



CTA INITIATIVE AERODYNAMIC FAIRINGS "Boat Tails"

Ontario Case Study

Meeting of the Task Force on
Vehicle Weights and Dimensions Policy

Montreal, November 20, 2006

Background

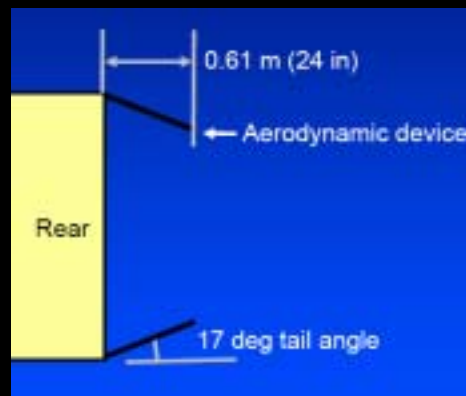
- Industry is looking at ways to achieve increased fuel efficiency to offset cost of fuel and increased consumption from '07 engines.
- Attaching aerodynamic devices to rear of trailers has been identified as one way to increase fuel economy.
- Boat Tails are estimated by the NRC to improve fuel efficiency by up to 5%.
- Truck Manufacturers Association and US DOE estimate savings of one billion gallons of fuel annually through use of aerodynamic devices.

What is a Boat Tail



Boat Tail Characteristics

- Lightweight aluminum or fiber glass construction
- Approx 70 lbs
- 24 inches in length
- 17° angle



How NRC Determined Fuel Efficiency of Boat Tails



- Results of testing published in SAE International 06CV-222 *“Full Scale Wind Tunnel Tests of Production and Prototype, Second-Generation Aerodynamic Drag-Reducing Devices for Tractor Trailers”*

Challenge

- How can boat tails be installed on trailers without compromising safety concerns related to rear out-swing and vehicle under-ride protection?

Solution

- Develop a partnership between government and industry to examine ways in which these devices could be installed on trucks operating in Ontario.
- A partnership was formed between Robert Transport, Ministry of Transportation, Ontario and the Ontario Trucking Association.

Desired Outcome

- To initially provide a permit to operate the trailers on Ontario highways;
- To then have the use of boat tails incorporated into Regulation;
- To have boat tails incorporated into the Memorandum of Understanding so that vehicles can travel coast to coast in Canada without restrictions.

Process

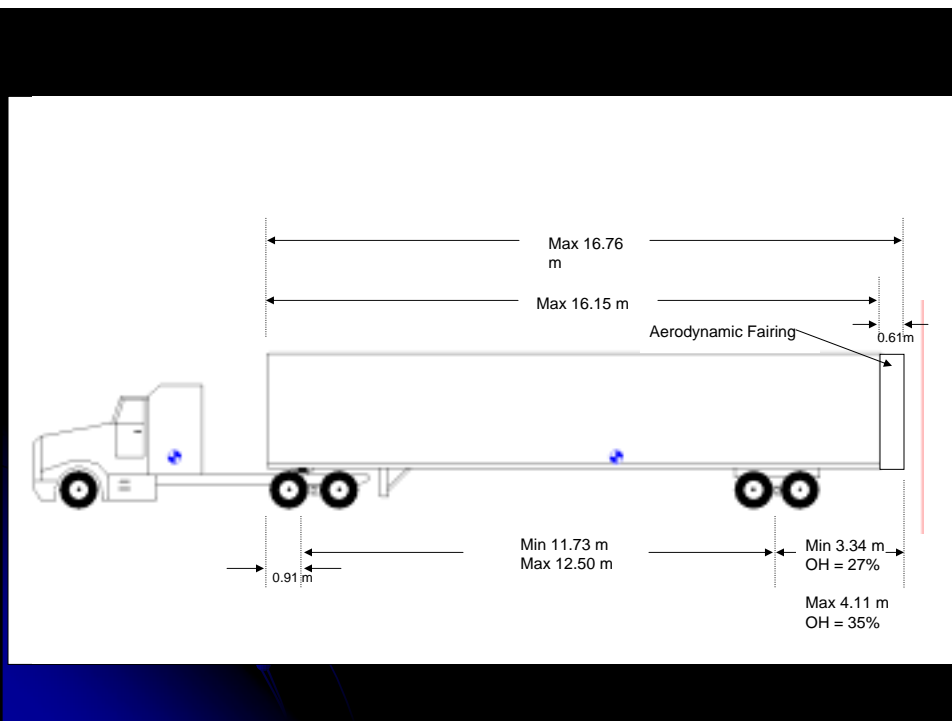
- Robert Transport has made a special vehicle permit application to MTO.
- Permit application highlighted economic and environmental benefits, that there would be no negative impact to highway safety and that there would be no negative impact on highway infrastructure.
- Permits were requested for 16.2 Metre semi trailers and 20 Metre box length B-trains.

Compromise

- MTO in its response concluded that they would be prepared to entertain the idea of these devices provided Robert Transport could demonstrate:
 - That these devices could meet the rear under-ride protection regulations and;
 - The rear out swing was still within acceptable levels, measured by the 35% overhang rule.

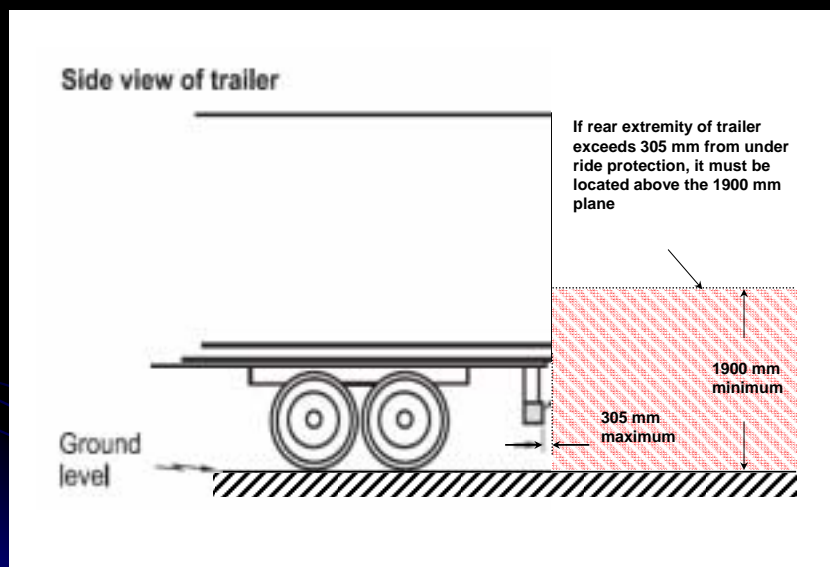
Rear Out Swing

- The concerns surrounding rear out swing were addressed by using a “boat tail” that would allow the trailer to remain within the 35% overhang rule.
- Other factors were also considered in rear out swing as presented by John Billing.



Rear Under Ride Protection

- The aero dynamic devices were modified to meet the rear under ride protection regulations as specified in CFR 571.224 S5.1.3 and Transport Canada TSD 224 S5.1.3:
 - Rear impact guard can be no more than 305mm (12") in board of the rear extremity of the trailer.
 - Nothing can overhang the rear extremity of the trailer by more than 305 mm unless the distance from bottom of the overhang to the ground is in excess of 1900mm (75").



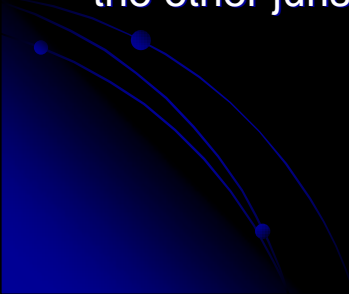
Modified Boat Tails



Modified Boat Tail



Progress to Date

- Robert Transport has met all the requirements of MTO.
 - MTO is now considering the application and will be discussing the proposal with the other jurisdictions.
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Questions/Discussion

