

# Flame Hardened Snow Plow Blades

Final Report

For

RB13-012

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Sponsored by:

Iowa Department of Transportation

And

The Federal Highway Administration

SP & R Project # RB13-012

By

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<b>16. Abstract</b>  Underbody plows and High Speed Ice Blades are an integral part of clearing Iowa roads of snow and ice during winter operations. Changing these blades requires crews to suspend plowing operations and return to the garage decreasing time spent clearing roads and increasing workplace hazards. A blade with a longer lifespan is desired. The Department is determining if using plow blades that have been flame hardened increase longevity of use over the Departments current underbody plow blades that are oven baked. This would reduce downtime and employee exposure to workplace hazards and increase productivity per dollar spent.			
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## **SPR Equipment Purchase Final Report Flame Hardened Underbody Plow Blades**

### **Objective**

To determine if using plow blades that have been flame hardened increase longevity of use over the Departments current underbody plow blades that are oven baked. This would reduce downtime, reduce employee exposure to workplace hazards and increase productivity per dollar spent.

### **Process**

Ten eight foot flame hardened blades were purchased at a cost of \$170 each. Each through hardened blade costs \$94.13 at the DOT warehouse. Ten flame-hardened eight foot test blades and ten through-hardened eight foot control blades were distributed to Ames, Fort Dodge, Elkader, West Union, Storm Lake, De Soto, Sidney, Muscatine, Dubuque, and Manchester. These blades were field tested during the 2012-2013 winter season.



### **Findings**

The average mileage obtained from the flame hardened blades was 335 miles, while the average mileage from the through hardened blades was 273 miles. However the cost of the flame hardened blade is nearly double that of the current stock blade, the cost per mile of the flame hardened blade is \$0.51/mile while the through hardened blade costs \$0.34/mile.

Seventy-five percent of the flame hardened blades were found to have vertically broken into two or more pieces causing one garage to remove the blade with usable life remaining due to safety concerns. The testing garages indicated that this is not typical with our current blades.

Of the garages that reported the type of road surface the blades were used on, an equal amount reported plowing on Portland cement and Asphaltic concrete, with the remaining reporting they plowed on Portland cement that has been resurfaced with Asphaltic Cement concrete. Cracked or broken flame-hardened blades were reported on all three surfaces.

It is not recommended that the DOT pursue the purchase of these blades at this time due to the increased cost without seeing significantly increased lifespan and the safety concerns associated with broken blades.



Broken Flame Hardened 8 foot test blade