

PRACTICAL ASPECTS CONCERNING HEAVY TRANSPORT SPECIFICATIONS IN  
NEW ZEALAND

R. LAMBERT A.M.I. R.T.E.

When I was invited to present this paper, I immediately dismissed the ideas of discussing details of Engine and Drive line specifications in favour of taking a broader look at the problems facing the Transport Engineer and Fleet Operators when purchasing Heavy Transport Equipment.

In taking this broader look I found:-

- Taxation
- Legislation
- Truck importation
- Trailer manufacture

in that order, are all important when considering the practical aspects of Heavy Transport Specifications.

It is also very interesting to note, Taxation and Legislation are directly controlled by Government and Truck Importation and Trailer Manufacture are heavily influenced by fiscal policy. Did someone say "The Transport Industry has been deregulated"!

Equipment Consultant - Freightways Express Ltd.

TAXATION

Our industry is without doubt on the heavy end of the tax collecting clobbering machine, with some of the tax collection methods being counter productive.

Perhaps the best example of this counter productive taxation is Road User Charges. This tax on heavy vehicles, based on laden axle weights and the user pay principal is, on the surface, a good idea.

Unfortunately, to minimise the tax payable, Road User Charges encourage the addition of extra axles in our vehicle combinations at the expense of payload.

Taking a detailed look at a 4-axle prime mover, towing a full trailer we find:-

If the full trailer has only two axles we have:

- Axle values under our axle weight regulations of	- 41.7 tonne
A total tare weight of	- 15.5 tonne
Potential payload based on 39 tonne gross	- 23.5 tonne
Road User Charges	- \$513.06 per 1000 km.

- by adding two additional axles to the full trailer we have:

Axle values under our axle weight regulation of	- 54.3 tonne
A total tare weight of	- 18.1 tonne
Potential payload based on 39 tonne gross	- 20.9 tonne
Road User Charges	- \$260.42 per 1000 km

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In reducing the taxation on our combination, by \$252.64 per 1000 km we have at the same time:-

- Lost payload to the tune of 2.6 tonne, which is equal to one trip in ten when related to our example.
- Increased the capital cost of the full trailer by \$13,000.00 (1985 costs) inclusive of some \$7,000.00 in overseas exchange.
- Increased the running costs by \$73.90 per 1000 km (based on fleet costs) extra running gear requires extra maintenance.

Thus we are failing to obtain maximum utilisation from high capital cost transport equipment by letting the cost of money to finance advanced payments of Road User Taxation to become dominant, rather than long term economics.

I also question the need to increase the Heavy Vehicle Maximum Weight as discussed by a previous speaker. A similar end result can be achieved by reviewing our transport taxation system.

#### LEGISLATION

During the past few years there has been an unprecedented amount of change in New Zealand's Transport Legislation, some of this change is continuing.

These legislative changes in place, or pending, are of concern to the Transport Engineer when specifying or designing the transport equipment of tomorrow.

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Delicensing of the Transport Industry, a change already in place, and is continuing to change the operational requirements. The need for sound transport engineering has consequently become more critical. Details such as:-

- Fifth wheel mounting heights on tractor units, yet we have no standard.
- Design heights of semi-trailers, again we have no standard.
- Age and design relationship between equipment forming combinations, yet we have no guide lines.
- Fatigue failures resulting from increased loading and distances, yet we are not updating our certification procedures.
- Performance criteria of prime movers, currently anything goes. These and other details are all in need of urgent attention, many relate to road safety, all are engineering problems.

Increase in Gross Weights and Related Vehicle Dimensional Changes, a major change pending and currently being considered by the "Ministry of Transport" and the "National Roads Board". This, if or when, introduced will:-

- Increase the maximum gross combination weight from 39 to 44 tonne, on selected combination only.
- Change a number of the current vehicle dimensional regulations.

Before this change takes place, the Ministry of Transport is going to look to our Industry for some trade-offs, and they have produced a list of items for discussion. This list is attached at Appendix A.

Let us not sit back and allow this list, of which many may not be necessary or desirable, slip into the proposed legislation without that discussion. I question:

- The engineering capability of the Industry to handle yet another major change, before the problems brought about by de-licensing the Industry have all been fixed.
- The need for one set of rules for 44 tonne gross and another for 39 tonne gross, as proposed.
- Why the proposed dimensional changes cannot be considered as a separate issue, after all the proposed forward length changes are unrelated to the weight changes.
- Why special consideration has not been given to the internal movement of I.S.O. containers when proposing such a major legislation change. Is this not the biggest single issue facing our industry and our exporters?

Other major road transport policy changes, recently introduced or currently under discussion are:-

- Open road speed limits (introduced)
- Load security (becomes law 1 February 1985)
- Brake compatibility code (under discussion)

As I do not wish to become emotional I will refrain from discussing the new "Open Road Speed Limits". It is enough to say:

- The new "Open Road Speed Limits" are a typical example of poor legislation.
- Load security and brake compatability should have been introduced prior to the increase in speed limits.

Heavy vehicle specification, you must all agree, are very much related to legislation and continued debate with Government is necessary if practical engineering solutions are to come through into legislation.

#### TRUCK IMPORTATION

As we do not have a Truck Manufacturing Industry, there are no vehicles available to the Transport Operator which have been designed exclusively for our conditions or legislation. Consequently, vehicles operating in our fleets are a compromise between the requirements of the country of origin and our local requirements.

Currently, there is little or no restrictions on the importation of C.K.D. Truck Kits. Fortunately, in most cases, we are supplied by well established companies, who provide us with wide range of specifications from which to make our choice.

This method of providing prime movers in cab and chassis form must, and does, present practical problems. Such problems are, in general terms fixed for the operator by local engineering workshops, thus the required compromise is reached.

On the surface it all looks good, as from the wide range of specifications available it is easy to select an engine, drive line specification to obtain a desired highway performance. Having made the selection we must now set the vehicle up to meet fleet requirements, legislative requirements and above all obtain driver acceptance.

At this point I believe the system falls apart and the practical problems start, many of them result from:-

- The offering of vehicles for sale by the importer which do not comply with our Dimensional and Weight Regulations i.e. vehicles too heavy on front axles.
- Poor product knowledge by importer, distributor and/or salesperson, i.e. what type of wheel equipment is supplied as standard.
- If major specifications or configuration changes are required, is it not the manufacturers/importer's responsibility to provide engineering instructions, not the purchaser or the trailer supplier as so often happens.
- Who certifies such modifications, again should it not be the manufacturer/importer.

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With the many changes taking place in the industry i.e. :-

- Greater distances travelled per annum
- Increase vehicle utilisation
- Higher road speeds

The need for the vehicle/supplier to improve their engineering standards become greater. Currently I can count on one finger the number of vehicle suppliers who provide practical engineering services to their clients.

#### TRAILER MANUFACTURER

As already mentioned, truck importers provide a minimum engineering service to their clients, thus our trailer manufacturers have played a dominant roll in the selection of Equipment for the Industry. This dominance has forced our legislators and the majority of operators to look to these manufacturers for guidance, thus the tail has wagged the dog.

This local industry together with the operators has grown up within the 40 mile and later the 150 km km distance regulation. They have yet to establish the need to rethink basic designs to meet the challenge of a de-regulated Industry.



I warn operators as distances and utilisation of trailer equipment increase, their life span decrease. The days of trailer equipment lasting forever are history, current indications are a maximum trailer life of about seven years is all you can expect from equipment built to current designs and inter-changed with none standard prime movers.

Should the trailer manufacturers wish to maintain the dominance they currently enjoy, they cannot remain neutral and retain the operators goodwill, therefore they must:

- Communicate with truck importers, thus eliminating the number of problems they import.
- Communicate with the operators, thus eliminating the number of problems they purchase.

The trailer manufacturers do not need continuing major transport policy changes to keep their industry viable. There is a need for them to:

- Continue to improve designs within the existing transport policy
- Introduce Quality Control, currently attention to detail leaves a lot to be desired.

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### CONCLUSIONS

By now many of you present will be thinking - What about the transport operator, is he not involved in this equation. He is, of course, very much involved: \_

- The load security regulation which comes into force on 1 Feb 1985 would not have been necessary had the transport operator been responsible and secured his loads.
- The truck importers would not offer for sale vehicles which do not comply with the existing regulations if the transport operator refused to purchase them.
- The trailer manufacturing industry could improve its image and standards if the transport operator compared specifications rather than price.

The transport operator needs our help, as Transport Engineers we have a major roll to play in ensuring Heavy Transport Equipment is designed to operate within the existing legislation and without endangering other road users.

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APPENDIX A

MINISTRY OF TRANSPORT TRADE-OFFS FOR OPERATING AT GROSS LOADS  
RANGING BETWEEN 39 TONNES AND 44 TONNES

1. Must comply with new size limits
2. Must have the appropriate number of axles
  - three-axle truck plus four-axle trailer
  - four-axle truck plus three-axle trailer
  - four-axle truck plus four-axle trailer
3. Braking - compliance with ADR35A and 38 or equivalent approved codes.
4. Compliance with drawbar code (under preparation)
5. No self-steering or castoring axles or forced steering axles. Must exclude dollies and front steering axles.
6. No spaced axle groups
7. All axles must have manufacturer's rating above 8.5 tonnes and other critical components rated to suit maximum loading, excluding front steering axles.
8. Compliance with a code or standard for turntables.
9. Fifty millimetre king-pins and tow coupling pins needed. Compliance with approved standards and drawbar and coupling code.

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10. Minimum power rating of tractor units (270 horsepower).
11. Approved suspension types only (braking non-reactive) load sharing.
12. Rear reflective markings - panel and white colouring to rear.
13. Seat belts fitted in all heavy trucks.
14. Compliance with standards for wheel and rim.
15. Suitable percentage of weight on drive axles (25 or 30 percent).
16. Load security requirements (compliance with new code).
17. Compliance with suitable standards for converter dollies or complete prohibition.
18. All drivers shall:
  - (a) be at least 21 years of age;
  - (b) have passed a defensive driving course
19. Demonstrate compliance with noise emission standards.
20. Specification of maximum speed capability (e.g. limit to 120 kilometres per hour).

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21. Suitable improved driver training and licensing.
22. Fitting of spray suppression devices.
23. Fitting of tachographs.
24. No telescopic drawbars or variable position axles or turn tables unless they comply with the drawbar and coupling code.
25. Front, rear and side under run protection - standards exist in United Kingdom. Under study in Australia.