



INDOT Research

# TECHNICAL *Summary*

Technology Transfer and Project Implementation Information

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## **Maintenance Quality Assurance Program**

### **Introduction**

Quality Assurance(QA) programs have impacted many industries within the United States. Common results are productivity increases, improved product quality, more efficient use of resources, and greater efficiencies in work processes. The Indiana Department of Transportation has been in the process of implementing QA principles in its various functions.

NCHRP Project 14-12, "Highway Maintenance Quality Assurance," describes a state-of-the art maintenance QA program. This prototype program was developed by utilizing standard principles of QA (Deming and others), statistical analysis techniques and evaluating other DOT organizations that have implemented QA programs.

The DOT organizations that have implemented a Maintenance QA program are Florida, Maryland, Oregon, Washington, and

British Columbia. Each one of these is using some type of Level of Service (LOS) program to categorize and standardize for comparison purposes. Florida DOT prepared a report describing its Maintenance Rating Program. To some degree each of these programs are described in the NCHRP report. Some of these programs were used as background information in developing the INDOT program described in this report.

At INDOT, a maintenance QA program had been developed and implemented at the activity level. Every maintenance activity is checked and evaluated by QA guidelines. One area that has been considered as an ideal candidate for QA is at the management level of maintenance operations. This report describes a program that implements QA principles into the managing of field activities.

### **Findings**

Several benefits can result from this program. Some of the typical ones experienced by other state DOTs that have enacted a Maintenance QA program are described next.

One expected result is a uniformly maintained system that is more consistent across the state. This can be accomplished through a standardized system of inspection, evaluation, weighting, and evaluation criteria, inspection procedures, and training program.

This project will provide an understanding of what LOS is important to the traveling public for various system components. For example, pavement smoothness, traffic control devices, or roadside vegetation are represent system components that will be ranked by the users. With this understanding INDOT can include user preferences in ranking the importance of various maintenance activities.

The ability to determine what level of funding is required for an activity to reach or maintain a certain LOS. This will help to generate more realistic budget requirements and allow for improved budget determinations of individual maintenance activities as well as at district and state-wide levels.

This program provides the ability to perform LOS and statistical analysis on maintenance activities and make corresponding adjustments and allocations

## Implementation

This program is an efficient way to collect information on roadway conditions. The inspection can be performed during the winter months by construction personnel, requiring no additional equipment or resources, and completed in a timely manner(400-450 manhours). Because of the random sample program, the results have a high level of certainty they represent the conditions in the District. The results can be used to develop a baseline of conditions that can be used for comparative purposes in the state and

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in resources to achieve a level of quality service across the Districts. By improving the allocation of resources an equitable level of quality among the main activities can be created and a more uniform state-wide facility created.

within the District for assessing Maintenance operations.

This program needs INDOT Executive Staff support to make this program a part of the normal work plan for the District Operations. An individual within Operations Support needs to be assigned the task of managing and administering this Maintenance QA program. This individual will be responsible for providing the random sample locations and for analyzing and reporting the results. Implementation assistance will be available from Purdue University by contacting the JTRP office or Dr. Bob McCullough ([bgm@ecn.purdue.edu](mailto:bgm@ecn.purdue.edu), 765-494-0643).

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