

# SEASONAL LOAD RESTRICTION (SLR)

## Ready Mixed Concrete Industry

Potholes, fatigue cracking and rutting are common signs of the distress of a road under repeated traffic loading. This is because each road is built differently and during the spring thaw process roads can lose their structural integrity. Seasonal Load Restrictions are put in place in order to protect roads from damage caused by excess weight from commercial vehicles during the spring thaw cycle.

### LESS DAMAGE INCURRED @ 6,500KG/AXLE

Placing a restriction on the amount of weight a concrete truck can carry significantly increases the number of trips each truck will have to make in order to complete the transport of material on the restricted road to the job site. This creates additional distress and wear and tear on the road, arguably even more impact than the full weight load.

RMCAO's study concludes that a typical local municipal road constructed using standard granular base and subbase (30 MPa) incurs less fatigue cracking if a standard concrete delivery is made (during SLR) via two truck trips at 6,500 kg/axle (1% to 1.2% damage) vs nine truck trips at 5,000 kg/axle (1% to 1.8% damage).

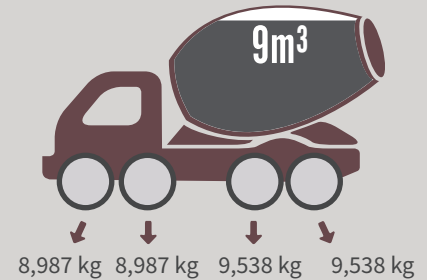
### EVERY ADDITIONAL TRIP CONTRIBUTES TO INCREASED GHG

Trucks used in the concrete industry are unique – only delivering product to a project for initial construction. The perishable nature of concrete also means that the distance travelled is relatively short compared to other heavy trucks.

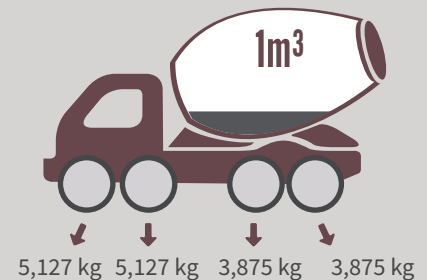
Every additional kilometer driven by ready mixed concrete trucks forced to make additional trips because of Seasonal Load Restrictions contributes to increased GHG and air contaminants. The RMCAO study estimates an 800% increase in number of truck trips, fuel used and GHG and CO<sub>2</sub> contributions when seasonal load restrictions of 5,000kg/axle are in force.

### How do 9 Trips Become 2 at 6,500 kg/axle?

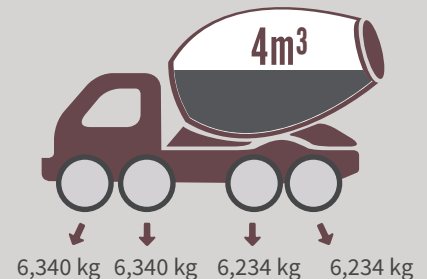
During non Seasonal Load periods (10,000 kg/axle), a standard concrete truck can carry 9m<sup>3</sup> of concrete.



When Seasonal Load Restrictions (5,000 kg/axle) come into effect this reduces the load a concrete truck can carry to less than 1m<sup>3</sup>. Forcing trucks to make 9 trips to deliver an equivalent full load.



A proposed Seasonal Load Restriction of 6,500 kg/axle would allow a concrete truck to carry almost half its load (4m<sup>3</sup>) reducing the number of trips to 2.



\* 1m<sup>3</sup> of concrete = ~2,380 kg

\* An empty 9m<sup>3</sup> concrete truck = ~15,625 kg

## WHY ENVIRONMENTAL IMPACTS INCREASE

GHG Emissions (HC, CO, NO<sub>x</sub>, PM and CO<sub>2</sub>) increase during SLR because less material can be transported at one time equaling more truck trips and more fuel consumed.

## CONCRETE TRUCKS ARE UNIQUE

Concrete trucks have a one-of-a-kind configuration that reduces infrastructure and environmental impacts.

Today's concrete trucks axle, tire and engine configuration did not exist when the original studies related to road damage during spring conditions were done 40 years ago.



**A concrete truck configuration** shifts the centre of gravity rearwards with additional load size reducing front axle weight. This is different than any other heavy truck because as load size increases in a concrete mixer weight is transferred to the rear axles.



**Tire pressures and contact loads** are lower by 22% to 25% because a concrete truck's standard vocational tires distribute the weight of the truck and load over a larger footprint. This greatly reduces truck and tire load impact on the road which translates into less road damage.



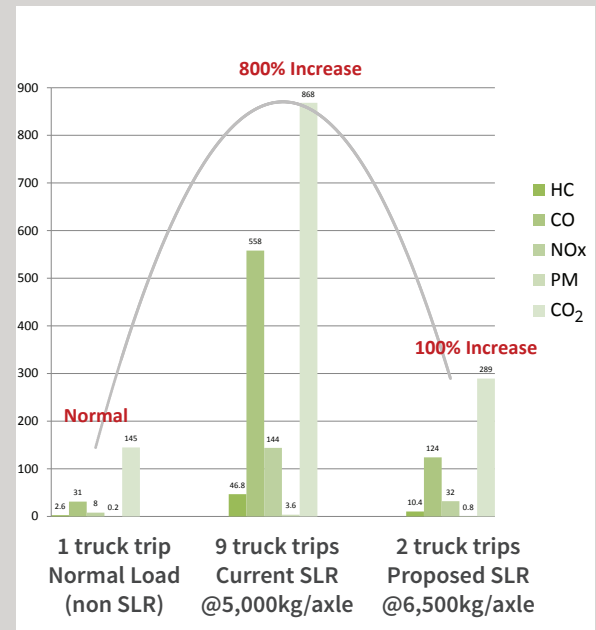
**Electronic engines**, along with lower emission fuels are common place with concrete trucks. These greener technologies help to reduce GHG emissions.

## CONCRETE TRUCKS MAKE UP SMALL % OF HEAVY TRUCKS IN ONTARIO

	All Heavy Trucks	Concrete Trucks	% of Total
Number of Trucks	108,936	3,200	3 %
Estimated total annual distance travelled	8,497,008,000 km	80,000,000 km	1 %

Source - Canadian Vehicle Survey 2005, National Resources Canada

## Environmental Impact Comparison of Concrete Truck Loads



## A CALL TO ACTION

Significant environmental, economic and road damage can be averted by making a simple change to your municipal by-law when it comes to allowances for ready mixed concrete trucks.

Consider changing your by-law to include the following amendment:

### Exemption to reduced load period:

No ready mixed concrete truck, certified by the RMCAO, shall be operated upon any designated highway where the weight upon an axle exceeds 6,500 kilograms.

## Ready Mixed Concrete Association of Ontario

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