

**From Mile Zero to Target Zero – the Dawson Creek Case Study**

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OF RESIDENTS AND OTHER ROAD USERS (NON-MOTORISTS) Session**

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## INTRODUCTION

Dawson Creek is a city in northeastern British Columbia with a population of 11,583 in 2011. It is centrally located in the Peace Region and is served by several highways. The city maintains 88 km (55 mi) of paved and 11 km (7 mi) of unpaved roads. The City is famous for its “Mile Zero” Marker (beginning of the Alaska Highway) and its industrial and heavy truck traffic. It is located in Northern BC with a cold climate and ice and snow covering the road for several months of the year.

The City of Dawson Creek Council has placed road safety as a high priority. However, like other municipalities, there are challenges where the main arterial road through the City also provides frontage to major trip origins and destinations, and requires pedestrians to cross the high-speed roadway at various points. A severe collision and several close calls were reported involving pedestrians crossing the highways. In 2015, the Council obtained funding to identify and address pedestrian crossing issues and other safety issues, in two projects:

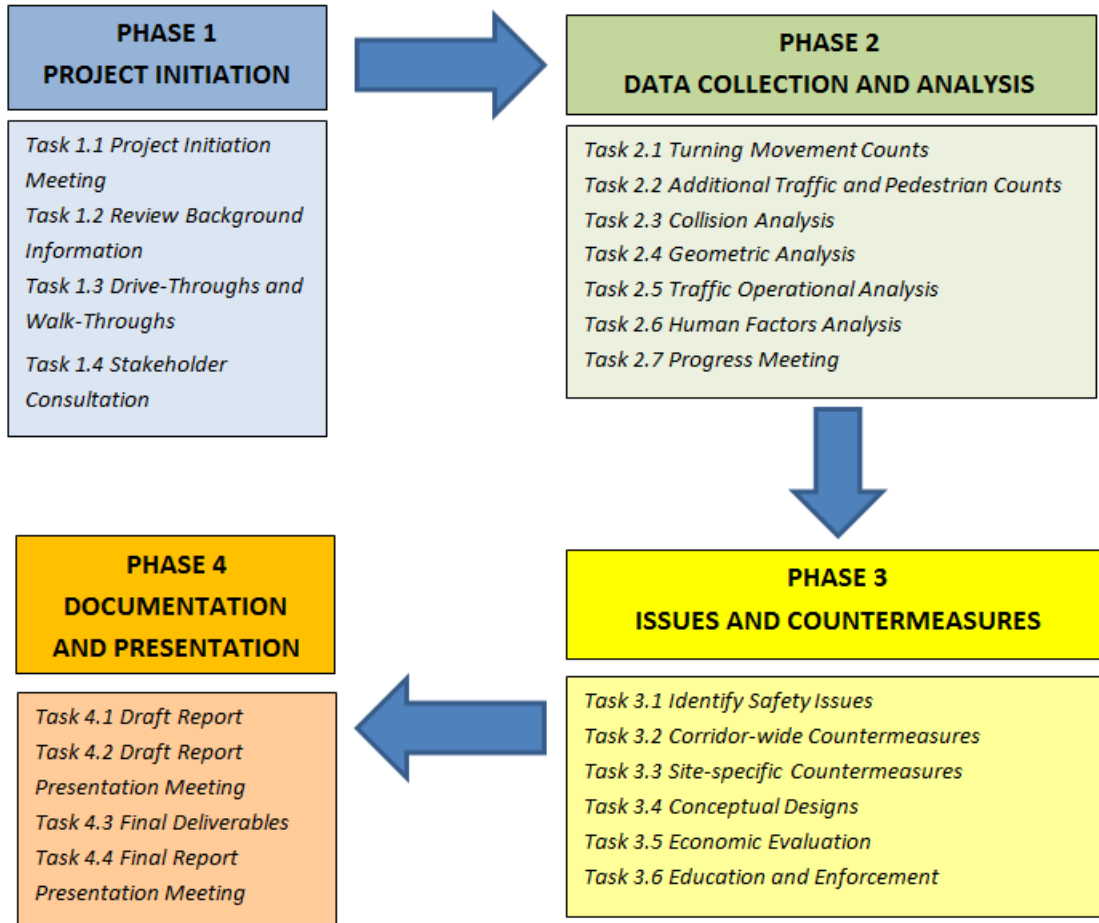
- Project 1: Highway 97 and Highway 2 within the City limits
- Project 2: Other City locations identified by citizens

This paper focuses on Project 1: the review of the two major highways through the City. Rather than focusing on one or two locations, the corridors were reviewed as a system, so that a more holistic and consistent approach could be taken. In Project 1, the City partnered with the Ministry of Transportation and Infrastructure (MoTI) and with the Insurance Corporation of British Columbia (ICBC). The three agencies contributed equal funding to the consultant study and formed the steering committee. Highway 97 and Highway 2 are the two highest volume roads throughout the City, and are owned by MoTI. ICBC provides funding for select road safety improvements identified in conjunction with the City.

The paper presents the results of the safety review conducted for the two highways, and explores issues the City has had in managing large trucks through the City, pedestrian safety, accessibility, which are characteristic of highways through northern towns. Mitigation measures to improve the infrastructure as well as to educate the public and manage road safety activities are discussed.

## STUDY METHODOLOGY

The methodology of the in-service road safety review is summarized in FIGURE 1.



**FIGURE 1 STUDY METHODOLOGY**

An important feature of the project was the consultation that was conducted. It included interviews with 17 stakeholders belonging to the following organizations/departments:

- City – Planning and Development
- MoTI - Peace District
- ICBC Road Improvement Program
- City – Fire
- RCMP
- City – Infrastructure – Public Works
- MoTI Regional Operations
- ICBC Road Safety Coordinator
- Northern BC Trucking Association
- School Board
- Tourism Board
- Public Health Region
- Northern Development Initiative
- 890CJDC Radio

These interviews led to the identification of safety issues contributing to collision risks and approaches in engineering, education and enforcement that could minimize the risk of collisions on the two major highways through the City.

## IDENTIFIED ISSUES AND MITIGATION MEASURES

A long list of safety issues were identified on highway corridors in the City. The mitigation measures identified for each of these issues are summarized in TABLE 1. Key issues included the presence of both heavy trucks and pedestrians on the two corridors. Some of these specific issues and proposed mitigations are discussed as follows:

**Heavy trucks and dangerous goods.** Heavy trucks comprise about 5% of traffic (based on intersection counts), but approximately 10% of crashes on Alaska Avenue. Trucks bring issues that affect safety in cities: geometry that typically increases design speed and pedestrian crossing distances; obstruction of the view of traffic control devices and other vehicles; larger storage requirements; smaller gaps in traffic; and higher-severity collisions. Routes designed for trucks and dangerous goods are intended to prevent movements through cities.



- Require all heavy trucks to use existing Dangerous Goods Route, re-define as Truck Route. Initial field reviews indicated that the existing DGRs are well-designed enough to accommodate higher volumes; but further analysis should be conducted. Re-routing all trucks would present the opportunity , or to even begin discussions for re-classifying the highways as arterial roads, and retrofit them as more pedestrian and bicycle-friendly corridors, with a landscaped median throughout, or curb extensions at crosswalk locations, or bike lanes.
- Enhance truck route signage, esp in the eastbound direction, including flashing beacons
  - There is only one truck route sign EB, and the intersection is not highly visible.
- Develop a stronger Truck and Dangerous Goods Route Bylaw and Enforcement
  - Current bylaws don't allow police to effectively enforce DGRs. Also need to update to include trucks.
- Lobby BC Trucking Association to discourage members from traveling through the City
- Lobby BCTA to build a Safety Rest Area / Truck Stop just outside the City – between airport and hotels, continue west on Adams Road (DGR)

**TABLE 1 CORRIDOR-WIDE MITIGATION MEASURES**

<p><b>TRUCKS AND DANGEROUS GOODS</b></p> <ul style="list-style-type: none"> <li>• Require all heavy trucks to use existing Dangerous Goods Route, re-define as Truck Route</li> <li>• Lobby the BC Trucking Association to Discourage truck movement through City</li> <li>• Develop a stronger Truck and Dangerous Goods Route Bylaw and Enforcement</li> <li>• Enhance truck route signage, esp in the eastbound direction, including flashing beacons</li> <li>• Lobby MoTI BCTA to build a Safety Rest Area / Truck Stop on either side of the City</li> <li>• In the longer term, develop an alternate route to the north and east</li> </ul>
<p><b>PEDESTRIAN SAFETY</b></p> <ul style="list-style-type: none"> <li>• Use higher visibility pavement marking materials for all crosswalk facilities</li> <li>• Provide illumination at all intersection and midblock pedestrian crossing facilities (see illumination review)</li> <li>• Replace to show walk symbol facing towards centre of roadway</li> <li>• Longer term: set back sidewalk to reduce snow accumulation</li> <li>• Provide buffer between moving vehicles and sidewalk</li> <li>• Raise the priority of the replacement of sidewalks that have severe cracking or rutting</li> <li>• Ensure the sidewalk network is continuous (replace missing links)</li> </ul>
<p><b>TRAFFIC SIGNAL ENHANCEMENTS</b></p> <ul style="list-style-type: none"> <li>• Replace all traffic signal displays to LED technology</li> <li>• Traffic signal coordination</li> <li>• Red light cameras at select locations</li> <li>• Provide secondary signal heads at all locations where missing</li> <li>• For wide cross-street signalized approaches: Option 1: Provide a right-side tertiary signal head Option 2: Provide a second primary signal head</li> </ul>
<p><b>TRAFFIC SIGN ENHANCEMENTS</b></p> <ul style="list-style-type: none"> <li>• Provide object markers signs on all islands</li> <li>• For overhead regulatory and guide signage: Option 1: Provide overhead signs at a height in accordance with TAC Supplemental Guide for Guide Information Signing, or increase size. Option 2: Provide larger signs if they can be accommodated on the existing cantilever</li> <li>• Provide street name signs at all intersections where they are missing</li> <li>• At signalized intersections, place street name signs at a consistent location</li> <li>• Upgrade all warning signs that are not already diamond grade, for consistency</li> </ul>
<p><b>GEOMETRIC DESIGN ENHANCEMENTS</b></p> <ul style="list-style-type: none"> <li>• Regarding lane width on Alaska Avenue: Option 1: Widen to 3.6 metres to be wide enough for trucks Option 2: Disallow heavy trucks from using Alaska Avenue / 8 Street</li> <li>• Where the design truck is already accommodated by the design, reduce the right turn channelization curve radii</li> </ul>
<p><b>ACCESS MANAGEMENT</b></p> <ul style="list-style-type: none"> <li>• Reduce the width of the driveways</li> <li>• Consolidate driveways where possible, particularly when they access the same development from the same street</li> <li>• Enforce minimum spacing from intersection in City's subdivision bylaw</li> </ul>

<p><b>MAINTENANCE</b></p> <ul style="list-style-type: none"> <li>• Consider trucking away snow</li> <li>• Enforce sidewalk clearing regulations with landowners</li> <li>• Continue washing signs twice per year and on demand</li> <li>• Consider painting all markings twice per year</li> </ul>
<p><b>ILLUMINATION AND DELINEATION</b></p> <ul style="list-style-type: none"> <li>• Regarding overhead lighting: Option 1: Continue to replace burnt out bulbs Option 2: Consider converting to LED bulbs Install delineator posts / reflectors at minor driveways</li> <li>• Provide delineation lighting at major driveways</li> <li>• Provide delineation between the multiple access points along driveways</li> </ul>
<p><b>ACCESSIBILITY</b></p> <ul style="list-style-type: none"> <li>• Provide wheelchair ramps on all curbs and islands that connect to sidewalks and crosswalks</li> <li>• Reconfigure driveways to allow for a smooth flat surface</li> <li>• For future design and construction projects, ensure a clear walkway width is consistently provided</li> <li>• In retrofit opportunities, seek to relocate obstacles out of the clear walkway width</li> <li>• Provide two wheelchair ramps when curb radii permit</li> </ul>
<p><b>PUBLIC EDUCATION AND TRAFFIC ENFORCEMENT</b></p> <ul style="list-style-type: none"> <li>• Focused and targeted manned red-light enforcement</li> <li>• Public education campaign regarding red-light running</li> <li>• Strengthen public campaigns regarding winter driving and winterization of vehicles, especially trucks, which are over-represented in winter conditions.</li> <li>• Increase traffic enforcement activities between 12 and 3 pm, including speed enforcement</li> <li>• Work towards establishing a dedicated traffic enforcement unit</li> </ul>
<p><b>ROAD SAFETY MANAGEMENT AND GOVERNANCE</b></p> <ul style="list-style-type: none"> <li>• Establishing a coordinating committee of stakeholders' representatives</li> <li>• Undertake a KAP survey (Knowledge, Attitude, Practices)</li> <li>• Conduct a Municipal Transportation Safety Assessment</li> <li>• Develop a Municipal Transportation Safety Plan</li> </ul>

**Road and Sidewalk Surface Conditions.** Conditions during snow/ice/wet conditions reduce sight distances and can lead to the loss of vehicle control. Snow stacked at the roadside affect pedestrian safety and accessibility, particularly during larger snowfalls or over longer periods. Some of the measures that can mitigate or reduce these risks include:

- Consider trucking away snow. Although trucking away snow is a significant additional effort, but it would alleviate interference with pedestrian movements in particular.
- Strengthen public campaigns regarding winter driving. Campaigns and winterization of vehicles, especially trucks, which are higher in winter conditions.



- Consider revising snow clearing contract to avoid accumulation on sidewalks
- Enforce snow clearing bylaws with adjacent business owners
- Set back sidewalk to reduce accumulation



**Accessibility.** All sidewalks should be constructed to allow for access by people with special mobility needs. At a minimum, sidewalks need to have wheelchair ramps to provide access.

- Provide wheelchair ramps on all curbs and islands that connect to sidewalks and crosswalks. Specific locations were identified in the active transportation review, and are noted among the location-specific issues and mitigation measures.
- Reconfigure driveways to allow for a smooth flat surface adjacent to the ramped portion of the sidewalk. This would then help to avoid wheel chair users from tracking towards the moving vehicles.
- Provide clear walkway width on future projects. For future design and construction projects, ensure a clear walkway width is consistently provided. In retrofit opportunities, seek to relocate obstacles out of the clear walkway width.



**Right-Turn Channelization.** Current design for right-turn movements is based more on truck requirements than pedestrian safety. High-radius intersections both encourage trucks to use these routes, while presenting risks for pedestrians due to the high-speed turning roadways and geometry. Where the design truck is already accommodate by the design, reduce the right turn channelization curve radii such that the visibility of pedestrians is optimized. Several standards for “smart right-turn channels” have been developed by other jurisdictions and have led to significant reductions in right-turn rear-end collisions. They aim to slow right-turn speeds as well as improve visibility of pedestrians and conflict vehicles, and can be designed to safely accommodate trucks.



**Road Safety Management and Governance.** The stakeholder consultations revealed many gaps and opportunities to address the management and governance of road safety, in order to start moving toward zero fatalities in the community. The following activities were recommended:

- **Establishing a coordinating committee of stakeholders’ representatives**
  - This would go a long way to secure stronger cooperation among stakeholders. In many small towns in BC these committees have been established as ad-hoc committees of council.
- **Undertake a KAP survey (Knowledge, Attitude, Practices)**
  - This involves interviews and focus groups to glean some understanding of what the general public perceive as traffic safety issues and what their attitudes are towards “risk” on the road.
- **Conduct a Municipal Transportation Safety Assessment**
  - More complete stakeholder consultation, process analysis, and collision analysis
  - Determining the current state of transportation safety in the City
  - Developing a municipal transportation safety plan - a blueprint for continuous improvement

## **CONCLUSIONS**

The following major conclusions were reached as a result of the safety review of Highway 97 and Highway 2 through the City:

- Where highway bypasses, heavy trucks and those carrying dangerous goods not destined for the City should not be entering the City. These other routes should be used and upgraded if necessary, and providing well-equipped rest areas outside of the City would reduce the demand for them to travel through the City and stop on the highway.
- Where heavy truck movements are discouraged, the infrastructure should not be designed to accommodate them. Good designs that balance the needs of smaller trucks and pedestrians, such as smart right-turn channels, should be explored and piloted.
- Winter maintenance activities often result in snow being stacked across sidewalks. Maintenance contracts can be revised to prevent snow from obstructing sidewalks. Providing a buffer between the sidewalk and the highway can reduce obstructions.
- Several simple improvements to sidewalks can drastically improve their accessibility for pedestrians and wheelchair users in particular, even along highways: these include the alignment of wheelchair ramps with sidewalks, reducing the width of driveways, and maintaining the horizontal profile of the sidewalk across driveways.



- Stakeholder consultation was highly valuable in the identification of safety issues. Conducting a more comprehensive municipal-wide assessment and establishing a committee can enable the City to make sustainable gains in traffic safety and keep the City moving towards a goal of zero fatalities and serious injuries.
- The partnering between the local road authority, the highway authority and the insurance corporation was successful, both in directing the review and providing funding towards made for a collaborate and highly successful review, and continued collaboration will help to ensure that the identified safety enhancements are implemented.