Comparison of New and Existing Caltrans Hopper Body and Tailgate Sanders

A study to evaluate and compare existing sander/spreader with new sander/spreader technology.

WHAT IS THE NEED?

California Department of Transportation (Caltrans) continuously seeks new methods and equipment that can enhance safety and efficiency of the winter maintenance operations. Winter maintenance operations represent a significant challenge, and by implementing better methods and equipment, Caltrans can realize operational and safety improvements, cost savings, and reduced environmental impacts.

Caltrans uses several different types of sander/spreaders currently. To determine the most efficient and cost-effective method to adopt in the long-run, Caltrans needs to conduct testing that yield quantifiable results. The testing will compare four types of sander/spreader: a tailgate spreader, a standard V-box spreader, an Epoke spreader with directional cast, and a Henderson First Respond System (FRS) with Direct Cast™.

WHAT ARE WE DOING?

Caltrans is partnering with the Advanced Highway Maintenance Construction Technology (AHMCT) Research Center at University of California, Davis to conduct this research.

A research project panel will be developed to provide guidance. The research team will develop test methods to compare the sander/spreader equipment for consistency of spreading application and rates under various situations. The controlled testing will produce data on all four sander/spreader types at three different speeds and three different spread rates. Besides, the researchers will collect data on the directional sander/spreaders for spreading on the right, center, and left lane; and all three lanes. The research team will observe existing sander/spreader operations and collect data to compare the four types of sander/spreaders for their speed of...
operations, routes traveled, and frequency of spreading. The researchers will use the data from the controlled testing and the sander/spreader operation observations as the basis of the research evaluation.

This research task will attempt to answer the following research questions:

- What is the spreading pattern of the Epoke and Henderson FRS sander/spreaders and how do they compare to the V-box and tailgate sander/spreaders?
- What is the material usage of the Epoke and Henderson FRS sander/spreaders and how do they compare to the V-box and tailgate sander/spreaders?
- Are the Epoke and Henderson FRS sander/spreaders maintainable in Caltrans’ winter maintenance operating environment?
- Do the Epoke and Henderson FRS sander/spreaders provide any performance improvements and merit any cost increase over the V-box and tailgate sander/spreaders?

WHAT IS OUR GOAL?

The main goal is to compare the four different types of sander/spreaders and identify the most efficient and cost-effective one.

The researchers will develop a final report that documents all aspects of this research, which will include results from the controlled testing, an equipment cost analysis, sander/spreader recommendations, and lifecycle winter maintenance cost analysis.

WHAT IS THE BENEFIT?

The research result has the potential to reduce waste material, speed up sanding/spreading operations, and reduce the environmental impact associated with sanding/spreading operations.

WHAT IS THE PROGRESS TO DATE?

This research started on September 1st, 2018 and the research team is currently performing the controlled testing on the four sander/spreaders at the Caltrans Maintenance Equipment Training Academy.

IMAGE

Figure 1. Henderson V-box sander/spreader on the top; Epoke sander/spreader with directional cast at the bottom.