Comments on: Draft MDL Amendment Regulation
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Increase GML to the limits that currently apply under CML

Page 5, 2nd last paragraph page first sentence

'Axle mass limits for tandem axle groups and tri-axle groups will increase to the equivalent of existing CML masses for these respective axle groups. '

Should not this sentence read:

Axle mass limits for tandem axle groups and tri-axle groups will increase to the equivalent of existing CML masses for these respective axle groups **provided each respective axle group has a manufacturer vertical load rating exceeding the specific respective allowable axle mass limit and each multiple axle group is installed with an inherently damped mean ride height controlled dynamic load sharing air suspension.**

Here it should be noted the use of inherently damped mean ride height controlled dynamic load sharing air suspensions on all multi axle groups on heavy vehicle combinations will eliminate road surface corrugation formation. The elimination of surface corrugations (especially on sealed roads atop softer road substrate) will significantly reduce road maintenance cost, driver fatige, vehicle and freight damage. A further significant advantage of installing dynamic load sharing suspensions on trailer multi axle groups, in particular, is the reduction to the risk of the rear most axle of each axle group overloading. This overloading of the rear most axle, in turn, causes the bearings on the same axle to overheat. Should the heating become excessive ignition of the tyres (and mudguards) and subsequently the trailer's freight occurs.

Another not so obvious advantage of the use of dyanmic load sharing multi axle groups is the vastly improved traction for driven axle groups (hence improved fuel economy) and braking for both driven and undriven axle groups. In addition tyre wear on inherently damped dynamic load sharing multi axle groups is minimal and uniform across the axle group. This improved tyre life generates another significant operation cost saving.

It should be further noted improved heavy vehicle combination stability is associated with the installation of pusher lazy or liftable axles in preference to the installation of tag lazy or liftable axles on each vehicle unit rear multi axle group of the combination (should lazy or liftable axles be installed). Here fore placement in preference to aft placement of the lazy or liftable axle is recommended to confidently ensure the respective vehicle unit wheel base simply increases or the trailing unit hitch point rear overhang dimension remain invariant should the lazy or liftable axle unintentionally offload or non load share when laden (even for short intervalds). (Obviously for steerable dollies with a multi axle group the reverse preference applies (notably the liftable axle group should be located aft). Proper caution is most appropriate should fore and aft liftable axles be installed to tri or quad axle dolly sets. Notably when laden all axles on the dolly should reliably dynamically load share.)

Last paragraph page 5

‘In addition, axle mass limits for quad-axle groups and groups of five or more axles will also be afforded an increase. The maximum mass limits for these groups will be 21t. This will ensure these axle groups retain equivalent masses to tri-axle group, as is the case currently.’

Should not this paragraph read:

In addition, axle mass limits for quad-axle groups and groups of five or more axles will also be afforded an increase provided the **manufacturer vertical load rating exceeds 21T and the respective axle group is installed with an inherently damped mean ride height controlled dynamic load sharing suspension**. The maximum mass limits for these groups will be 21t. This will ensure these axle groups retain equivalent masses to tri-axle group, as is the case currently.’

On application the implication of this paragraph begs the question: ‘Why on earth would an operator install a quad axle or five axle group on a heavy vehicle combination?’

Page 6 Second point:

- The 5% gross mass restriction will be removed.

Should not this read:

- The 5% gross mass **overload** restriction will be removed.

In any case it is paramount the final document be accurate and concise as to the proper intent!

Page 6 Last point first sentence.

- …, the increase in overall length allows for an increase in truck length only, …

The undersigned is in full support of increasing the truck wheel bases noting the grossly adverse operational dynamic stability characteristics exhibited by current short wheel base (SWB) (especially PBS classified) prime mover’s.

However, how will this requirement be regulated? Especially for typical rural operators with multiple optional trailers for each fleet prime mover?

Furthermore this requirement is moving toward the US dimensional regulation which only regulates the O/A dimension of the trailer (or payload space) with no restriction on the combination’s O/A length.

A safer and more robust option would be to specify the prime mover wheel base not be less than 4.7 m provided the (various) axle spacing ratios sufficiently deviate from integar values. In particular for 6 x 2 or 6 x 4 prime movers ratio of the axle spacing between the steer axle and the lead rear axle to the spacing between the rear axles should deviate strongly from the numerial 3 or 4 (particularly the latter which associates with the adverse four beat phenomena). Obviously, prime movers with increased number of axles associate with increased multiplicity of axle spacing ratio combinations which should be avoided. These axle spacing dimensional ratios numerical values

should be avoided to minimise excessive driver seat pad vibrations and, in turn, driver health problems.

Page 7 First point second sub point:

- the rear overhang limit will also increase 19m from 3.7m to 4.0m

should not this sub point read

- the rear overhang limit will also increase **0.3**m from 3.7m to 4.0m **provided the combination does not operate in excess of 50 kph**.

Noting local heavy vehicles operate at 100 kph highway speeds the rear overhang limit should be reduced to the lesser of 40% of the vehicle's wheel base or 2.4m. Notably the rear over hang of new local heavy vehicles should be reduced not increased for improved safety. This recommendation is consistent with that recommended by the Roaduser Systems Pty Ltd report [1].

Page 7 First point third sub point:

- the maximum distance from the front articulation point to the rear of the trailer will be increased from 12.3m to 14.5m

Does not this sub point directly conflict and contradict the statement in the last point paragraph on page 6 that '…, the increase in overall length allows for an increase in truck length only, …'

Page 7 last point

- … The steer group, of eligible prime movers, shall:
  - be fitted with a load sharing suspension system
  - be fitted with tyres with section widths of at least 275mm

Should not this read:

- … The steer group, of eligible prime movers, shall:
  - be fitted with an inherently damped mean ride height controlled dynamic load sharing suspension system
  - be fitted with tyres with section widths of at least 275mm

Page 8 Amend the tow mass ratio an associated conditions for tag trailers.

Combinations with tag trailers should be limited to 80 kph maximum operation speed on sealed roads and 50 kph on unsealed roads due to the extreme risk of road surface generated gross steering deviations. Notably the use of tag axles should not be encouraged.

1 Roaduser Systems Pty Ltd, January 2005, 'Stability and On-Road Performance of Multi-Combination Vehicles with Air Suspension Systems: Stage 2 Project'.

Page 9 Further future amendments:

Increasing the vehicle height limit from 4.3m to 4.6m.

All vehicles exceeding 3.6m in height should be limited to 80 kph maximum operation speed on sealed roads and 50 kph on unsealed roads. Furthermore the various heavy vehicle suspensions are only rated for vertical load rating without any guidance to paramount roll resistance.

The general height of heavy vehicle combinations should not be increased from 4.3m to 4.6m due to current relative high overturning incidences of 4.6m high livestock vehicles and the fact local roads in the majority are unsealed. Furthermore the limited extent of sealed roads are void of sealed shoulders hence associating with an ongoing risk of loss of control and / or rollover exists should an axle group of a heavy vehicle combination deviate over or from the pavement edge. These operational risks are further compounded by the fact local roads are poorly maintained hence exhibit high roughness, significant potholing and significant corrugation (form and extent). The same are further exposed to unconstrained stock and wild life movements, vegetation litter during periods of high winds, bush fire exposure and on the other hand flood inundation including road formation and bridge abutment / structure wash aways. Subject to these every day operational conditions it is paramount to make heavy vehicle combinations safer in preference to increasing productivity. Driver health, well being and fatigue minimisation are also paramount operational considerations.

Notably, in summary, the NTC and other road / road transport authorities should completely and thoroughly avoid the assumption local heavy vehicles operate on highest quality fully sealed roads (that is including full width (near and off side shoulders)) maintained invariantly to highest standard.

Suggested Additional Requirements

All dog and pig trailers should be installed with pivoted draw bars. Pivoted draw bars are recommended to minimise the variation in the prime mover steer axle (/ group) dynamic load.

All 6 x 2 and 6 x 4 prime mover semi trailer combinations with the turntable located aft of 10% of the prime mover's wheel base should be installed with an inherently damped mean ride height controlled dynamic load sharing air suspension on the rear axle group.

To minimise the extent of sealed road corrugation formation all multi axle groups on heavy vehicle combinations should be installed with inherently damped mean ride height controlled dynamic load sharing air suspensions.

The hitch point of pig and tag trailers onto the hauling truck or hauling vehicle should be located as close as possible aft of the hauling vehicle's rear axle group rear most axle. This concise tow bar hitch point is recommended to minimise the variation in the hauling vehicle's (especially the prime mover's) lead or steer axle (/ group) dynamic load as implied by the Roaduser Systems Pty Ltd report previously cited[2]. Furthermore it is recommended the hauling vehicle's rear axle group be installed with an inherently damped mean ride height controlled dynamic load sharing air suspension to more optimally tolerant the in operation hitch dynamic down load variation inflicted by the tow hitch of the trailing pig or tag trailer.

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2 Ditto.