge of the green roof of the building on the adjoining property. Figure 23 shows a northward view from an opening in the brush at the struck fence where it is believed that the vehicle passed through. Figure 24 shows a view of some damage in the brush in the property south of the struck fence suggesting that this is where the vehicle might have been extricated.

Overall these facts suggest that the southbound vehicle was travelling at an elevated speed in order to produce the type of evidence shown in these photographs.

Figure 17: View, looking south, at the faint tire marks in the grass on the east side of the road. The marks indicate minimal curvature and this could mean that the vehicle was either not rotating very quickly or it was travelling very quickly and therefore the rotation in a given distance would be small.

Figure 18: View, looking south, at a disturbance in the grass indicating that the southbound vehicle passed between the utility pole and its guide-wire anchorage.

Figure 19: Looking past the utility pole, the vehicle travelled over a long length of gravel. It is known that physical evidence is destroyed very quickly on a gravel surface.

Figure 20: View, looking north, at the tire marks exiting onto the grass. The marks are no longer visible in the foreground indicating the deterioration of the evidence but also suggesting that the vehicle mass might have been partially lifted due to its speed.

Figure 21: View, looking north, at the area in the grass where the tire marks were shown in Figure 21. If one looks closely the faint tire marks can still be detected in the grass.

Figure 22: View, looking south, at the faint tire marks in the grass as the vehicle travelled toward the brush and fence in the background.

Figure 23: View looking north, from the struck fence and brush, matching the faint tire marks and the observing the north curve in the distant background.

Figure 24: View of some damage in the brush on the property south of the struck fence where it is likely that the vehicle was likely extracted either by towing personnel or other means.

4. Event of October 2, 2015

This next incident was similar to that of Event 3 in that tire marks were observed on the east roadside only a short distance south of the north curve, as noted in Figure 25. Fortunately, we had walked through the site on Tuesday, September 29th and a photo taken at that time (See Figure 26) confirmed that the tire marks were not present at that time. So, at most, these tire marks could only be about 3 days old. The freshness of the markings found on October 2nd allowed the ability to see the tire marks as they passed through the gravel driveways as demonstrated in Figures 27 and 28.

The northward view shown in Figure 29 shows how the marks are not visible in the gravel in the foreground and there were no additional photos taken further south of the parked vehicle. This leads to the belief that we determined at that time that there was no additional evidence further to the south. However, in hindsight, this is a lesson for the future and to all investigators who encounter such evidence in that, regardless of what has been concluded, additional photographs should have been taken further to the south to confirm to ourselves in some distant future, as well as any others examining this research, that indeed there was no additional visible evidence. Such lessons, and others, are learned on a regular basis as investigators encounter new situations and it is a reminder that as investigators and analysts we must always be prepared to learn and discover regardless of how long we have been examining and analyzing evidence.

Figure 25: View, looking north, at the tire marks of a southbound vehicle which exited the roadway a short distance south of the north curve.

Figure 26: Photo taken on September 29th, 2015 confirming that the tire marks did not exist on that day of our road inspection.

Figure 27: View, looking north, at the tire marks passing through the gravel of the driveway.

Figure 28: View, looking south, at the tire marks visible on the gravel driveway. The marks are no longer visible at the second driveway near the parked car in the background.

Figure29: View, looking north, showing that the tire marks terminate in the grass in the foreground and no additional marks are visible in the gravel in the foreground.

5. Event of September 9, 2016

This event is similar to Events 3 and 4 in that yaw marks were observed exiting onto the east roadside just a short distance south of the north curve. The difference however is that in the present event the tire marks showed the vehicle travelling back onto the road and no further evidence was found. This suggests that the speed of vehicle in the present incident was likely substantially less than the two vehicles in Events 3 and 4.

Figures 30 and 31 show views looking south at the tire marks as they exit onto the east roadside at the south end of the north curve. As the tire marks reach the grass it can be seen that the vehicle is in a clockwise rotation and the tire marks start to curve back toward the roadway.

Figure 32 shows the tire marks from a northerly view and here they can be seen passing through the east shoulder as the vehicle returns to the road surface.

In summary it can be seen that the vehicles in Events 3, 4 and 5 exited the east side of the road at similar locations however differences in their speeds had an effect on what evidence was created.

Figure 30: View, looking south, at the tire marks exiting onto the east roadside and the vehicle begins to rotate back toward the road on the grass in the background.

Figure 31: View, looking south, at the tire marks showing the vehicle rotating clockwise back toward the road surface.

Figure 32: View, looking north, at the tire marks as the rotating vehicle passes through the gravel shoulder in the foreground on its return back onto the road surface.

6. Event of March 22, 2017

This event provides a good example of how we can be determine that a vehicle has come to a halt, then left the incident by its own power and that the documentation of this happening will not be found in any police records.

Figure 33 provides an overall, southward view of the area where the loss-of-control yaw marks exist in the background of the east shoulder. This indicates that the vehicle exited the road surface at a substantial distance south of the north curve similar to Events 1 and 2. Unlike Events 1 and 2 the vehicle was not travelling quickly enough to reach the fence and bushes further to the south but rather came to a stop on the east shoulder.

As we approach further south, Figure 34 shows a closer view of the loss-of-control yaw marks that indicate the vehicle's counter-clockwise rotation. Figure 35 provides a closer view of the tire marks in the area where the vehicle came to rotating stop on the shoulder. Figure 36 provides a close-up view of the evidence at the location where one of the tires came to stop and then a print of the tire's tread indicates that the vehicle is accelerated away from the stop position to leave the site.

Other extraneous tire marks exist at the final rest position of the vehicle which indicate that other motions occurred, perhaps related to other vehicles and further study could be made to determine what those activities actually were.

Figure 33: View, looking south, at some yaw marks in the background of the east shoulder. This view gives a general idea of their position with respect to the incidents discussed previously.

Figure 34: View, looking south, at the yaw marks on the east shoulder indicating that the vehicle is rotating counter-clockwise. Additional tire marks exist because, after the vehicle came to a halt it then accelerated away and left the site.

Figure 35: View showing the tire marks where the vehicle's tires gouge into the gravel as the tires slide sideways and then two mounds of gravel/earth are created at the precise location where the wheels came to stop.

Figure 36: A close up view of one of the ends of the tire marks shows how the sliding tire comes a halt a the mound of earth and then there is a tire print progressing to the left where the rolling tire begins to move after coming to a halt as the driver moves the vehicle to exit the site.

7. Event of August 25, 2017

This event is very similar to Event 6 in that the vehicle followed a similar path and came to rest at a similar position as in Event 6. The difference is that in the present event we observed tire marks on the pavement which indicated the vehicle's counter-clockwise rotation before it exited onto the east shoulder. Also the evidence on the east shoulder was more aged and therefore not as well-defined. This gives us an opportunity to recognize how the evidence of very similar events can be different in terms of its visibility and that our ability to use that physical evidence to follow the vehicle's motion can vary as a result of these differences.

Figure 37 shows a general view, looking south, along the northbound lane where there are some faint yaw marks in the background. There is a linear black mark in the northbound lane that is close to and parallel to the centre-line but that is not related to the southbound vehicle's motion.

Figure 37: View, looking southbound in the northbound lane toward some yaw marks that exist in the background of the northbound lane.

Figures 38 and 39 provide closer views of the yaw marks on the northbound lane as the southbound vehicle rotates onto the east shoulder and roadside in the background.

Figures 40 and 41 provide views of the tire marks on the shoulder and grass roadside.

The tire marks shown in Figure 42 suggest that the driver may have regained control of the southbound vehicle without bringing it to a stop and that he then re-entered the road and continued to travel southbound.

Figure 38: View, looking south, at the yaw marks in the northbound lane.

Figure 39: View, looking south, of the yaw marks in the northbound lane.

Figure 40: View, looking south, at the yaw marks created on the east shoulder and roadside.

Figure 41: View, looking north, at the tire marks created on the east shoulder and roadside.

Figure 42: The physical evidence of the curved tire marks suggests that the driver may have regained control of the vehicle without stopping and then continued to re-enter the road to proceed southbound again.

8. Event of March 11, 2018

In this final event we examine a collision that is similar to Events 3 and 4. A southbound vehicle exits the east side of the roadway at a similar location to Events 3 and 4 and then it proceeds to plow through the south fence and vaults over it into the adjacent property. Figures 43 through ** provided details of the evidence that was found.

At the point when it enters the east shoulder it is rotating clockwise but as it moves onto the grass roadside the driver is able to counteract this motion such that the vehicle changes its rotation direction and begins to rotate counter-clockwise as it passes through the first driveway. As the vehicle passes this first driveway the driver is able to counter the rotation again such that the vehicle goes back to a clockwise rotation just as it passes by the post of an address marker as well as a wide diameter utility pole.

The driver is able to straighten the vehicle's rotation again as it passes by the second driveway and travels head-on into the south fence and bushes. The vehicle vaults through the fence and bushes and makes a single contact of its undercarriage with the ground on the other side of the fence. It then strikes an 8 inch diameter pipe and smaller diameter pipe causing them to be flattened to the ground before coming to a rest position a few metres beyond. Tire marks near the rest position and further, near a driveway leading back to the roadway, indicated that the vehicle may have left under its our power or was assisted in leaving by another vehicle. Yet, given the dramatic set of events the involved vehicle had been travelling at a very high speed and it could easily

have been involved in a fatal collision had it not been pure circumstance that prevented it.

Figure 43: View, looking north, at the tire marks of the southbound vehicle as it enters the east shoulder.

Figure 44: View, looking south, at the tire marks of the southbound vehicle as it enters the east shoulder and roadside.

Figure 45: Southward view of the tire marks as they pass through the grass of the east roadside. The tire marks continue toward the parked car in the background.

Figure 46: View, looking north, at the tire marks of the southbound vehicle approaching the camera.

Figure 47: View, looking north, at the tire marks as they pass through a driveway at the east roadside.

Figure 48: View, looking south, as the southbound vehicle passes through a driveway and passes to the left (east) of the large utility pole.

Figure 49: An address marker located just north of the utility pole sustains a minor contact as the southbound vehicle passes through.

Figure 50: Close-up view of the black transfer on the address marker caused by contact by the southbound vehicle.

Figure 51: As the southbound vehicle passes by the utility pole additional tire marks are visible south of a driveway indicating that the vehicle travelled into the fence and bushes in the background.

Figure 52: Closer view of the tire marks showing the vehicles path into the fence and bushes.

Figure 53: View, looking south, showing the tire marks indicating that the southbound vehicle passed through the fence and bushes and onto an adjoining property owned by the City of London.

Figure 54: View, looking north from the location of the fence, showing the tire marks in the foreground and the path of the southbound vehicle coming toward the camera in the background.

Figure 55: View, looking north, while standing on the City owned property and looking at the fence and bushes where the southbound vehicle vaulted toward the camera. In the foreground is blue-painted pipe and a yellow pole both of which were struck by the southbound vehicle after it vaulted through the fence.

Figure 56: A side-view of the stuck pipe. The southbound vehicle was travelling from the left to the right and pushed the pipe and yellow pole to a horizontal position.

Figure 57: Close-up view of the flattened pipe and yellow pole that were struck by the southbound vehicle.

Figure 58: View, looking north, from south of the final rest position of the southbound vehicle. There is a driveway in the foreground where tire marks were found suggesting the at involved vehicle either exited under its own power or was assisted by another vehicle.

Figure 59: The investigator's finger is pointing to some tire marks near an exit driveway indicating the path of the involved vehicle which exited back onto the road via it own power was assisted by another vehicle.

Figure 60: View of the driveway of the City-owned property where the southbound vehicle exited back onto the roadway.

Discussion

The detailed collision evidence related to the loss-of-control events of eight southbound vehicles has been reviewed in this article. The events come from a group of 26 southbound vehicles all of which exited onto the east shoulder and roadside between the two curves of the S-curve on Clarke Road north of Fanshawe Park Road in London, Ontario.

It needs to be emphasized that all of these 26 vehicles passed through the opposing, northbound, lane of Clarke Road yet no impact occurred with northbound traffic. It is possible that many of these events occurred at nighttime or early morning when there was minimal traffic as this could explain why there has not been an impact with opposing traffic. Yet, it cannot be certain because our methods of identification of the evidence are not precise enough to determine in which hour of a day the events occurred. Thus there is a real possibility that some of these fortunate results could be due to chance and, much like Russian Roulette, a participant's luck eventually runs out.

While information about the latter 5 events from 2016 to March 2018 has not been officially matched with police records, our data indicates that only one of the 26 incidents (documented on May 8, 2015) became reported to police.

How can these research findings be generalized to other sites? While it might be argued that the S-curve at Clarke Road north of Fanshawe Park Road is unique that conclusion has be supported by objective evidence. In contrast the argument can be made that this S-curve is similar to many in North America and similar results may be found at other curves. One might also argue that the London City Police are lacking in diligence for failing to detect these significant events. We do not believe this is so. We have worked in the vicinity of London, Ontario and have had an opportunity to study their collision reports over several decades while also examining the actions of other forces in the Province of Ontario and we have not observed any indication that London's police are substandard in comparison to other police agencies.

This research conducted by Gorski Consulting is unique. It delves into the issue of completeness of officially-collected, collision data and our findings are supported by indisputable photographic evidence. Our findings should spur others to re-evaluate the strongly held belief that officially reported collision data can be used to support conclusions about the safety of one collision site versus another without taking into account the large number of incidents that are likely unreported.