Highway Incident Management in Ontario

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ABSTRACT

Highway Incident Management in Ontario

In June 2000, Ontario’s Red Tape Commission formed the Highway Incident Management Task Force that consisted of a broad range of transportation stakeholders. The problem that the Task Force was asked to address was stated as follows: “Traffic congestion caused by accidents on Ontario’s major highways is affecting Ontario’s economy and the health and safety of its citizens.”

The challenge set forth for the Task Force was stated to be: “To clear up highway incidents quickly, while maintaining road and public safety and improving driver behaviour.” After much discussion and debate, the task force members summarized their recommendations into five main issues:

1. Make highway incident management a priority.
2. Improve driver behaviour (major public education initiative).
3. Reduce incident detection, verification, response and clearance times.
4. Provide timely, accurate information to the driving public.
5. Enhance the safety and security of highway travel.

The Task Force’s recommendations were finalized in January 2002 and contain 36 separate action items including the following:

- Establishing emergency response teams;
- Driver education;
- Updating legislation;
- Expansion of incident detection technology;
- More effective use of the media for incident reporting;
- Increased use of Variable / Changeable Messages Signs;
- Investigate the use of Highway Advisory Radio;
- Installation of screens on median barriers; and
- Increased provincial / municipal partnering.

The various documents produced by the Task Force contain a wealth of information on: defining a highway incident; experience in other jurisdictions; stakeholder concerns and other research.

Other provincial and municipal jurisdictions in Canada can learn from the extensive work done by this Task Force and avoid going over the same ground.
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1.0 Introduction and Background

The highways in Southern Ontario, particularly in the Greater Toronto Area (GTA), are among the busiest in the world. One section of Highway 401 in Toronto has an Average Annual Daily Traffic count of close to 400,000 vehicles per day. It is not hard to predict, therefore, that an incident that causes the highway to be closed any length of time has severe social and economic impacts.

In 1999, there were a number of incidents that closed Toronto area highways for significant amounts of time (see Table 1). These long closures drew the attention of the Ontario Provincial Police (OPP), the Ontario Ministry of Transportation (MTO) and Ontario’s Red Tape Commission. The Red Tape Commission was put in place to look into ways to make the government work more efficiently.

<table>
<thead>
<tr>
<th>Closure Duration Range (in hours)</th>
<th>Number of Incidents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Truck Involved</td>
</tr>
<tr>
<td>0 to 1</td>
<td>21</td>
</tr>
<tr>
<td>1 to 2</td>
<td>24</td>
</tr>
<tr>
<td>2 to 4</td>
<td>39</td>
</tr>
<tr>
<td>4 to 8</td>
<td>37</td>
</tr>
<tr>
<td>8 to 12</td>
<td>13</td>
</tr>
<tr>
<td>&gt; 12</td>
<td>4</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>138</strong></td>
</tr>
</tbody>
</table>

Table 1: Number of Complete Closure Incidents on GTA Highways in 1999 by Duration and Type

The three parties met in late 1999 to discuss a process that would lead to opening the highways faster after a major incident. It became clear during the initial discussions that they were a large number of stakeholders with interests related to highway closure times. The Red Tape Commission created a task force to review the components of highway closures and to make recommendations on how to reduce their duration. Table 2 lists the stakeholders that participated in the Red Tape Commission’s Task Force on Highway Incident Management.
<table>
<thead>
<tr>
<th>Agency Represented</th>
<th>Number of Members</th>
<th>Role in Highway Closure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Tape Commission</td>
<td>4</td>
<td>Identify barriers, change legislation</td>
</tr>
<tr>
<td>Police (2 agencies)</td>
<td>5</td>
<td>Incident management, closure authority</td>
</tr>
<tr>
<td>Ontario Ministry of Transportation</td>
<td>2</td>
<td>Incident detection, highway repairs</td>
</tr>
<tr>
<td>Fire</td>
<td>2</td>
<td>Fire and rescue</td>
</tr>
<tr>
<td>GTA* municipalities (3)</td>
<td>4</td>
<td>Emergency detouring</td>
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<tr>
<td>Ontario Ministry of Environment</td>
<td>1</td>
<td>Spills</td>
</tr>
<tr>
<td>Emergency Measures Ontario</td>
<td>1</td>
<td>Major incident management</td>
</tr>
<tr>
<td>Ambulances</td>
<td>1</td>
<td>Treatment of personal injuries</td>
</tr>
<tr>
<td>Coroner’s Office</td>
<td>1</td>
<td>Procedures in fatal incidents</td>
</tr>
<tr>
<td>Chemical Producers Association</td>
<td>1</td>
<td>Large chemical spill cleanup</td>
</tr>
<tr>
<td>Industry (2 groups)</td>
<td>2</td>
<td>Just in time delivery (for example)</td>
</tr>
<tr>
<td>Ontario Trucking Association</td>
<td>1</td>
<td>Crash site clean up, liability / insurance</td>
</tr>
<tr>
<td>Insurance Industry</td>
<td>3</td>
<td>Insurance impacts, education assistance</td>
</tr>
<tr>
<td>Tow Truck Association</td>
<td>2</td>
<td>Role of tow trucks and heavy tows</td>
</tr>
<tr>
<td>Canadian Automobile Association</td>
<td>1</td>
<td>Representing the drivers</td>
</tr>
</tbody>
</table>

Table 2: Highway Incident Management Task Force Membership

* GTA: Greater Toronto Area
2.0 Anatomy of an Accident

The task force determined that, in order to analyse ways to shorten highway closure times, it was important to determine what actually happens. In addition, the task force needed to determine which parts of the process were causing delays in opening up of the highway.

Figure 1 is a depiction of the steps taken when an incident occurs. This early analysis showed that the potential for long delays was not in the incident detection and response steps; the potential for delay was mostly in the actions taken at the accident scene. The major focus of the task force became, therefore, an analysis of the response at the accident scene.

Although there are a myriad of actions that take place at a serious accident scene, the major potential delay components were distilled into four areas. These four areas are described below.

2.1 Accident Scene Events

RESTORATION OF THE HIGHWAY

The highway infrastructure can be damaged in an accident. Guide rails, lighting standards, barrier walls and pavement are components that are typically damaged. The repairs to this type of plant do not usually result in an overall delay to the opening of the highway. Occasionally bridges are hit and the inspection and repair of the bridge can take significant time resulting in delays to opening. The finding of the task force was that this component of accident scene restoration was not a delaying factor in most lane openings.

TOWING SERVICES

One of the critical private sector partners in accident recovery is the towing and heavy towing industry. The availability of light tow trucks proved not to be a problem. In the case of accidents involving tractor-trailers, however, the availability of qualified and properly equipped heavy tow trucks and related equipment did appear to be a problem. Often inappropriate equipment and personal arrived on the scene, causing lengthy delays while debates took place, the equipment failed to do the job it set out to do and appropriate equipment was then brought through congested traffic to deal with the vehicle removal.
RECOVERY

One of the major concerns discovered for delaying the opening of the highway was in the area of recovery of the assets in tractor-trailer accidents. Trucking companies and insurance companies were sometimes insisting on using their own towing and recovery teams to recover as much of their assets as possible. Companies would insist on hand balming their loads since that caused the least amount of damage but took inordinate amounts of time. This component of accident recovery received a large amount of attention.

PERSONAL INJURIES

The first priority of emergency services is to treat and transport the injured. Although this can sometimes cause significant delays, no one on the task force felt that proper treatment of injuries should be compromised. There was some discussion on how to expedite the rescue process, however.
FATALITIES

The most common reason for extended closures of highway lanes was due to fatal accident investigations. In Ontario, fatal accidents are always treated as possible homicides and often they are fully investigated as such. Removal of bodies and the forensic investigations surfaced as the main reason for the extended delays. The task force spent considerable time analyzing the time required for the investigations and examined ways to shorten the time required and for the need to have the investigations at all.
3.0 The Key Issues

The task forces summarized the many months of discussion on the causes of lengthy lane closures into the following key issues that needed to be addressed.

**DRIVER KNOWLEDGE**

Drivers don’t know the rules of the road, and they don’t know their responsibilities when they are in an accident. The driver’s disabled vehicles block highway lanes because drivers are concerned they’ll be charged with leaving the scene of an accident if they move their vehicles or leave the scene. In some cases vehicles cannot be moved since they can’t get off the roadway because there are no shoulders. They are not aware of collision reporting centres. “Rubbernecking” and inattentive driving also increase chances of secondary accidents.

**ACCIDENT SCENE MANAGEMENT**

There is a lack of clarity over who’s in charge at scene of accident. Disputes arise amongst emergency response agencies and businesses (ie: towing companies and highway cleaning firms) because they are either unaware of each others’ capabilities and responsibilities, or they are inclined to protect their turf.

There is a lack of coordination and cooperation between emergency responders. Infrequent debriefing sessions in which incident management methods can be assessed result in missed opportunities to improve incident management techniques and performance.

Disabled trucks, and their cargo, block highways for long periods of time while owners or operators make arrangements for towing.

**LIABILITY CONCERNS**

Emergency responders are concerned about their liability, especially about ordering the removal of disabled vehicles and their cargo.

**POLICE INVESTIGATIONS**

An adequate supply of modern equipment and trained staff is required to conduct effective and fast incident investigations. A lack of such equipment greatly increases the time required for necessary police investigations.
ACCESS TO THE SCENE

Emergency vehicles have difficulty reaching incident scenes quickly and this causes delays in getting assistance to the injured and in re-opening highways which, in turn, and increases the possibility of secondary accidents.

COORDINATION BETWEEN ROAD AUTHORITIES

There is limited municipal or provincial coordination regarding road closure plans.

INADEQUATE INFRASTRUCTURE

The design of some highways contributes to traffic snarls and highway incidents (lack of shoulders, ramp gates, tall barriers to prevent “rubbernecking”, not enough bridges across major physical barriers, etc.).

TRAFFIC MANAGEMENT

Drivers are unaware of incidents, and so are unable to avoid congested areas. Drivers attempting to avoid incident sites aren’t aware of designated emergency diversion routes and often choose inappropriate routes. Some large vehicles get onto routes that can’t handle them. Large numbers of vehicles use the same route causing gridlock.

3.1 Key Consequences

The key issues have to be addressed because they are having serious consequences. The consequences that the task force is hoping to mitigate are listed below.

- **Unsafe driving behaviour.** Driver frustration with traffic delays can result in increased frustration and aggressive driving.

- **Public health and safety are at risk.** Emissions from idling vehicles increase local air quality problems. Traffic snarls lead to delays in emergency treatment of people injured in accidents. Highway incidents create increased chances for secondary accidents.

- **Danger to emergency personnel:** Workers entrusted to save people’s lives are often working under hazardous conditions that can surround highway incidents.

- **Disruptions to local communities.** Traffic re-routed to adjacent municipalities in the event of highway incidents creates congestion in those municipalities.

- **Diminished competitiveness.** The cumulative costs of vehicles being delayed in traffic snarls has a tremendous impact on the economy. Lost productivity results when goods and labour do not arrive at their destinations in a timely manner.
Businesses’ just-in-time production schedules suffer, and lack of information about the length of expected delay exacerbates the problem.

**Figure 2: Impact of Secondary Collisions**

- **Increased costs of insurance.** Unsafe roadways mean more incidents. More incidents mean higher insurance rates.

- **Increased road maintenance expenses.** Vehicles driving on shoulders can increase the cost of maintaining highways.

- **Investment and tourism impacts.** Inefficient highways deter direct investment (especially in the job-rich manufacturing sector) and impede local tourism development efforts.
4.0 The Key Recommendations

The final task report has a large number of recommendations in each of five key areas. The key recommendations are summarized below.

4.1 Making Highway Incident Management a Priority

- An independent and cross-organizational agency should be established to lead the development, implementation and analysis of highway incident management activities.

- MTO and OPP (provincial police) should organize meetings of emergency responders to work on how to respond to incidents as a team. Protocols for establishing command of the scene should be the first order of business.

4.2 Improve Driver Behaviour (Public Education Program)

- MTO, OPP and the Insurance Bureau of Canada should develop a major, extensive and long-term driver education program to improve driver behaviour. The program should be cost shared with the private sector, and should include the following messages/information:
  - Drivers’ responsibilities at the time of accident and their reporting obligations;
  - Drivers must make way for emergency services vehicles;
  - MTO is providing information on traffic conditions to local media. Methods of improving the timeliness of the information (including continual updates) should be explored. Drivers should be encouraged to listen to local radio stations for information about traffic BEFORE they embark on their commute, and to continue to listen for traffic updates as they drive; and,
  - Drivers should be aware of who to call to identify accidents.

4.3 Reduce Incident Detection, Verification, Response, and Clearance Times

- Investigate whether the accident reporting requirement should be eliminated in some cases.

- Create a protocol for OPP officers to follow when conducting traffic investigations; emphasizing that investigation and ticket issuance should happen off the highway.

- OPP should develop a protocol that guides officers in determining whether a fatal accident should be considered a crime scene.
OPP should increase its investment in state-of-the-art photogrammetry equipment that can speed up the investigation of incidents. The equipment, along with staff trained to use it, should be strategically located in order to minimize delays in reaching incidents.

Police and Coroner’s Offices should clarify coroner certification requirements before a body can be moved from a roadway. Consider establishing a 24-hour a day hotline to the Coroners’ Office that officers can call to confirm that body can be removed.

MTO and OPP should introduce legislative changes that give site managers appropriate increased authority to remove vehicles and debris from the highway, or to direct its removal. OPP review legislation to ensure that OPP officers are immune from liability when they order the removal of vehicles and the vehicle or its cargo is damaged.

OPP should establish standards and clearance times for disabled vehicles for its officers who must deal with owners of disabled vehicles, recognizing that some companies have established arrangements in place to guarantee removal within a very short period of time, and others do not have such procedures in place.

MTO should investigate the concept of emergency service partnership in the GTA.

MTO should expand its COMPASS incident detection system.

4.4 Provide Timely, Accurate Information to the Driving Public

MTO and OPP should build on their efforts to work with the media by providing regular updates as highway clean-ups progress, in order that information on the duration of a road closure can be disseminated to area police, municipalities and local businesses. Updates should be available as frequently as possible as dictated by traffic conditions and when the volume of traffic justifies the updating.

The number of Changeable Message Signs or other appropriate signage should be increased and used to make drivers aware of issues related to the highway.

Local area radio broadcasts should be created along all 400 series highways (“Radio 400”) to get information on road conditions to motorists.

4.5 Enhance the Safety and Security of Highway Travel

To prevent rubbernecking, MTO should install screens/deflectors on the top of jersey barriers to block drivers’ views of oncoming traffic on divided highways.
An emergency telephone number should be established and posted at regular intervals on the highway so that motorists can report accidents. Changeable message signs should be used to display this information as well.

MTO and SG should work with municipalities adjacent to Ontario’s 400 series highways to develop and implement “Highway Closure Action Plans” similar to that in use by the Region of Halton within one year. Plans should include:
- a traffic diversion plan;
- a system of multi-agency communication and coordination that clarifies responsibilities, authority and equipment capabilities of each agency in order to enhance coordination of activities;
- protocols for ramp closures and use of road barricades;
- provisions for improved signage (permanent, temporary and changeable message signs);
- signal timing priority plans for alternate routes;
- signal preemption strategies for emergency vehicles;
- strategies for sharing information about proposed construction activities;
- strategies for working with local industries and institutions about contingency planning concerning highway incidents;
- restricting parking on busy alternate routes; and,
- aerial surveillance options.
5.0 Summary and Conclusions

At the time of the writing of this paper, the implementation of the task force recommendations were still being discussed. The implementation plan will be discussed in more detail during the presentation at the conference.

There is no simple or single way to address the challenges involved in clearing up highway incidents quickly, while maintaining road and public safety. There are complex issues involved, including: how best to protect emergency services workers, differences of opinion regarding the capabilities of various emergency services providers, and the extent of public servants’ liability for actions taken at incident scenes.

The Taskforce is convinced that implementing improvements to the province’s highway incident management systems should be a high priority for the government because keeping highways fast, efficient and effective is critical to the economic prosperity of the province.

The spin-off effects of improved highway incident management are substantial:

- **Improved public health and safety.** When emergency vehicles have less trouble getting to accident scenes, they can begin life-saving procedures more quickly. Reducing the number and duration of highway incidents can have a positive impact on reducing vehicle emissions and improving air quality.

- **Improved safety of emergency personnel**: Workers entrusted to save people’s lives should not be endangered themselves.

- **Decreased number of secondary accidents.** The more quickly initial incidents are cleared up, the more the opportunity for secondary incidents to occur is reduced.

- **Improved driver behaviour**: Drivers who know that systems are in place to quickly return highways to normalcy after incidents are less likely to react with rage or aggression to traffic stoppages.

- **Enhanced competitiveness.** Economic efficiency results when goods and labour can arrive at their destinations in a timely and predictable manner.

- **Investment and local tourism attraction.** A reputation for efficient road transportation systems can be an important Ontario asset when economic development players are selling the province as an investment location. It also can make the difference in tourism spending decisions. More efficient roadways can encourage Ontarians travel more often to tourism destinations within the province.

- **Fewer disruptions to local communities when highways are closed.** Coordinated rerouting of major highway traffic through secondary roads, as required under road
closure action plans, can reduce impacts on traffic flows within communities and on the safety of citizens within those communities.

- **Reduced road maintenance expenses.** The impact on Ontario’s roadways of major highway incidents can be substantial: the replacement of the James Snow Parkway bridge over Highway 401 is an extreme, but accurate, example. But the wear and tear of shoulders used to transport emergency services vehicles accumulates expenses.

- **Possible insurance savings.** Safer roadways mean fewer accidents. Fewer accidents mean fewer fatalities, fewer catastrophic injuries, less property damage and, therefore, support reduced insurance rates.

- **Model for other Canadian jurisdictions.** Concerted attention and action on the implementation of highway incident management systems in Ontario could place the province at the forefront of Canadian jurisdictions.

- **Better road efficiency can lead to increased private investment in transportation partnerships.** With better traffic flows, private sector transportation and engineering consortia will recognize the benefits of investing in transportation projects (eg: toll roads) that can lead to investments in improvements in the province’s entire system of highways.

- **Reduced pressures on employers of volunteer firefighters.** In most small communities in Ontario, local fire services are made up of volunteers. Often, these volunteers work in local small businesses. When they are called into a highway incident situation, and the incident is not cleared quickly, they are often away from their employment for extended lengths of time. Implementing quick clearance policies would benefit the small business employers of volunteer firefighters.

Hopefully, delegates to the conference will be able to take away some of the ideas presented herein and apply them in their home jurisdictions.
Acknowledgements

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