

DAMAGE TO ROADS

Seasonal Load Restriction (SLR)

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.

PREDICTING ROAD DAMAGE

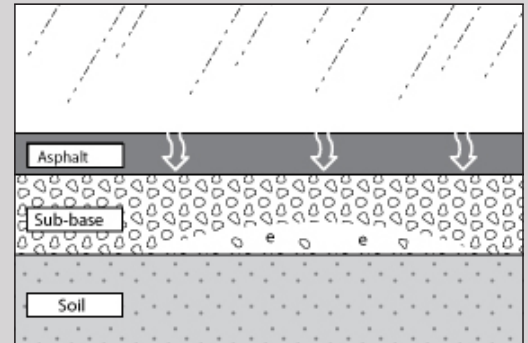
RMCAO commissioned a report using the Mechanistic-Empirical Pavement Design Guide (MEPDG) methodology. The MEPDG principles are used to predict the deterioration of pavements and their expected service lives. State of the art mechanistic models predict the accumulation of pavement distress based on the traffic loads and the material properties. This methodology requires local calibration models. Design inputs from MTO were utilized in the RMCAO study.

LESS DAMAGE INCURRED @ 6,500KG/AXLE

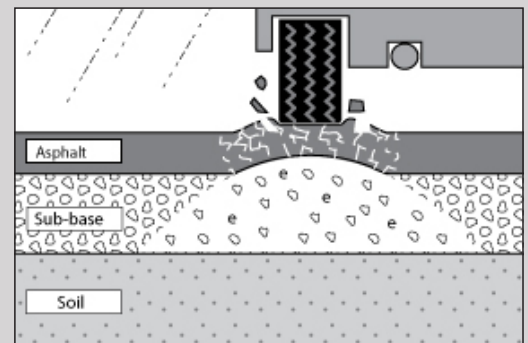
Placing a restriction on the amount of weight a concrete truck can carry significantly increases the number of trips each truck will have to make in order to complete the transport of material on the restricted road to the job site. This creates additional distress and wear and tear on the road, arguably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

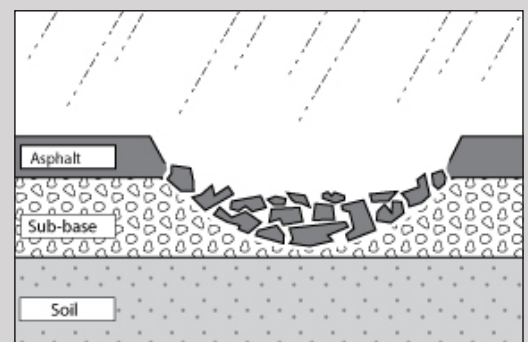
Impact of Spring Thaw on Asphalt Surface



Water from melting snow and ice seeps into the asphalt and softens it. During repeated cold spells, the water in the asphalt refreezes and expands, breaking up the asphalt on and below the surface.

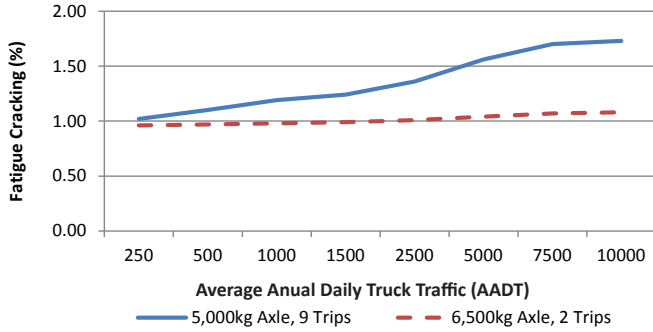


When the ice melts, it leaves gaps inside the asphalt and the moisture further softens it. The soft, fractured asphalt cannot support the weight of passing vehicles and begins to break up.



As vehicles continue to pass over the damaged asphalt spot, pieces of roadway are kicked out, creating cracks, rutting and potholes.

Road Damage caused by ready mix trucks @ 9 trips (5,000kg restriction) vs. 2 trips (6,500kg allowance)



Source - Applied Research Associates, Inc.

CHANGE NEEDED TO SEASONAL LOAD RESTRICTION FOR CONCRETE TRUCKS

While protecting roads from physical damage during the spring thaw is important, a seasonal load restriction of 5,000kg/axle (nine truck trips) creates more damage than allowing a concrete truck to travel at 6,500kg/axle (two truck trips).

Current



Proposed



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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