Wisconsin Department of Transportation Report on AB185

Problem Statement
Currently farmers are restricted by weight limitation as to the volume of manure that they can transport on public roads. This leads to an increase in the number of trips that they have to make to dispose of or spread the manure on fields. The cost associated with the compliance to the existing weight limitation is additional time and fuel costs.

Description of the proposed vehicle weight limit exception
For the transportation of agricultural manure exclusively the vehicle or combination of vehicles may exceed by 10% the gross weight imposed on the highway by the wheels of any one axle or axle group. As long as the gross weight of the vehicle or combination of vehicles does not exceed the maximum gross weight specified for that vehicle or combination of vehicles by 10%. The bill applies to the entire state. However due to the nature of the commodity being transported this bill would apply primarily to rural highways.

Analysis
The increased wheel, axle or vehicle weight in all probability will not result in an immediate pavement failure. However, it will reduce the service life of the pavements they are placed on. The length of the reduction in all likelihood will be minimal but without knowing the tire, axle, vehicle specifics and frequency of occurrence it is very difficult to make an accurate prediction of the overweight trailer impacts.

We performed several pavement response analyses to try to quantify the impacts that this increased loading will have. The analyses showed a decreased fatigue life associated with an increased loading. The chart below shows the results.

Classification	ADT*	Existing ESAL's ** (per day)	Additional ESAL's for heavier load	Pavement Service Life Reduction (Years Lost)
Low Volume	1421	75	4	2.5% (<0.5)
Medium Volume	4848	386	4	0.5% (<0.1)
High Volume	11874	1054	4	Negligible

Assumptions – There would be 5 overweight trips per day. Tire configuration and pressure would be similar to other trucks.

Background on WisDOT's Pavement Design Philosophy
Pavement structures are designed based on an accumulation of standardized 18 kip axle (ESAL) application. Based on this design approach pavement structures typically have sufficient structural capacity to accommodate individual (or limited repetitions) axle loads without causing visible damage. However, the fatigue model (Miners Law) states that larger loads while not causing imminent failure do consume many of the lower load fatigue cycles. Therefore fatigue life, which is directly related to service life, is reduced. Our design process doesn't account for heavier loads nor would we have any way to quantify the number of occurrences.

*ADT – Average Daily Traffic
**ESAL – Equivalent Single Axle Load