

## **NVF Stipend Report**

**Title:**  
**Axle Load Enforcement in Canada**

**Oslo/Lusaka February 2006**



Vineland Inspection Station

## **Foreword.**

Canada has quite different legislation and axle load limits than Europe. They also differ from other countries and parts in the world. This was the reason for a study tour made by Jan Tore Odd and Asbjørn Johnsen from The Norwegian Public Roads Administration (NPRA) in October 2005. They both have good experience from axle load enforcement in Norway and are working with the same issue in African countries. Mr. Odd is working as Project Advisor in Zambia in The Axle Load Program and Mr. Johnsen as Technical Assistant in the same program.

To optimize the benefit of the tour, the Program Manager in The Axle Load Program for Zambia, Mr. Jairos Mhango, attended. This made a good opportunity to compare axle load policies in a “world-wide” perspective, including experience exchanging related to very different economy conditions. Zambia has in addition a great mining industry with transport challenges related to wear and tear on the road network in some areas.

Organisation and management was also of great interest for the study tour. It was a positive experience to observe the conformity in organisation and operational performance compared with Norway. However the enforcement was not uniformed in all provinces due to different legislation and limits for legal loads.

The Canadian authorities had requested information about some specific issues being part of the road management system. This is shortly described in the report. Thanks to the hospitality we were shown from the Canadian Authorities, Raglan Industries and NVF that made this tour possible and for the good experiences achieved.



## **1.0 Introduction**

Jan Tore Odd and Asbjørn Johnsen from NPRA together with Project Manager Jairo Mhango, Axle Load Control Programme in Zambia took a study tour of the Ministry of Transportation in Ontario, Canada. The main purpose of the tour was to exchange ideas on the following issues;

- i. The regulation on vehicle Weights and Dimensions
- ii. The enforcement of the Vehicle Weights and Dimensions for Commercial Vehicles is carried out.
- iii. The weighbridge methods/procedures such Weighing in Motion Technology.
- iv. The Public Private Partnership and Auto PASS systems.

The team took advantage of the trip to tour trailer manufacturers and a commercial vehicle control station.

This report covers the activities that were carried out during the study tour and the conclusions drawn from the tour.

## **2.0 Visit to Ministry of Transportation, Toronto**

The delegation visited the Ministry of Transportation in Toronto and the following issues were discussed.

### **2.1 Ontario Vehicle Weights and Dimensions (VW&D)**

The project Leader, Vehicle weights and Dimensions Reforms, Mr. Ron Madill informed the meeting that the new regulations governing truck weights and dimensions came into effect on January 1 2001. The changes are the result of an agreement to better harmonize vehicle weights and dimensions in the provinces of Ontario and Quebec.

The changes standardize the weights of tandem and tridem tractor trailers which commonly operate between the two provinces. They also introduce a new generation of self-steer semi-trailers that will improve weight distribution among the axles and reduce wear on Ontario's infrastructure. Certain quad axle configurations will also be allowed to operate at the harmonized weights under a special vehicle configuration permit.

The use of liftable axles in Ontario has been introduced. If improper use of a lift axle contributes to an overweight infraction, an additional fine will be added to the existing overweight penalty.

Below is the summary of the load limits in use in Ontario

## **Tandem Axles**

The load limit for tandem axles is 18000 kg for axles spaced 1.2 metres or more apart. The weight limit is applicable to tandem axles of truck tractors and semi trailers with two axles that are part of a combination of vehicles composed of a truck tractor and one semi trailer. This provision does not apply to trucks, semi trailers of double road trains, semi trailers with more than two axles or trailers.

## **Triple Axles**

The triple axle load limits are 24000 for triple axles with an axle spread of 3.05 metres and 25 5 00 kg for triple axles with an axle spread of 3.66 metres. This is applicable to single semi trailers operating only on a tridem and where the self steer, load equalizing triaxle and quad semi trailers are introduced

## **2.2 Vehicle Weights and Dimensions Enforcement in Ontario**

The Senior Enforcement Advisor, Mr Warren Reynolds informed the meeting that in Ontario, there are approximately 480,000 licensed commercial drivers and approximately 170,000 trucks and 30,000 registered buses. About US\$ 3.2 Billion worth of the goods are transported by road and about 74% of Canada's exports to the US move by road.

### **Enforcement Program**

Ontario province has 39 fixed truck inspection stations, 3 mobile inspection stations, 69 laybys and 180 enforcement vehicles.

The activities that are enforced are

- i. Truck inspections
- ii. Area patrols and bus inspections
- iii. On site audits and investigations
- iv. Accident Investigations involving commercial motor vehicles.

The above mentioned activities are enforced by the Carrier Safety and Enforcement Branch

### **Carrier Safety and Enforcement Branch**

The Carrier Safety and Enforcement Branch is divided into the following;

#### *Policy Office*

The Policy Office develops and implements legislation, regulations, policies and procedures to support commercial vehicle safety and regulatory enforcement.

### *Sanctions Office*

This office monitors carrier safety performance and sanctions offenders, issues special permits and administers Motor vehicle inspection

### *Enforcement Program Office*

This office provides operational support to field enforcement, sets vehicle safety standards, trains enforcement officers and measures and improves enforcement program.

### *Field Enforcement Operations*

This office enforces and promotes compliance with legislation, regulations and industry standards for safe and efficient commercial vehicle operations.

The following laws are enforced

- i. Highway Traffic Act
- ii. Truck Transportation Act
- iii. Dangerous Goods Transportation Act
- iv. Compulsory Automobile Insurance Act
- v. Fuel Tax
- vi. Provincial Offences Act
- vii. Public Vehicles Act
- viii. Trades and Qualification Act

### *Officer Roles and Responsibilities*

- i. Inspect vehicles at request of police and attend to accidents involving commercial vehicles
- ii. Detain vehicles and or loads
- iii. Impound vehicles
- iv. Enforce federal and provincial legislation
- v. Lay Charges, issue offence notices or warnings, initiate prosecutions and serve summons.



*Trucks entering The Vineland Inspection Station (directed by traffic signs)*



*One of the officers operating the weighbridge*

### **2.3 Vehicle Weights and Dimensions in Norway**

Chief Engineer Asbjørn Johnsen from NPRA gave a short presentation about current weights and dimensions in Norway. Generally they are common with regulations for the European Union that Norway through the EEA agreement is obliged to follow, with some few national exceptions.

The European regulations are designed to ensure transport competition under equal conditions and avoid infrastructure damaging. They set the standard for legal axle loads, axle combinations and GVM for single trucks and vehicle combinations. Vehicle constructions are more uniform in Europe than Canada according to the defined axle standards and legal overall length.

Transporters and truck owners are utilizing the Canadian regulations as regards legal GVM where the result has been trucks and vehicle combinations giving unintentionally GVM. This is of great concern for the road authorities because of wear and tear of bridge constructions.

### **2.4 Vehicle Weights and Dimensions Enforcement in Norway**

The enforcement is mostly performed by NPRA staff, only assisted by the police in a small extent. The control staff in Norway is mainly organized as the Canadian, being a part of the Road Administration. Also the tasks are mainly the same where the enforcement of vehicle weights and dimensions is done in addition to the control of

- technical standard and condition of heavy vehicles
- transport of dangerous goods (ADR)
- securing goods
- driving and resting periods for drivers
- transport permits
- road taxes

Most control stations in Norway are equipped with fixed weighbridges. Mobile scales are only used for spot checks and on roads with low traffic volume. The largest control stations sited near trunk roads are in addition designed for brake testing by using roller testers. These are normally located in large garages giving protection under difficult weather conditions and contribute to good working environment for the staff.

Overloading in Norway is penalized by imposing fees for exceeding axle loads or legal GVM and detaining vehicles until they have offloaded or redistributed the load.

### **2.5 Axle Load Control Programme in Zambia**

It is a well known fact that a good road network is essential for the development of any economy and that most of the goods in Zambia are transported by Road. The reason being that the other modes of transport are insufficient and economically uncompetitive.

As result of this it is rather common to find overloaded vehicles on the public roads as this gives huge profits for the Transporter. But to the Road Development Agency overloaded vehicles increases the rate of deterioration for the roads and bridges.

The Road Agency has realized the need to control overloading on the public roads. It has embarked on the process related programme called the Axle Load Control Programme. The Programme outlines issues that are pertinent to effectively control overloading.

The main objective of the programme is to reduce the rate of overloading from 30% for Axles to less than 5% and from 50% for the Gross vehicle mass to less than 5% in 2008.

The programme has nine components namely

- i. Information and Awareness Campaign
- ii. Improve Organization and procedures
- iii. Legal Initiative
- iv. Minimize Corrupt Practices
- v. Weighbridge Equipment and sites
- vi. Commercialization of Weighbridges
- vii. Project Monitoring
- viii. Vehicle Overload Management System
- ix. Project Administration and Budgets

The expected output of the programme are:

- i. educate and give information to the transport industry through awareness information campaigns.
- ii. To come up with a piece of new and efficient regulation.
- iii. Overload on axles and GVM to reduce to less than 5%
- iv. Construction of eight number fixed electronic weighbridges
- v. Procure 8 number portable weighbridges

## **2.6 The Public Private Partnership in Norway**

In 2001, the Norwegian Parliament approved the National Transport Plan including three road projects as pilot projects to test the idea and model of PPP in Norway. These were:

- **E 39 Klett Baardshaug**
- **E 39 Lyngdal Flekkefjord**
- **E 18 grimstad Kristiansand**

The parliament wanted to test whether the PPP is a more efficient way of developing the road service than through traditional development.

The expectations to the use of PPP have mainly been to add valuable extensions to the current procurement strategies used by the Norwegian Public Roads Administration. Some of the expectations can be summarized in a few lines:

- Initialize creativity by use of technology and methods from other fields.
- Details in plans and solutions adapted to existing equipment.
- Life cycle perspective on construction, operations and maintenance leads to sustainable solutions.
- More efficient construction period.
- Co-operation to find the best solutions for the project replacing claims and additional demands.

The experiences so far have mainly been within technical creativity.

- Many good proposals to improve details in the development plan, both as part of the tender process and during the construction period
- In the projects have been used well known and traditional methods, not new technology and methods from other fields
- We have seen professional management, but also detailed level as in other contracts
- We have also seen solutions adjusted to existing equipment

The use of PPP in Norway is in an initial stage and should be regarded as a valuable addition to the current procurement strategy in the road sector.

## **2.7 Auto PASS systems**

Chief Engineer Asbjørn Johnsen gave a presentation about Toll Roads in Norway and Auto Pass systems. The main issues were

- the extent of toll roads in Norway (totally 48)
- organization of toll projects
- payment systems
- technical solutions and design
- road users attitude to toll rings
- toll rings in urban areas

- effect of toll rings, regarding traffic volume and environmental effects
- challenges to make Auto Pass system operational to other Nordic toll systems

## 2.8 Weighing in Motion Technology, Ontario experience

There are three types of WIM; Single Load Cell, Bending Plate and Piezoelectric Sensor.

WIM scales can be used to directly carry out actual enforcement action or profiling traffic on a particular highway corridor to assess the need for enforcement.

The following are WIM Applications.

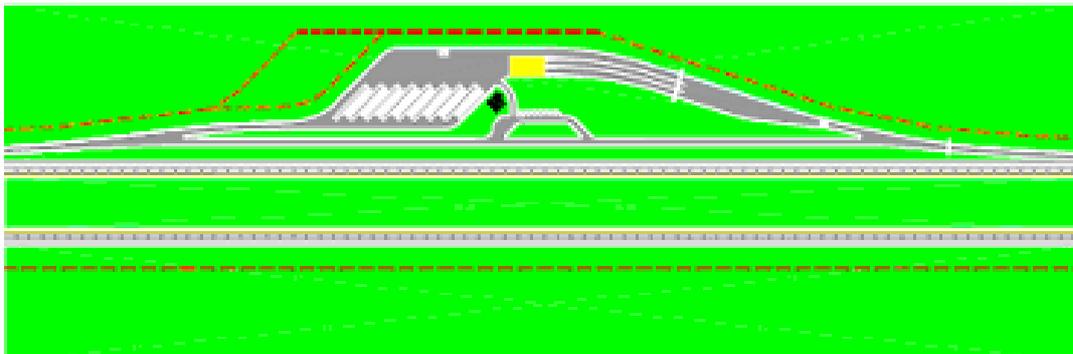
- Ramp Sorting WIM
- Electronic Pre-Clearance Systems
- Virtual Weigh Station
- Mainline Survey Scale

New Station Design

The following has been included in the new station design

- Linear station design
- All trucks are weighed by WIM
- Only trucks determined to be overweight by WIM scale will be weighed on static scale
- Need the accuracy of the static scale to fine driver for overweight.

The new station design shown below will be implemented in the next few years in Ontario.



### **Visiting a trailer manufacturer.**

A visit was performed at Raglan Industries Inc to study different technical solutions for trailer constructions. The company has a specialized production, building vehicles according to the customers' specifications. This was both to meet requirements according to different kind of transport/goods and utilizing load limits due to current regulations. The Director John Michel sheared the authorities concern about the high GVM for special vehicles and the impact on bridge constructions on the road network. He was also stressing the fact that Canadian authorities are unwilling to allow steering axles in multi axle combinations.



From Raglan Industries. *Semi trailer made after customers specification. The number of axles and the close spacing is to utilize the GVM limit.*