TRUCKING INDUSTRY'S PERSPECTIVE ON HIGHWAY AND STREET IMPROVEMENT NEEDS

Masood Hassan, EBA Engineering Consultants Ltd.
Robyn McGregor, EBA Engineering Consultants Ltd.
Peter Kilburn, Alberta Infrastructure & Transportation
Robert Hastings, Alberta Infrastructure & Transportation

1. Introduction

This paper presents the observations and suggestions of a focus group of ten representatives of Alberta trucking industry regarding improvements in the planning, design, pavement management, safety and operation of highways and urban roads in Alberta. The comments should in general be applicable to other jurisdictions. The paper also provides recommendations regarding best methods to obtain trucking industry feedback.

The paper's findings should be useful for the highway and street infrastructure providers as a basis for, among other things, selecting appropriate design vehicles, standard and special intersection designs and identification of special routes. Such improvements in turn would make truck operations safer and more efficient, thus enhancing the financial performance of the trucking industry and contributing to the efficiency of the economy in general.

Trucks are the lifelines of modern economies: everything people use in their daily lives moves by truck for a significant proportion of the trip to the consumers. (In the study the term "truck" denotes commercial vehicles with a gross vehicle weight exceeding 4,500 kg.) An example using 2004 statistics from Alberta illustrates the ubiquitousness and importance of trucks: trucks constituted 8 % of

registered vehicles in Alberta, but accounted for more than 17.5% of the vehicles involved in fatal collisions in the province (on provincial highways and urban streets), and for 15% of the vehicle-kilometres of travel on provincial highways.

Trucks are thus major users and stakeholders of highway and street systems. Understandably, therefore, the design manuals of the highway jurisdictions (e.g. Alberta Infrastructure and Transportation, 2007) include guidelines and standards pertaining to the characteristics and requirements of trucks in various aspects of highway and street planning and design. Some obvious examples are bridges, pavements, lane widths, intersection geometry, maximum gradients, and climbing lanes, among others. Several syntheses of practice regarding trucks and road infrastructure have also been published (Harwood, 2003).

Given the importance of trucks, one would assume that trucking companies and operators would be consulted on an ongoing basis regarding the various planning, design, operations and safety aspects of the highway and street infrastructures. However, it appears that the consultations by the provincial governments with the trucking industry are mostly confined to regulatory affairs and policies such as truck weights and dimensions.

The Centre for Transportation Engineering and Planning (C-TEP), a non-profit entity supported by Alberta government, universities and private sector companies, perceived a need for consulting the Alberta trucking industry with a view to improving the non-regulatory aspects (e.g., planning, engineering, operational and safety policies, standards and practices) for provincial highways and urban streets in Alberta. In 2006 C-TEP retained the services of EBA Engineering Consultants Ltd. (EBA) to undertake a study to fulfill this need through consultation with the Alberta trucking industry. EBA was assisted by the University of Manitoba Transportation Information Group. Guidance to the study design and process was provided by staff from Alberta Infrastructure and Transportation (INFTRA). The Alberta Motor Transport Association (AMTA)

provided valuable advisory and administrative assistance in liaising with the trucking industry.

The main objective of the study was to obtain trucking industry's observations and feedback regarding various aspects of highway and street infrastructure that are of mutual interest to the highway/street agencies and the trucking industry, including the following topics:

> Planning: aspects of items like network planning, route location, rest stops/staging areas and functional planning.
> Geometric design: horizontal and vertical alignment and lane widths on routes with high truck volumes and/or high proportion of over-width and over-height trucks.
> Pavement design and management: pavement roughness and rutting performance measures, seasonal variations in roughness, and the effects of roughness on vehicles and payloads.
> Maintenance: road maintenance standards and practices, winter snow and ice control, and signing.
> Safety: speed limits, signing, pavement markings, vehicle-animal collision countermeasures, emergency planning and management, and dangerous goods transportation.
> Traffic Operation: traffic signals, speed limit enforcement, incident management, traffic control during maintenance and repair operations, detours, roadway lighting.
> Other aspects not covered elsewhere.

It should be noted that that EBA is simply reporting what was said in the focus group session, and does not endorse or discount the suggestions that have been made. The major road infrastructure agencies in Alberta (INFTRA and the cities of Calgary and Edmonton) and elsewhere should consider this information, assess its applicability to their jurisdictions, and implement where appropriate.

2. METHODOLOGY

The original methodology for this study had envisaged that the data would be collected through a questionnaire distributed to a

representative sample of AMTA members (major "For Hire Carriers" and owners/operators) as well as "Private Carriers". However, as explained below, poor response rate in a trial questionnaire survey at a regional meeting of the AMTA, and a letter survey for comments from the provincial motor transport associations and the provincial and municipal chief engineers, indicated that a questionnaire approach would likely not be successful in getting the required information from the trucking industry.

It was therefore decide to use the "focus group" method instead.

Testing of the Questionnaire Approach

At a regional meeting of the AMTA in Edmonton in June 2006, the following two questions were posed to the AMTA members attending:

1. What questions should we ask in the survey so as to obtain the truckers' opinion about improvements needed on highways and streets?
2. AMTA will email the questionnaire to the carriers. How can we increase the response rate? And, how should we get the input from the owner-operators?

After the meeting, the questions were also sent to selective AMTA member companies.

The response to the questions at the meeting or later by email was, unfortunately, extremely low. The only substantive comment received was that "the questionnaire should be designed for a grade-8 education level".

With a view to improving the design of the trucking industry survey questionnaire and to gain insights from the experience of other jurisdictions in Canada, a questionnaire was sent in May 2006 by email to seven provincial motor transport/trucking associations (other than AMTA), and to 25 senior provincial and city engineers on the Chief Engineers' Council of the Transportation Association of

Canada. In addition to two other questions related to consultation practices, the respondents were asked to suggest the questions that should be included in the trucking industry survey questionnaire.

The response rate, after two reminders, was 29% (2 of 7) from the provincial motor transport associations, and 40% (10 of 25) from the Chief Engineers. The response to the above question was disappointingly low: neither of the two responding motor transportation associations answered the question, and the few suggestions by the Chief Engineers were deemed to be insufficient to ensure the success of the questionnaire approach.

Focus Group Approach

The relatively meagre quantity and quality of the suggestions received regarding the questions to be asked in the survey questionnaire led EBA and INFTRA staff to the conclusion that a questionnaire approach would not be effective for the purposes of this study. It was therefore decided that a "focus group" approach would be more effective.

The focus group discussion was held in Calgary in April 2007. Ten people representing various levels in for-hire and private trucking companies participated in the discussion; they were selected with AMTA's assistance. Each of the participants had extensive truck driving experience in Alberta and elsewhere. In order to encourage attendance by trucking industry people, the focus group discussions were scheduled on a Saturday and an honorarium of $150 was provided to the participants.

The focus group discussion was semi-structured so as to allow the participants to feel free to express their opinions and observations. The terms such as planning, geometric design, pavement design and management, maintenance, safety and traffic operation, etc. were explained at the beginning of the discussion. The comments by the group indicate that they did not have difficulty understanding the terms.

3. RESULTS

Introduction

This section summarizes the suggestions made at the trucking industry focus group. The following general points should be kept in mind when interpreting the suggestions.

1. Many comments at the focus group, as expected, pertained to more than one among the categories of planning, design, safety, etc. The various comments were allocated to the most suitable category; and comments reported under one category are not usually duplicated elsewhere.
2. Among the focus group suggestions, some are truck-specific, while others are of general application to all highway and street users. Many of the suggestions are already part of the planning, design and operating practices of the infrastructure providers; while others provide new insights from the truckers' viewpoint.
3. The following summary emphasizes mainly the items that are of general application to the highway and street networks in Alberta and elsewhere. References to specific issues and/or locations on the Alberta highway system and on the street networks in Calgary and Edmonton are generally not included.

Planning

1. More frequent, better designed rest areas with more facilities should be provided on highways. More rest stops/staging areas should be provided near large urban areas, so as to facilitate the movements of over-dimensional/long commercial vehicles.
2. Greater coordination is required among the various levels of government (provincial, municipal and, where applicable, federal) in matters pertaining to the trucking industry's infrastructure needs.

3. More bypasses of towns should be provided on major international/interprovincial routes, such as the CANAMEX (Canada-US-Mexico) corridor.
4. On major routes, providing more interchanges and on and off access points would be helpful to trucks.
5. The short and long-term transportation improvement plans by the province and large municipalities should be revised more frequently to keep them in step with the rapid economic developments.
6. An explanation and comparison of the governments' revenues from fuel taxes and the expenditures on roads would be useful.

Geometric Design

1. The design of on and off ramps and acceleration and deceleration lanes (length, crown/superelevation, location on curves, etc.) should take a greater account of the characteristics of trucks.
2. The number of curves should be minimized.
3. Tight horizontal curves before and after bridges should be avoided.
4. There is a need for more interchanges on major highways and truck routes.
5. There are examples (e.g., on the Trans Canada Highway in Medicine Hat) of traffic lights right on the grade of a big hill. In such cases trucks takes a long time and extra fuel to get back to speed.
6. Railroad crossings need to be made smoother and the night-time visibility of the markings and advance warning signs at railroad crossing needs to be improved.
7. Passing lanes need to be on more than just hills and should extend past the crown of the hill (especially if there's a roadside pullout located at the crest).
8. More emergency pullouts (runaway lanes) are needed in the mountainous areas.
9. More protection of bridge pillars with energy damping materials is needed.

10. The location of signs at or near intersections sometimes blocks the sight lines.
11. In areas with large volumes of truck traffic, such as industrial zones in cities, design standards should be enhanced or adapted to serve the trucks.
12. Vehicle inspection stations/weigh scales and rest/staging areas should be located on the right side of divided highway and not in the median.
13. More Variable Message Signs should be used.
14. Mile markers would be useful for reporting the location of breakdowns.
15. Truck-only lanes should be considered on routes with heavy truck volumes.

Pavement Design and Management

1. Pavement rutting is a serious problem for trucks.
2. Measures to prevent and/or deal with the black ice on roads in winter are required.
3. New materials such as rubber-asphalt pavements should be investigated.
4. Pavement roughness affects truck operations (e.g., speed, fuel consumption, wear and tear, etc.) and thus lowers profitability.
5. Rules regarding seasonal weight restrictions on highways should be reviewed to make at least the major routes restriction free.

Maintenance

1. Proper maintenance (potholes filled, lines painted, snow removed, and road sanded, etc.) on highways and city streets is "key" from the truckers' perspective.
2. Maintenance needs to be timely.
3. Maintenance standards, practices, and quality appear to vary among regions.
4. Signs covered with snow are a problem; drivers can miss their exit.

5. Signage for lane closure in urban areas is sometimes inadequate.
6. Several suggestions were made regarding snow and ice control, particularly in urban areas: higher priority for truck routes, sanding on hills, less salt use, snow and ice build up under overpasses.

Safety

1. Faded road markings are a big hazard. More durable markings with better night/winter time reflectivity should be used.
2. Median safety barriers should be provided on heavily travelled divided highways (such as Highway 2 between Calgary and Edmonton) to prevent crossover collisions.
3. More safety training and education is required for both truck drivers and motorists.
4. The driver training for all drivers should include special emphasis on the characteristics of large trucks, and on "dos and don'ts" of driving safely in the presence of large trucks.
5. Stricter enforcement of speed limits for non-truck traffic is required.
6. Reduced speed limits should be posted at night on highways through animal zones.
7. The automatic daytime running lights on cars and pickups only turn the headlights on, but not the tail lights, making the back of these vehicles hard to see. All drivers should be required to switch their full lights (front and tail) on during inclement weather.
8. There should be rest areas for the public prior or after the brake check stop. Often the public will be in brake check stop area sleeping, etc. so the truckers have to do their brake checks on the highway.
9. To improve drivers' sight lines, the tree lines should be cut back, especially on corners and tight curves.
10. The visibility of pedestrian crosswalks should be improved in urban areas.

Traffic Operation

1. More Weigh in Motion installations would be useful, especially on major routes such as Highway 2, to bypass the scale if the truck is not too heavy.
2. Detours seem to be designed just for passenger vehicles, and are often inconvenient and unsafe for trucks. Detours on dangerous goods routes should receive special attention, and suitable alternative routes should be provided.
3. To minimize stopping and starting by trucks:
    a. Provide better synchronization/coordination of traffic lights.
    b. Install more advanced notices that a light is going to change, especially on routes with speed limits of 80 km/h or higher.
    c. Turn more routes within cities to through routes with amber flashing lights at certain times of the day when traffic is very low.
4. Greater awareness and public education is required about roundabouts.

Other Aspects

1. The term "truck" is usually applied to pickups as well as commercial trucks (single unit trucks, semi-trailers, and long combination vehicles). The focus group participants felt that some way to differentiate between commercial trucks and pickup trucks would be useful. For example, some participants felt that collisions involving pickups were usually reported as involving "trucks", even though a commercial truck may not have been involved.
2. The decision-making process of the provincial and municipal governments regarding road plans and priorities needs to be better communicated, and the trucking industry needs to be more involved in the process.
3. A formal and more frequent feedback/input system from truckers to the province (Alberta Infrastructure and Transportation) and the cities is required.

(Note that, as expressed in points 2 and 3 above, the desire to be consulted is strong. However, it contrasts with the difficulty in getting the trucking companies interested in providing input for this study. There is thus a need to find a consultation method that would be productive as well as convenient for the trucking industry.)

4. IMPLEMENTING TRUCKING INDUSTRY'S SUGGESTIONS

In November 2007, the trucking industry suggestions from the focus group were presented to the staff from INFTRA (from the planning, design, operations, and carrier safety divisions) and the cities of Calgary (staff from the transportation planning and traffic engineering divisions) and Edmonton (staff from traffic operations and design divisions). The purpose was to hold a preliminary discussion of practical ways of implementing the suggestions. The following summarizes the discussion.

- The group agreed that many of the trucking industry suggestions were quite useful and relevant. Some were already being acted upon, and that the infrastructure providers would give appropriate consideration to other relevant ones.
- It was pointed out that some of the suggestions were a bit too truck-oriented. Some appeared to be complaints based on an inadequate understanding of the policies, standards and practices of INFTRA and the cities, and of the needs of light vehicles.
- It was pointed out that a single focus group of ten is probably not fully representative of the entire trucking industry. A larger sample representing the various trucking industry sectors (e.g., logging, livestock, construction, oilfield, etc), various geographic regions and various levels of staff within the trucking industry would likely produce a more comprehensive list of suggestions.

5. SUGGESTED METHODS FOR FUTURE CONSULTATION WITH THE TRUCKING INDUSTRY

This study has demonstrated that asking the trucking industry (companies, dispatchers or drivers) to complete questionnaires is not a productive method of getting the industry's input and feedback. The following suggested actions would be more useful for that purpose.

1. The infrastructure providers should ask the Alberta Motor Transport Association (AMTA) (and its counterparts in other provinces) to encourage its members to phone in or email (to the provincial or city transportation departments) any specific problems/issues on highways and streets. Many jurisdictions provide a special phone number for this purpose. Alternatively, the AMTA office could keep a simple file of these suggestions and periodically pass them on to the provincial or city transportation departments.
2. Major trucking companies could likewise encourage their truck drivers to inform their own dispatch office (by phone or a note) of problems the truckers observe.
3. The agenda for the routine meetings between the infrastructure providers and the provincial trucking associations or sector/regional associations should have a specific item pertaining to truckers' comments and suggestions regarding general or specific improvements required on highways and streets.
4. This study relied on only one focus group of ten from the industry as a whole. Perhaps more focus group discussions should be held with truck drivers/dispatchers from the sector/regional sectors of the for-hire and private trucking companies.

6. CONCLUDING COMMENTS

The usual consultations with the trucking industry pertain mainly to regulatory or policy matters. This paper has presented the results of a focus group survey which, perhaps for the first time in Alberta,

elicited suggestions by the trucking industry representatives with extensive personal truck-driving experience about improvements required on the highway and urban road networks that would better serve large trucks.

The comments and suggestions made by the focus group of ten people are not necessarily fully representative of the entire trucking industry in Alberta. A larger sample representing the various trucking industry sectors (e.g., logging, livestock, construction, oilfield, etc), various geographic regions and various levels of staff within the trucking industry would likely produce a more comprehensive list of suggestions.

This study has demonstrated that a questionnaire approach is not productive when surveying trucking company drivers and other staff. For future feedback from the trucking industry, methods that would work better include: focus groups; direct feedback by truck drivers by phone to a central file in the trucking company or in the provincial or city transportation departments; and specific agenda items in the regular meetings with the provincial trucking associations.

DISCLAIMER

This paper has summarized, for consideration as appropriate by the various road infrastructure providers, the suggestions made at the focus group of ten trucking industry representatives. The paper's contents do not necessarily represent the endorsement or opinions, policies or practices of EBA Engineering Consultants Ltd., Alberta Infrastructure and Transportation, the cities of Calgary and Edmonton, Centre for Transportation Engineering and Planning, or the University of Manitoba.

REFERENCES

Alberta Infrastructure and Transportation. (2007). Highway Geometric Design Guide. Alberta Infrastructure and Transportation, Edmonton, Alberta.

Harwood, D.G. et al. (2003). Highway/Heavy Vehicle Interaction: A Synthesis of Safety Practice. Commercial Truck and Bus Safety Program Synthesis 3. Transportation Research Board., Washington, DC.

Harwood, D.G. et al. (2003). Review of Truck Characteristics as Factors in Roadway Design. NCHRP Report 505. Transportation Research Board., Washington, DC.