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FINAL REPORT

**HIGHWAY
MAINTENANCE
IMPROVEMENT
RESEARCH
PROJECT**

JULY, 1972

Prepared by
Planning and Research Division
ARKANSAS STATE HIGHWAY DEPARTMENT
in cooperation with the
U.S. Department of Transportation
Federal Highway Administration

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16. Abstract The principal objective of this project was to develop improved methods for the conduct of efficient and economical highway maintenance. This objective was accomplished by studying the methods used by the State's maintenance personnel and the resultant productivity and comparing our methods with findings of other states. Training materials incorporating the best of Arkansas' methods with other ideas were developed and tailored to the needs of the Maintenance Division of the Arkansas State Highway Department. Methods of instruction were studied under field conditions to determine the best means of conveying information acquired during development of the project. Evaluation procedures were set up on a relative productivity and efficiency basis, establishing a solid basis of comparison for judging accomplishment among the ranks of maintenance personnel. This resulted in a more competitive spirit in the entire Division and established a strong feeling of "esprit de corps." Application of the training materials and methods formulated under this project should result in a higher standard of highway maintenance at less cost to the taxpayer.			
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INTRODUCTION

This constitutes the final report by the Project Director and the Principal Investigator on the Highway Maintenance Improvement Research Project. This report briefly outlines setting up the project and implementation of the findings and conclusions resulting from the research. Actual work conducted during the project is documented by the consultant on the project, Roy Jorgensen Associates, Inc., in their final report and two supplemental reports.

This publication has been prepared and compiled by the Project Director and the Principal Investigator. The opinions, findings and conclusions documented herein are explicitly those of the authors and not necessarily those of the State of Arkansas or the Federal Highway Administration

A BRIEF HISTORY

The "Highway Maintenance Improvement Research Project" was initiated in October, 1968. A Project Director and a Principal Investigator were assigned at this time to prepare for the full development of the project. The Project Director resigned shortly thereafter and the Principal Investigator took over as the Project Director. Another investigator was named in June, 1969.

The pilot study began in Clark County on July 1, 1969. Activity codes designed by Research personnel were used for tabulating the work performed in Clark County. These records were kept without altering the existing method of reporting by the county crew. An engineering aide was added to the staff in August, 1969. Later in the year it was decided that further assistance would be necessary for the fullest development of the project. The firm of Roy Jorgensen Associates, Inc., retained to aid in the development of a complete maintenance management system, began working on the project in January, 1970. Work continued in Clark County and in September, 1970, a Standards Committee was established and began work on the development of maintenance function standards. In February, 1971, the pilot study was extended to all of District Seven, which included Clark County. District Seven had seven county crews, a bridge crew, a sealing crew, and a sign crew. This expansion made possible the gathering of much more information than could be collected from Clark County alone. It also facilitated the observation of important district-wide operations. The work was continued until December, 1971, at which time the consultant completed the contracted

portion of the work. At that time the basic research was complete, and implementation was begun statewide in January, 1972. Minor changes and modifications were made and assistance given where needed during the next six months. The basic system of planning, scheduling, and reporting was fully implemented by the beginning of the 1972-73 fiscal year.

During the next year, work will be continued on the development of better standards. Other phases of the project will be upgraded; including training in individual work functions.

LITERATURE REVIEW

A review and indexing of material contained in reports from other highway departments who have conducted similar studies were carried out by Research personnel at the beginning and during the course of the project. The purpose of this review was to familiarize project personnel with methods used by other groups in conducting similar projects and to avoid duplication of research efforts where possible. The reports studied came from many states, cities, and counties throughout the nation. A partial list of these reports is included as the bibliography.

No specific use could be made of the detailed information found in most of the reports. This was due to the individuality of each area. However, the basic methods and ideas expressed were helpful in carrying out the project successfully.

Information found to be most useful was in the form of papers presented to various groups by individuals who had worked with maintenance management. These were of a general nature and were not saturated with minute details unapplicable to Arkansas.

The purpose of this project was not to adapt another organization's maintenance management system to Arkansas, but to understand the basic principles of maintenance management and devise a unique system which would be most beneficial to the State.

A review of articles pertaining to the various maintenance functions established during the course of this project was conducted and is continuing. Many of the articles reviewed have been applicable to Arkansas and, when used in conjunction with existing knowledge of specific conditions in the State, have been helpful in establishing some of the standards, definitions, and procedures for maintenance functions. This data was also useful in preparing training material.