

# Analysis of County Road Management Functions

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● **THE PURPOSE** of a highway needs study is to produce an advance highway and street improvement plan for a road jurisdiction. This advance plan becomes a management device to finance, arrange and finally build highway improvements. It is advisable in making a needs study to also appraise highway management and determine its ability to use this important planning tool.

Highway needs are determined by comparing each existing road with a proper standard or guide. This establishes the ability of each road to provide desirable road service for present and future travel. The ability of the road to perform a definite task is measured. Highway management, likewise, should not be taken for granted but also compared to a standard so its needs can be clearly seen. Present deficiencies and those occurring from an expanded improvement program would establish needs.

Since an advance highway plan includes maintenance and replacement needs, in addition to improvement needs, management functions, other than planning and construction are involved. All highway functions are involved in the total program and so the total management operation must be appraised.

States are composed of many counties and each county functions as a separate road agency. Statewide needs studies are usually developed in such manner that individual advance programs can be set up for each county. The basic data enables counties to prepare fiscal plans to conduct sound programs.

However, to obtain all possible benefits from a needs study, each county must have the advantage of competent management. Study and appraisal of existing county road management is needed so deficiencies can be isolated and corrections suggested. In the course of a statewide needs study a general knowledge of the counties' management abilities can be obtained; however, in a statewide study a detailed study and evaluation of each county is not practical.

A guide is needed as an ideal management plan which by simple comparison can be used for this purpose.

The National Association of County Engineers, with the aid of the Automotive Safety Foundation and the Bureau of Public Roads, is embarked on a research program to determine, describe and define this ideal county road management plan. Drawing upon some of the developments of this research program, it is found that good management is the sum total of the proper actions which need to be taken to build and maintain a system of county roads.

Before a process of evaluating county road management can be developed, it is first necessary to define what it is, and to break this management down into its components for careful scrutiny.

Just what is county road management? Nationwide it follows no consistent pattern. In all of those states with county road responsibilities, there is an elected board of officials representing the people and which is charged with this road responsibility. In some states the elected boards are required to avail themselves of the services of a qualified, full-time engineer who shares this road responsibility. In other states, the employment of an engineer is permissive, but not mandatory. Still other states provide for the employment of a practical road superintendent rather than an engineer. Some states still allow the elected officials personally to direct road activities.

With all of these types of road management, only a wide range of results could be expected. But where administrative officers are trained and experienced, better operational methods have been found and improved. This is why the engineer-board type of management has generally demonstrated the greatest efficiency, and therefore the best results. This is not universally so for reasons which will be mentioned later.

The legislative intent in establishing the engineer-board form of management plan is to provide an elected board of laymen who shape road policy for the entire county. It also provides (in some states) a qualified engineer to bring modern road knowledge to

the county level, with specialized skills to plan and direct county activities on a county-wide basis. This, in effect, places road authority and responsibilities with a management team, and provides the framework for bridging that vast gap between lay policy and technical execution.

Where this type of management has existed for a period of years, continued day by day operations have developed a pattern of actions necessary to accomplish the desired purposes. Ordinarily, the realm of proper relationships between the board and the engineer has developed in such manner that a harmonious atmosphere of teamwork prevails.

These management actions are basic regardless of the size or location of a county. It is obvious, however, that these actions must be taken in proportion to the need in a given county. Omissions can only result in less successful operation. The basic actions can be listed under nine definite functional titles as follows:

- |                 |                  |
|-----------------|------------------|
| 1. Office.      | 6. Construction. |
| 2. Personnel.   | 7. Relations.    |
| 3. Information. | 8. Research.     |
| 4. Programs.    | 9. Maintenance.  |
| 5. Plans.       |                  |

Under each of these titles can be listed the detailed activities which take place, to greater or lesser extent, in a county road operation. When this is done, a total picture of county road management emerges, as shown in Figure 1.

The extent to which these detailed actions are carried out depends on the work load of the county and the amount of road responsibility involved. The listing on this figure may be incomplete; additional activities may be added, but the ones tabulated here are basic.

The completed list provides each county board and engineer with a means of self-appraisal for operations. Importantly, this tabulation can guide the management team in determining if all the necessary activities are being done in the county for which the team is responsible and if proper relationships exist.

A worthwhile by-product of such a chart is that it points up graphically the extensive

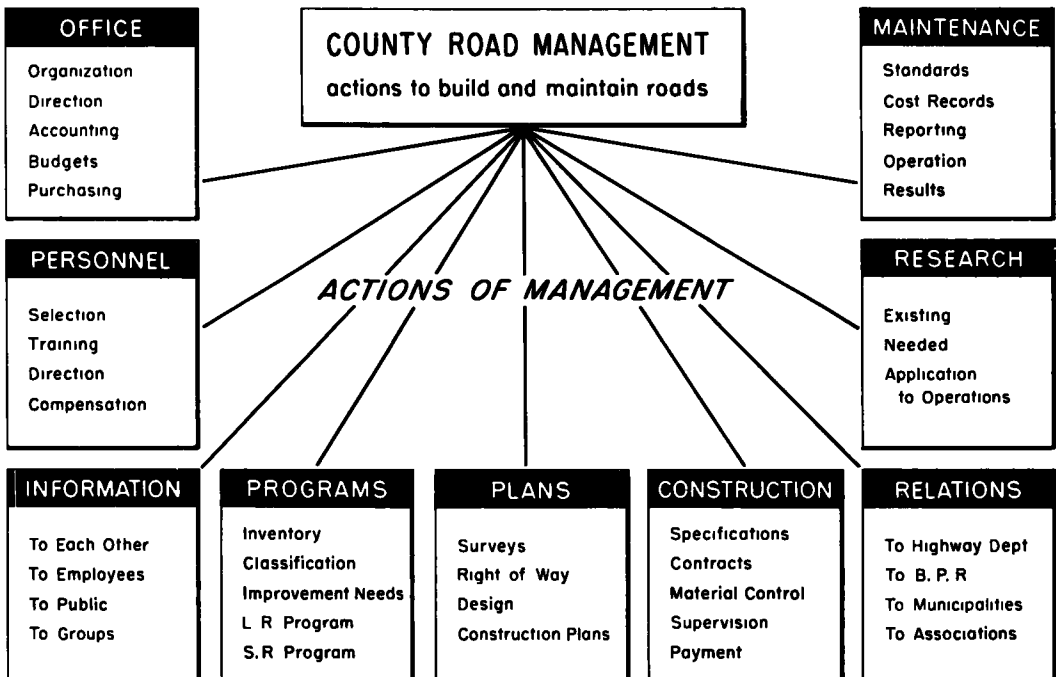


Figure 1.

duties of a county board. Relatively few citizens really understand how a county board operates, or the many actions it must take and decisions it must reach, to provide a system of roads worthy of description. Certainly, the magnitude of the county board's task is portrayed in this chart. In like manner, the chart conveys information on the many and varied duties of the engineer. To both his board and the public, it brings out that, in addition to using his engineering skill to build roads, his knowledge also is valuable in furnishing factual information about roads. This information provides the board with data on which to base policy decisions.

Each action can now be briefly defined.

**Office.** The county road office is the seat of management. It provides housing for records and the space to carry out its activities. The staff size and work load will vary with the size and road responsibility of each respective county. A few of the principal duties carried out under office functions are organization, direction, accounting, budget, and purchasing.

**Personnel.** Daily activities of construction and maintenance on a county road system require many different kinds of road equipment and employment of persons with many skills. These activities include selection, training, direction, and compensation.

**Information.** Roads are of general interest, because they affect all citizens. Each county can achieve best results by providing information designed to correctly inform its employees and the public on road policies, needs, programs and benefits. A method of communication to provide this information flow is necessary. Information activities include to each other (between board and engineer); to employees; to public; and to groups.

**Programs.** Programing is the advance determination of needs and the orderly arrangement of the needs into plans of action. Programing activities include inventory, classification, improvement needs, long-range program, and short-range or annual programs.

**Plans.** Once specific projects are scheduled for improvement, plans and detailed cost estimates are necessary. Under plans are included surveys, design, right-of-way, and construction plans.

**Construction.** This is the building of the improvements as detailed by the plans, and brought to realization by the actual work, which includes specifications, contracts, material control, supervision, and payment.

**Relations.** Within a state, several governmental road agencies have jurisdiction over roads and streets. However, these agencies—state, county and municipal—all are engaged in building a transportation system. In this endeavor there must exist some coordination between all agencies—a working intergovernmental relationship. Necessary relations include those to the state highway department, to the Bureau of Public Roads, to the municipality and to associations.

**Research.** Research is the investigation and determination of better methods to build and maintain roads. County roads have problems which, generally, differ from those of the state or municipalities. Research should be directed to problems found in three basic areas: existing, needed, and application. For example, all counties should have the research results which now are known, and areas where further research is needed should be defined.

**Maintenance.** Maintenance is the work performed to perpetuate a road or structure in good condition and keep traffic moving. The everyday tasks such as mowing, and smoothing or repairing road surfaces, are called routine maintenance. Reconstruction or improvement of existing roads is called improvements or special maintenance. Division of maintenance into routine and improvements allows costs to be segregated, giving facts for planning and control of operations. The five principal maintenance activities are

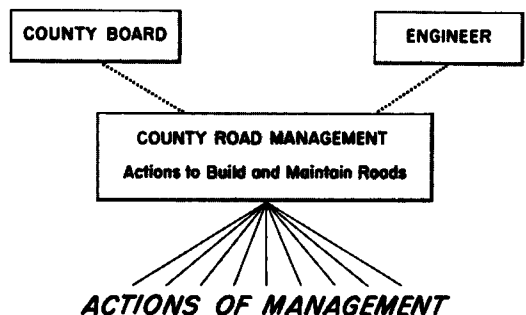


Figure 2.

standards, cost records, reporting, operations, and appraisal of results.

Several times thus far the management team, defined as comprising the county board and the county engineer, has been mentioned. It has been observed that where harmonious relations exist the best results emerge. Where harmony does not exist, generally poor results are the case. Basically, the county board and the engineer are mutually concerned in all of these actions that have been described, and the proper contribution of each is needed for successful management.

The board, representing the citizens, is vested with legal authority and responsibility for the road system. The engineer's professional training and experience bring technical knowledge of roads to the county (see Fig. 2).

Some of the broad duties of the board and the engineer are as follows:

<u>County Board</u>	<u>Engineer</u>
Makes decisions (policy) on actions of management	Carries out decisions (policy) of board
Uses facts to make decisions	Gathers, prepares and explains factual data
Refers decisions (policy) to engineer for execution	Uses technical skill to build and maintain roads
Sees that decisions (policy) are carried out	Appraises results
Appraises results	

The respective interest of the board and engineer in the details of operation can be illustrated by the following outline covering five of the nine actions of management.

#### OFFICE OPERATIONS FUNCTION

<u>County Board</u>	<u>Engineer</u>
Establishes office—size, location	Directs activities and personnel
Approves accounting procedure	Prepares, presents accounting procedures
Adjusts and approves annual budget	Prepares, presents annual budget
Provides funds for budget	Directs total operation within budget
Establishes purchasing procedure	Directs purchases under procedure

#### PERSONNEL FUNCTION

<u>County Board</u>	<u>Engineer</u>
Decides a method of selection	Provides information on employees
Establishes pay schedules	Methods of reporting
Provides a method of payment	Methods of training

#### INFORMATION FUNCTION

<u>County Board</u>	<u>Engineer</u>
Informs public of road problems	Informs board of road problems
Learns public reaction to policies	Informs employees of road plans
Decides how to release road information	Arranges news material about roads

#### PROGRAM PLANNING FUNCTION

<u>County Board</u>	<u>Engineer</u>
Approves and adopts classification plan	Suggests classification plan
Studies improvement needs appraisal	Determines improvement needs
Adopts a long-range improvement plan	Prepares long-range improvement plan
Adopts a short-range improvement plan	Prepares short-range improvement plan

## CONSTRUCTION FUNCTION

County Board

Decides how to do work  
Awards contract  
Approves final work

Engineer

Prepares plans  
Prepares estimates  
Supervises construction

To evaluate any county operation, two separate operations are necessary. First, the nine actions of management may be judged individually, and a rating system may be devised to reflect the efficiency of each action. The relative importance of each action may vary from state to state, so no effort at numerical weighting will be made here. Second, a value must be derived, separate and apart from operational efficiency, to determine if the board has delegated authority to the engineer on management functions. For example, if maintenance responsibility is assumed by the elected board members, coordination and proper planning of operations is almost impossible. In this instance, the county performance would be reflected in comparison with a county where the engineer is in charge of maintenance and uses his knowledge and skill to plan and direct maintenance activities.

Where authority is delegated, it is also necessary to determine how well this authority is executed. If maintenance operations are an engineer's responsibility, are his operations well planned? Are the maintenance forces organized and directed and are the desired results obtained?

The estimated cost of an advance highway program resulting from a needs study, is predicated upon management ability to efficiently place the plan in operation. Poor management will result in increased costs and a disrupted schedule of improvements. Analysis of county road management is necessary so its weakness can be discovered and strengthened and programs accomplished on schedule and with minimum costs.

The method just outlined of analyzing county road management functions will provide factual information about management. Its use will permit pinpointing management deficiencies. The continuing research plan now underway will provide additional information on county road management and thus allow further refinement of appraisal techniques. The self-appraisal feature, providing encouragement and direction to individual county analysis, will be strengthened. When county road management has been appraised and strengthened, future needs studies can be made more readily and a continuous needs inventory can be maintained. Management then can schedule improvements at reasonable costs.