

# IMPACT OF COMMUNICATIONS ON HIERARCHICAL ORGANIZATIONAL STRUCTURES

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●THE IDEA that management systems or management information systems are really a somewhat sophisticated form of communication is responsible for this particular discussion topic. From pursuit of this communications concept came the thought of reviewing the impact of new forms of management communications on the organizational hierarchy. From this preamble then, I would like to make the observation that those involved in highway maintenance management will likely find that the application of improved communications will not materially change the hierarchical organization structure in state highway departments, but rather will alter the roles of the individuals and the organizational segments.

## THE ORGANIZATIONAL PATTERN

First, let us establish the organizational pattern. The typical highway department tends to be a political entity or territory-aligned organization. Stemming from the headquarters, we find special staff units, such as testing laboratories or research units plus statewide operating staffs for design, construction, and maintenance. In the field, we find district or area and county or parish units. The major field units often provide expertise in each of the three discipline areas of design, construction, and maintenance. Below this middle management level we find the operating units, primarily devoted to maintenance and minor betterment efforts. The scope of responsibility and authority throughout a highway department has tended to establish much of the maintenance decision-making at the lowest hierarchical level where crews and equipment are assigned. The vagaries of attendance, equipment maintenance, and climate have encouraged "seat of the pants" managers at the operating level. The "can do" spirit is often the only remedy to meet the undesirable circumstance. Flexibility and innovation, often in the face of discarding rules, have been the key factors in the makeup of a successful highway maintenance foreman. For all practical purposes, his contacts are limited to the adjacent maintenance organizations and to his next-in-line superior.

Because of uncertainties, we have allowed the field crews to follow unstructured paths both in organization and in management. In recognizing limitations, we have tended to shrug our shoulders or direct in detail how to do an operation. We have all observed "response" maintenance in the typical unstructured organizations. Current pressure on one work area creates an unwanted result in another area. If we push our supervisor to fix potholes, the end result may be to neglect equipment maintenance. Management can always push in, but we do not know where "out" is going to occur.

Through the establishment of specific organizational elements, we can hope to limit the impact of our "patch" edict to a specific group that we might make responsible for patching. But what happens when the weather is not right for patching? Our functional organizational structure may build in another form of natural restriction to productivity. The true bureaucrat takes refuge in the adage "It ain't in my job description," and our functional organizational control fails to ensure achieving the objective.

## THE PROGRAM OR PRODUCT APPROVALS

We scratch our heads some more and we come up with a new scheme. Let us define our objectives in terms of projects or product outputs. We will do away with organizational elements and work on a program or product basis. We will talk in terms of output and measure productivity on a meaningful basis. We allocate resources on a

lane-mile, bridge-foot, or acre basis. In this manner, if we want to concentrate on patching, we adjust the resources between programs, and evaluate the impact on a particular subunit's productivity. We have added a new dimension to our communications system. We have instituted program guidance. The next step, of course, is to establish work standards and the concomitant cost reporting on a product or output basis. From an open system which relied on the judgment of the lowest level supervisor for work planning, we have structured his effort to a degree. So far, this has been largely a paper exercise. The section boss may continue to do business in the same old tradition, give obeisance to the new, and faithfully fill in the reams of ADP cards sent to headquarters. We have defined the system, but have not necessarily changed productivity or the selection of work method in the least at the working level.

Similarly, the relationship to accomplish an objective between the department and the districts may suffer through a communications gap. Let us assume we have three major departmental operating elements—design, construction, and maintenance. We have just initiated a grand new maintenance management program. We describe it in detail indicating all of the things that the district is to do in implementation. The district maintenance element, however, is headed by a guy who could not give away water in the desert. He cannot convince the district engineer to assign resources to meet the maintenance program requirements. As we have all experienced in this type of situation, the program is going to die a slow and perhaps untidy death in that district. Suppose, however, we shift our resources to program lines, and resources are distributed by program on a statewide basis. Then we have the skirmish halfway won if we are able to define both program and organizational requirements. In preparing for this scheme of management, we must be able to ensure that the communication produces both resources and guidance consistently within the organizational hierarchy. Whether we call this program cost-based, or performance budgeting, or management control, or management information systems, the end result can be similar when successfully applied.

#### AN IDEAL APPROACH

In the ideal structure, we must be able to relate funds or resources to the organization element with responsibility and for defined outputs or programs. If we have performed well in creating our information structure, we should be able to accomplish three goals: (a) determine responsibility; (b) define work output; and (c) allocate resources. Through this process, we will be able to coordinate organization, programs, and funds.

Working from the information base established, we can develop finer controls. At the operating level, we can institute work improvement programs that can be measured as to their true benefit. We can, through allocation of program resources, control work in order to concentrate on areas that management wants emphasized.

We can also provide a logical basis for assisting the working foreman to plan and schedule his activities. We can identify marginal units for training concentration, and perhaps most important, we are able to provide realistic guidance to the working level in terms that the working foreman can use.

#### THE IMPACT IS ON INDIVIDUALS

I would like to suggest that there really is no impact on the organizational hierarchy from installing improved communications. The impact is on individuals, and herein lies a potential for disaster if handled improperly.

The response-oriented individual will likely be unhappy under such a system, unless he has sufficient powers of concentration to be a successful planner and team player. We have moved our player into a league game where there is a set of plays to be learned, where there is a coach on first and third, and an umpire to evaluate his actions, calling him "out" when the rules require it. When he steps up to the plate, he may feel like a home run, but the signal is on to bunt. The play was chosen by the coach—not the player.

Team play requires two-way communication—instruction and response. If our instructions are poor or wrong, the coach has to accept responsibility. Our maintenance communication must be such that it not only instructs, but recognizes a response. Too often, communications have been one way. We establish cost control reporting up the line. No information is ever fed back to the field to encourage change. We send down work methods from headquarters and never check up on the efficiency of the method with the man in the field. If our communication is not looped through feedback, it is not a true communication; it is just information.

The last impact is on judgment. We want neither to stifle, nor to allow everyone's judgment to prevail. Our system must be tolerant of the exercise of judgment. We must try to evaluate on the sum of actions rather than on each separate action. The goals or objectives must be recognizable but must retain tolerance suitable to the measurement device and the material being worked.

In installing modern communication (management) systems, we have to recognize these characteristics. We are moving from response to plan. We are placing emphasis on team play. We must have feedback. And last, but not least, we must provide for the "J" factor—Judgment. The impact is on individuals not organizations, although organizational response can be improved through the process.

We engineers are a tidy bunch, but too often untidy as individuals. As Alexander Pope write: "Tis with out judgments as our watches; none go just alike, yet each believes his own." During the sessions of the 1970 Highway Maintenance Management Conference, many judgments were expressed. I hope that mine will be of some assistance in work on highway maintenance programs.