

OTA BRIEFING NOTE



May 2014

Legality of 6x2 Tractors

Background

Tractors configured as 6x2s (6 wheel positions, 2 of which are connected to the power train) have existed for decades. Their advantage, compared to a standard 6x4 tractor, is they are a few hundred pounds lighter and potentially use 2% to 3% less fuel. The main reported concern with 6x2 tractors is lack of traction in slippery conditions – especially in certain northern climates like Canada.

Such traction issues are usually addressed by temporarily shifting weight from the non-driving axle to the driving axle. Although shifting weight to the drive axle improves the situation, it does not match the traction of a 6x4. The weight shifting technology can range from very basic, such as a driver controlled lift-axle, to very sophisticated systems that automatically engage when low-traction events are detected.

There is starting to be considerable interest in 6x2 configurations due to recent improvements in traction control systems that automatically shift weight for short periods of time from the non-driving to the driving axle during a low-traction event and, in some cases, also engage a differential lock.

From governments' standpoint, provinces remain concerned about infrastructure damage caused by shifting weight between axles. Although some systems appear to perform better than others, there is also concern with how to control the types of systems that may be used and how to ensure systems are working 'as advertised'. There are also outstanding questions about how these vehicles can perform on Canadian roads in all types of winter conditions.

Legality of 6x2s in Canada

Provincial truck weight and dimension laws are guided by a national *Memorandum of Understanding on Interprovincial Weights and Dimensions* (MoU). The MoU sets weight and dimensional standards for a limited number of common vehicle configurations and requires each province and territory to ensure their laws accommodate these vehicles at the stated weight and dimension limits. If they wish, provinces and territories could allow additional configurations than are listed in the MoU as well as more generous weight and dimension limits for the MoU vehicles. They may not impose more restrictive rules than contained in the MoU.

Consequently, if the MoU recognizes 6x2s and related traction control systems, all provinces and territories would similarly have to recognize them. Unfortunately, the MoU does not specifically address 6x2 tractors one way or the other, except for a stipulation that any tractor-trailer operating in British Columbia in excess of 38,000 kgs gross weight requires a 6x4 tractor. Therefore, there is need for interpretation of existing MoU rules and language to determine treatment of 6x2 tractors.

Other than the BC prohibition, there does not appear to be any specific restriction on using a 6x2 in place of a 6x4 tractor, provided the MoU load-equalization requirements of the two rear axles are satisfied and individual axle weights do not exceed 9100 kg. Load-equalization requires that the individual weights of the two rear axles do not vary by more than 1000 kg – including when a traction control system is engaged.

Although 6x2 traction control systems are capable of staying within the 9100 kg individual axle weight limit when the system is engaged, they must cause a weight differential well in excess of 1000 kg to provide effective traction. Therefore, 6x2 tractors with weight shifting traction control systems do not meet MoU standards and are generally not legal in Canada.

Legality in Ontario

Ontario has a two-tier system of vehicle weights and dimensions. "Safe, Productive, Infrastructure-Friendly" (SPIF) vehicles are considered the upper-tier and incorporate all MoU vehicles as well as a number of additional configurations. Axle and gross weights of SPIF vehicles are generally "more generous" than specified in the MoU. Any vehicle that does not meet SPIF standards is considered a lower-tier "non-SPIF" vehicle which must operate at restricted gross weights and may not pull semi-trailers longer than 48'.

As set out in Highway Traffic Act regulation, all 3-axle SPIF tractors must be equipped with a "tandem" drive axle. While this does not preclude a 6x2 configuration, the term 'tandem' requires that the weight be equally shared between the two axles and prevents inclusion of any sort of device that may alter the axle weights. The simple existence of a 6x2 traction control system that is able to alter the axle weight disqualifies the vehicle as SPIF.

Such a vehicle is therefore deemed to be non-SPIF and subject to reduced gross weight allowances and limited to semi-trailers no longer than 48'. Similarly, 6x2 tractors with weight altering traction control do not meet Ontario's Long Combination Vehicle (LCV) requirements and may not be used as part of that program.

Conclusion

Any 6x2 traction control system that may cause unequal weights on the two rear axles (ie. a differential greater than 1000 kg) does not meet MoU standards. Provinces and territories are therefore under no obligation to recognize these systems and they are generally not legal in Canada. Ontario does have laws that accommodate a 6x2 traction control system, but only as a lower-tier non-SPIF vehicle which must operate at restricted gross weights and with semi-trailers no longer than 48'. OTA members interested in more information can contact OTA's Jonathan Blackham – jonathan.blackham@ontruck.org