JOINT TRANSPORTATION RESEARCH PROGRAM

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Striping Truck Utilization at Crawfordsville and Greenfield

Introduction

The Indiana Department of Transportation (INDOT) is divided into six districts, with district offices located in LaPorte, Fort Wayne, Crawfordsville, Greenfield, Vincennes and Seymour. Prior to the launch of this project in February 2013, each district used separate trucks to paint the white edge lines and yellow centerlines on state roads.

The total statewide annual cost for the paint operations in fiscal year 2012 was \$10,197,576. This figure includes \$8,253,737 for material (paint and beads), \$1,059,402 for equipment and fuel, and \$884,437 for 54,733 hours of labor. The age of the twelve existing paint trucks range from 6 to 19 years, with a median age of 9 years.

In an effort to reduce the cost of paint operations, this project was launched to find ways to improve the efficiency of the paint operations and to reduce the need to replace the existing twelve trucks as they wear out. The goal of this project was to determine the feasibility of painting all the required lane miles with just one paint truck per district rather than two trucks per district.

Upon the successful demonstration that districts can complete their required operations with a single truck,

INDOT plans to redistribute the six best paint trucks in the existing fleet so that each district would have one of the best trucks. The remaining trucks would be retired from the fleet and the best of those retired trucks may be saved as an emergency replacement truck for any district needing it if its truck should break down for an extended period or if weather or some other circumstance jeopardized the district's ability to complete the painting with one truck.

Findings

Although the Crawfordsville and Greenfield districts pursued slightly different approaches to increasing their truck's paint capacity and different staffing models (carrying four totes vs. one larger tank; using a four-days-per-week work schedule vs. three long days per week), both districts were able to paint all their required lane miles with just one truck per district.

While both approaches enabled the districts to meet the original objective of painting the district with a single truck, the Greenfield approach of carrying 1,390 gallons of paint seemed more optimal for running 12.5-hour shifts as it reduced the number of times the truck had to be refilled during the extended day. The

Greenfield paint truck modified with a 1,390-gallon paint tank.

Crawfordsville approach of carrying 1,100 gallons of paint in totes worked well for a standard length day, but it may not have worked as well if they had also gone to a three-day workweek with 12.5-hour days on the road.

Implementation

There are several benefits associated with the improvements documented in this project.

First, new paint trucks cost approximately \$400,000 each (depending on model and options). By reducing the need from two to one truck per district, this project has the potential to save the taxpayers of Indiana \$2.4 million in acquisition costs by replacing only six of the twelve current trucks. In addition, some of the operational efficiencies achieved by the Greenfield district's compressed workweek suggest the possibility of reducing the number of trucks even further to perhaps four for the state. However, an additional study would have to be completed before any firm decision could be made about reducing the trucks below a level of one per district.

The results achieved by the Crawfordsville and Greenfield district paint crews this season were shared with the other districts in a statewide Traffic Operations Managers meeting held in Indianapolis on September 24. During this meeting the changes to the trucks and operations were discussed, and both the Greenfield and Crawfordsville paint trucks were available for inspection in the parking lot to allow the staff from other districts to see the changes in detail.

The remaining four districts (LaPorte, Fort Wayne, Vincennes and Seymour) have been asked for details

about their current paint trucks so that the INDOT central office can select the four best trucks from those districts to be upgraded with either a higher capacity paint tank or a modification allowing them to carry paint totes. Once the four best trucks have been upgraded, they will be distributed to the remaining four districts so that during the next paint season all six districts will be painting with a single truck per district.

Based upon the experience of the Crawfordsville district (8.7% reduction in equipment and labor cost) and Greenfield district (10% reduction in equipment and labor cost), the average savings in equipment and labor cost was 9.35%. Assuming all six districts achieve this level of savings next year, and based upon the \$1,943,839 cost of equipment and labor in FY 2012, the annualized statewide savings for paint operations would be \$181,748.

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