Recognition Of Harpooning Danger Is A Very Long And Slow Learning Curve

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Figure 1: News media photo from February 21, 2016 of a car that was harpooned by a horizontal railing at the intersection of Horton Street and Wharncliffe Road in London, Ontario.

The evidence is there, ever-present for anyone to see, but when we do not understand its meaning we are constructively blind.

The harpooning of a vehicle by an inappropriate roadside structure can be a devastating incident, yet it can also be completely unrecognized. When a narrow structure enters the confines of where an occupant is seated there is essentially nothing that modern technology can do to prevent a catastrophe. Much like drowning in water or being trapped in a burning vehicle, the fate of a car occupant caught in a harpooning incident is simply and completely dependent on luck.

As an example, Figure 1 is a photo taken by a local news agency describing an unimportant collision that resulted in no major injuries. Yet no one focused on the fact that a horizontal pole from a roadside railing had penetrated the right portion of the vehicle's windshield. If there had been a right-front occupant present, and if the circumstances were lined up, the end of the penetrating railing could have struck the

occupant in the head and the result would have deadly. But because this did not occur no one took notice of this potential.

Figure 2 shows a westward view of the north side of the intersection of Wharncliffe Road and Horton Street, taken on February 26, 2016, or just a few days after the collision. In the foreground is a view of a non-struck railing while in the background is the damaged railing that was struck by the above-mentioned car. Looking at the undamaged railing one would conclude that there appears to be sufficient protection from a harpooning incident because there is a curved portion of the rail in front of the horizontal railing ends. But what is the actual situation and how did this railing perform in the actual collision? Let's take a look on the other side of the road at the damaged railing...

Figure 2: Photo taken on February 26, 2016 of non-struck railing in the foreground and the struck railing in the background.

Figure 3 shows an overall view of the area at the damaged railing. Figure 4 takes us closer to the damaged end of the struck railing. Figure 5 shows the deformed ends of the damaged railing. Figure 6 shows a close-up view of the end of the middle of the three horizontal poles of the railing. Figures 7, 8 and 9 show the end of the bottom of the three poles of the railing. Figure 10 shows the top pole which was the one that harpooned the windshield of the striking vehicle.

Figure 3: Overall view of the north-west corner of the intersection looking at the damaged railing.

Figure 4: A closer view of the damaged end of the railing.

Figure 5: View of the deformed ends of the damaged railing.

Figure 6: View of the damaged end of one of the horizontal poles of the damaged railing.

Figure 7: View of the bottom of the three Horizontal poles of the damaged railing.

Figure 8: View of the bottom of the three horizontal poles.

Figure 9: View of the bottom of the three horizontal poles.

Figure 10: View of the top of the three horizontal poles.

In assessing the safety performance of the railing one needs to consider the severity of the impact and the kinetic energy that was required to be dissipated. While Figure 1 provides a poor view of the extent of damage to the car, it seems to show a relatively minor deformation at the bumper level with a minor vertical crease in the right front hood area which might have been created by contact with one of the vertical anchorage posts of the railing.

The extent of energy dissipation in the railing also appears to be relatively minor. Energy would be dissipated by the bending of the various posts/poles of the system. Although there is some evidence of this at the junctions of the posts/poles, there is no evidence of bending/buckling in the lengths of the posts/poles. What is needed is a unified and controlled bending and buckling throughout the system that involves components further away from where the original force was applied. Instead what is observed is a disintegration of the system by way of fractures and separations in the immediate vicinity of where the contact was made. This disintegration is uncontrolled, leaving the very obvious ends of the poles protruding horizontally toward the windshield and other parts the vehicles where penetration into the interior could occur. Overall this

system failed to perform in a reasonably safe manner such that the occupants of the striking vehicle might have been safer if the railing did not exist.

If the danger of this malfunction was understood then it is not revealed it the actions of the City of London, as similar installations existed in other parts of the City before this occurrence and nothing has changed since.

As an example, the intersection of Oxford Street and Quebec Street contains a similar railing. Figure 11 shows a view of the railing from a photo taken on February 11, 2012.

Figure 11: View, looking north-east, at the railing installed on the north side of Oxford Street, north of the T-intersection with Quebec Street in London, Ontario.

Figures 12 and 13 show views of the same railing taken on August 9, 2002. Although these photos do not show a clear view of the railing they seem to show that the railing extended further to the east, at least up to the post of the traffic signal shown in Figure 11.

Figure 14 shows another view of the same railing taken on April 7, 2016. Unlike the installation on Horton-Wharncliffe, the installation here does not contain any protective bar in front of the ends of the horizontal poles of the railing. One would reason that, if a harpooning of a vehicle occurred at Horton-Wharncliffe then such a result would be more likely at Oxford-Quebec where the ends of the horizontal poles are more exposed.

Figure 12: View, looking north from the south-west of the intersection of Oxford Street and Quebec street. The railing on the north side of Oxford Street seems to extend eastward to the post of the traffic signal.

Figure 13: View from August 9, 2002, looking north along Quebec Street toward the intersection with Oxford Street.

Figure 14: View from April 7, 2016, looking west, at the railing on the north side of Oxford Street. The ends of the horizontal poles of the railing are exposed to oncoming, westbound traffic.

One can see from the photos that the present installation at Oxford-Quebec has existed at least since August of 2002. There could have been changes to the east end of the railing as the photos suggest that the railing may have extended further eastward before 2012. It is possible that the railing was struck sometime before February 2012 and the damaged eastern portion was removed, leaving the shortened, undamaged section shown in Figure 14. If so, then no one would have appreciated the danger of leaving the remaining section of railing with the east end of the poles exposed to oncoming traffic.

What decisions made and by whom from staff at the City of London is unknown. But clearly persons making those decisions do not appear to understand the danger they have created. Should an unfortunate incident occur where a vehicle is harpooned by the horizontal poles of the railing the City of London would most likely be held liable.

Yet this example is not an isolated one. There are many instances where unsafe roadside objects exist, not only in London, Ontario, but in many municipalities and on many rural roadways and highways. The presence of these conditions is not being revealed. Certainly when a collision occurs police investigations are not revealing the

presence and influence of these dangerous conditions. Many municipalities are more focused on hiding defects on their roads so as not to be involved in legal suits whereas there is less focus on proactive correction of these problems.

With respect to situations of harpooning of striking vehicles, the recognition of the problem is a long and slow learning curve.

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