

PROBLEMS ENCOUNTERED IN IMPLEMENTING AND UTILIZING THE STATE OF ILLINOIS REPORTING SYSTEM

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•THE FIELD REPORTING for the Illinois system was initiated on July 1, 1967. Preparation for the change had been in progress for many months prior to that date. It was necessary to prepare new maintenance records consisting of maps, record cards, and roadway inventory. It also required new time cards and new accounting forms and procedures. Training of personnel in the use of the new forms and procedures was required not only for maintenance personnel but also for those in the general accounting section and the data processing section.

In Illinois the majority of our maintenance field personnel are still under a political patronage system of employment. In November 1968, we elected a new governor. As a result, a different political party was soon in control. In the spring of 1969, we had an almost complete change in our nontechnical maintenance personnel. This included our supervisors and our foremen.

In the latter part of 1968, a study was initiated to review the operations of our district maintenance field forces in an attempt to develop a more efficient organizational structure for present-day conditions. A consulting firm made the study and submitted their recommendations early in 1969. It was decided to implement the recommended plan with a few minor modifications. We have since switched from what was basically a patrol-type system to a flexible, gang-type operation. Our new basic work unit has a work load approximately equal to that of a highway system in a county of medium size and population density. Implementation of this change was started on July 1, 1969; new position titles were established and assignments revised. Again, new maintenance maps and records, time cards, and instructions had to be prepared so we could start field reporting to the new organizational units on January 1, 1970. This change in organization has resulted in reduced manpower and in a significant reduction in maintenance costs.

When the decision was made to reorganize the district field forces, it became necessary, at a rather critical stage in our maintenance management system, to halt the work needed to speed up and refine the output from the system and to jump ahead and make preparations for all the many changes required to overhaul our system of maintenance records and the programs, reports, forms, and procedures involved in the maintenance management system.

On May 15th of this year our engineer of maintenance retired. This is Mr. H. O. Scheer, who did so much to promote the development of our system and who is program chairman for this workshop.

Since July 1967, we have acquired a new computerized cost accounting and maintenance management system; had an almost complete turnover in our nontechnical personnel; established a completely new field organization; helped implement a new system of budget preparation and budget reports; acquired a new engineer of maintenance; and the central bureau of maintenance, along with most of the other central bureaus, has moved into a new building.

In telling of these many changes it may seem that I am digressing a bit from my subject, which is "Problems Encountered in Implementing and Utilizing the State of Illinois Reporting System." However, I am sure you can understand how a series of major changes such as these would, in themselves, be problems or create problems.

The basic planning for our system was done within the bureau of maintenance of the Illinois Division of Highways. A consultant was hired to aid in the development. They

did the computer programming, designed forms, developed procedures, and made an extensive study of operations in other highway bureaus so that all procedures would be compatible.

Much of our trouble in the early stages involved the overlap of our system into the areas of payroll processing, general accounting, and others wherein many existing procedures were disrupted and new ones had to be developed to replace them. We learned, too late in many cases, that our communication with other bureaus was not adequate. Some of our questions and information were not reaching the right people. We encountered pitfalls and delays that could have been avoided. This was largely due to resistance to our bureau making changes in existing accounting procedures of another bureau. In other words, we had to step on some toes and therefore, encountered some opposition. Our success in making the changes was due entirely to having the full backing of our executive office. The moral is, sell your plan to the "boss" first.

During much of the development of the maintenance system, the bureau of administration, which included the general accounting and data processing sections, had undergone a number of changes in key personnel. This bureau was finally divided into a bureau of administration and a bureau of fiscal management. During these changes, maintaining proper communication and continuity with accounting personnel and the data processing section was a bit difficult. We were both making changes which, unfortunately, were not always correlated.

Within the division of highways, supervision of the planning and development of the system has largely been a one-man operation by one engineer in the bureau of maintenance. Others involved were part time or participated in occasional meetings. In the areas of general accounting and electronic data processing, no one at the working level was assigned to work closely enough with our consultant to acquire a good overall background relative to the computer programs and systems and the new accounting procedures. As in a relay race, when our consultant had finished his work, we needed personnel with sufficient knowledge of the systems to take over all phases of the operations and proceed. Unfortunately, such personnel were not prepared in our case. Of the many problems we encountered, this was probably the most damaging. We were not prepared to react quickly to changes in various procedures and policies and to revise quickly or correct our systems and instructions. Two examples that occurred shortly after the system was operational were: (1) a change in overtime policy from allowing compensatory time off to payment for overtime; and (2) a change in the numbering system of some budget codes. In a governmental organization, such changes can come quickly with little or no prior warning.

Collection and recording of cost data from time cards and invoices were changed from a manual operation in the 10 districts to centralized computer processing. Initially, the new time cards contained many reporting errors and all were forwarded to a group in data processing who were not trained to check and correct the cards and who were not familiar with maintenance field operations. It would be far better to process these cards in the districts with a teleprocessing link to the central computer. Such a change is under consideration.

The added load due to the maintenance management program originally taxed the capacity of our data processing section. A change from an IBM 1410 computer to an IBM 360, Model 40 computer has solved this problem. You should be sure that your computer section has the hardware and personnel to accept the additional load.

The change to the IBM 360 computer required the rewriting of a great number of existing computer programs. This, in turn, required most of the time of available programmers during a period when corrections and refinements were needed in the maintenance systems programs.

Presently, I feel that our biggest problem is within our maintenance organization; specifically in our maintenance records. Apparently many of our district maintenance bureaus have not had sufficient capable personnel available to revise their records (the maps, roadway inventories, and record cards) as quickly as needed to keep up with some of the major changes discussed earlier. Late submittal of roadway inventories applicable to the new field organization is currently delaying some of our reports. If we can overcome this bottleneck, I feel we will be near our goal of producing reports within 30 days after the end of the designated period.

In this presentation, I have made no attempt to describe the various features of our system but have confined most of my remarks to problems encountered along the way. I do not wish to leave a negative impression indicating that we have had nothing but problems. Most of these have been resolved and we are well pleased with most aspects of the system. I think most other states who have developed systems such as ours will agree that getting it operating properly involves some headaches and frustrations.

If I were to offer a brief bit of advice to anyone considering development of such a maintenance management system, I think it would be to get, in advance, a positive commitment that you will have available, as needed, people from all affected bureaus with the various skills required to operate, correct, and revise all phases of the system. In the normal state highway maintenance organization, there is much dependence on other bureaus, such as fiscal management or administration for a very large percent of the handling and processing of all the time cards, invoices, payrolls, and other documents vital to the system. There is a massive amount of data to be processed and many steps along the way. The people who help operate the system should be involved in its development in order to have the background needed to understand the systems.

These systems do not operate themselves. You do not just make up manuals and instructions and everything falls into place. You must have the proper help readily available to react quickly to all changes affecting the system.

I have not brought examples of our reports, input data, forms, and detailed instructions as was done at our first Maintenance Management Workshop held at Columbus, Ohio, in July 1968. I will prepare and send such material to any of you who might wish to examine it. The basic format for most of the management reports we generate has changed very little since 1968. We have decided that there is a definite need for an "annual report," because most of the reports that were originally generated were only monthly or quarterly. This will be done soon.

As we have stated in previous papers, the field reporting for our system is relatively simple. As we gain experience with the system, I become even more convinced that complicated or cumbersome field reporting will likely result in unreliable data.

In closing, we feel the systems we have developed and the changes we have instituted are good, and when all problems are resolved we will have a valuable maintenance management tool.