



Transportation Research Division



Technical Brief (10 – 4)

*Second Year Evaluation of the Viking -
Cives Tow Plow*

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Introduction

In early February, 2009, the Maine Department of Transportation (MaineDOT) entered into an agreement with Viking-Cives USA to evaluate the Viking-Cives Tow Plow. MaineDOT agreed to evaluate the Tow Plow for the remainder of the 2008-2009 winter season and in turn provide information and feedback to Viking-Cives relative to the Department's experience with the Tow Plow. The results of that evaluation are available Transportation Research Division Technical Brief 09-3 Evaluation of the Viking-Cives Tow Plow, May, 2009.

Results of the 2008-2009 evaluation were so positive that MaineDOT purchased the Tow Plow. The winter of 2009-2010 marked the second year MaineDOT personnel had the opportunity to evaluate the plow.

The same 2009 Volvo Wheeler used in 2008-2009 was used to accommodate the towing of the plow for the 2009-2010 winter season.

During the 2008-2009 evaluation, the Tow Plow was used primarily as a support vehicle, with no designated plow route. For the 2009-2010 evaluation, the Tow Plows designated plow route was Route 1A, from Brewer to the Green Lake road in Dedham. This section is a two lane highway with approximately 32 miles of travel lanes and 5 miles of truck lanes. The Tow Plow performed very well as a primary vehicle and needed only minimal assistance during one storm to maintain the Route 1A section in satisfactory condition.

Results

Overall, the 2009-2010 evaluation was considered a success by MaineDOT personnel. Steep hills along the section of Route 1A, and the potential of "shutting down" traffic because of the inability of the truck to pull the plow up and over those hills during a significant winter event were a concern to the driver and supervisor. As with the 2008-2009 evaluation, this did not create a significant problem. On four occasions; two of which were caused by tractor trailers stopped on hills in front of the plow, the Tow Plow was unable to crest hills along the plow route. In each instance, the driver was able to back down and accelerate up and over the hill.

The Tow Plow was used in the fully deployed position for both the truck lane areas and areas with one travel lane and a wide, paved shoulder (See Photo #1). On the several occasions when it was not fully extended, both the operator and supervisor noted the plow did not clean the pavement as well as when it was in the fully deployed position.

Granular salt was distributed from the hopper on the Tow Plow at a rate of approximately 500 pounds per lane mile. The salt was pre-wetted using a garden hose running from the liquid system of the truck to the spinner on the Tow Plow. The spinner is located about mid-point of the Tow Plow trailer. When the plow is fully articulated, the position of the spinner is approximately 6 to 8 feet right of center line. Setting the spinner to rotate at a moderate rate, salt was applied to the travel lane in an acceptable pattern. Salt was not distributed from the truck when the Tow Plow was utilized. This salt was kept in reserve as ballast.



Photo 1: Clearing Travel Lane and Shoulder

The Tow Plow was used several times on Interstate 95 to clear the travel lane and shoulder (see Photo 2). This application worked very well and the Supervisor indicated that he believes the Tow Plow might have the most value in a more rural, Interstate setting.



Photo 2: Interstate Application

Utilization of the Tow Plow on a secondary, two lane roadway creates potential issues for the travelling public. The plow typically travelled at speeds from 15 to 25 miles per hour with little opportunity to pull off the road and allow traffic to pass. This often created long lines of disgruntled travelers. One advantage of the slow moving traffic is that the salt stays in place better and quickly creates a bare and wet pavement surface.

Perhaps the biggest issue experienced during this evaluation, was the time it took to hook-up and remove the Tow Plow trailer from the truck. This sometimes became an issue because depending on the storm condition, severity and duration, the supervisor would recommend the trailer be removed (or hooked up) and only the truck plow and wing used to battle the storm. The supervisor and driver estimated it took approximately 30 minutes to install and remove the trailer.

Conclusions/Recommendations

As with the 2008-2009 evaluation, this evaluation was considered a success. Once again the Tow Plow worked well in both the two lane secondary highway and Interstate applications. Several suggestions for improving the overall performance of the tow plow were presented by the supervisor and driver. These suggestions are listed below.

- ❖ Improve the salt application capability of the tow plow unit
- ❖ Improve the pre-wetting system
- ❖ Enable salt application from both the tow plow and truck for Interstate applications
- ❖ Improve the hook-up and removal procedures
- ❖ Improve the Hopper cover
- ❖ Consider purchasing a laser alignment system
- ❖ Increase the maximum horsepower of the tow vehicle

The driver and supervisor also stressed the importance of having adequate turnarounds at each end of the plow route and possibly turnouts near the middle of sections to enable traffic to pass.

They also stated that an experienced, competent and conscientious driver is critical to the successful use of the Tow Plow unit.

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