

NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM
SYNTHESIS OF HIGHWAY PRACTICE

11

DEVELOPMENT OF
MANAGEMENT CAPABILITY

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11

DEVELOPMENT OF MANAGEMENT CAPABILITY

RESEARCH SPONSORED BY THE AMERICAN ASSOCIATION
OF STATE HIGHWAY OFFICIALS IN COOPERATION
WITH THE FEDERAL HIGHWAY ADMINISTRATION

AREAS OF INTEREST:
TRANSPORTATION ADMINISTRATION
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1972

NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM

Systematic, well-designed research provides the most effective approach to the solution of many problems facing highway administrators and engineers. Often, highway problems are of local interest and can best be studied by highway departments individually or in cooperation with their state universities and others. However, the accelerating growth of highway transportation develops increasingly complex problems of wide interest to highway authorities. These problems are best studied through a coordinated program of cooperative research.

In recognition of these needs, the highway administrators of the American Association of State Highway Officials initiated in 1962 an objective national highway research program employing modern scientific techniques. This program is supported on a continuing basis by funds from participating member states of the Association and it receives the full cooperation and support of the Federal Highway Administration, United States Department of Transportation.

The Highway Research Board of the National Academy of Sciences-National Research Council was requested by the Association to administer the research program because of the Board's recognized objectivity and understanding of modern research practices. The Board is uniquely suited for this purpose as: it maintains an extensive committee structure from which authorities on any highway transportation subject may be drawn; it possesses avenues of communications and cooperation with federal, state, and local governmental agencies, universities, and industry; its relationship to its parent organization, the National Academy of Sciences, a private, nonprofit institution, is an insurance of objectivity; it maintains a full-time research correlation staff of specialists in highway transportation matters to bring the findings of research directly to those who are in a position to use them.

The program is developed on the basis of research needs identified by chief administrators of the highway departments and by committees of AASHO. Each year, specific areas of research needs to be included in the program are proposed to the Academy and the Board by the American Association of State Highway Officials. Research projects to fulfill these needs are defined by the Board, and qualified research agencies are selected from those that have submitted proposals. Administration and surveillance of research contracts are responsibilities of the Academy and its Highway Research Board.

The needs for highway research are many, and the National Cooperative Highway Research Program can make significant contributions to the solution of highway transportation problems of mutual concern to many responsible groups. The program, however, is intended to complement rather than to substitute for or duplicate other highway research programs.

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The study reported herein was undertaken under the aegis of the National Academy of Sciences—National Research Council. The National Cooperative Highway Research Program, under which this study was made, is conducted by the Highway Research Board with the express approval of the Governing Board of the NRC. Such approval indicated that the Board considered that the problems studied in this program are of national significance; that solution of the problems requires scientific or technical competence, and that the resources of NRC are particularly suitable for the oversight of these studies. The institutional responsibilities of the NRC are discharged in the following manner: each specific problem, before it is accepted for study in the program, is approved as appropriate for the NRC by the NCHRP Program Advisory Committee and the Chairman of the Division of Engineering of the National Research Council.

Topics for synthesis are selected and defined by an advisory committee that monitors the work and reviews the final report. Members of the advisory committees are appointed by the Chairman of the Division of Engineering of the National Research Council. They are selected for their individual scholarly competence and judgment, with due consideration for the balance and breadth of disciplines. Responsibility for the definition of this study and for the publication of this report rests with the advisory committee.

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PREFACE

There exists a vast storehouse of information relating to nearly every subject of concern to highway administrators and engineers. Much of it resulted from research and much from successful application of the engineering ideas of men faced with problems in their day-to-day work. Because there has been a lack of systematic means for bringing such useful information together and making it available to the entire highway fraternity, the American Association of State Highway Officials has, through the mechanism of the National Cooperative Highway Research Program, authorized the Highway Research Board to undertake a continuing project to search out and synthesize the useful knowledge from all possible sources and to prepare documented reports on current practices in the subject areas of concern.

This synthesis series attempts to report on the various practices without in fact making specific recommendations as would be found in handbooks or design manuals. Nonetheless, these documents can serve similar purposes, for each is a compendium of the best knowledge available concerning those measures found to be the most successful in resolving specific problems. The extent to which they are utilized in this fashion will quite logically be tempered by the breadth of the user's knowledge in the particular problem area.

FOREWORD

By Staff

Highway Research Board

This report should be of special interest to administrators responsible for managing highway engineering organizations, to highway personnel managers, and to those responsible for training and development programs. The report offers information on policies and practices affecting training practices, recruiting, manpower development, and trends in public personnel administration.

Administrators, engineers, and researchers are faced continually with many highway problems on which much information already exists either in documented form or in terms of undocumented experience and practice. Unfortunately, this information is often fragmented, scattered, and unevaluated. As a consequence, full information on what has been learned about a problem is frequently not assembled in seeking a solution. Costly research findings may go unused, valuable experience may be overlooked, and due consideration may not be given to recommended practices for solving or alleviating the problem. In an effort to resolve this situation, a continuing NCHRP project, carried out by the Highway Research Board as the research agency, has the objective of synthesizing and reporting on common highway problems—a synthesis being identified as a composition or combination of separate parts or elements so as to form a whole greater than the

sum of the separate parts. Reports from this endeavor constitute an NCHRP report series that collects and assembles the various forms of information into single concise documents pertaining to specific highway problems or sets of closely related problems. This is the eleventh report in the series.

The management of public works is as old as civilization. Although the Great Wall of China and the Appian Way are the results of managed effort, public works management separate from other functions of government is a concept derived from the Roman Empire. Contemporary concepts of public administration, however, originate from developments in the late 19th century.

With the inception of the Interstate Highway System, many state highway programs faced increased work loads while high turnover of personnel, scarcity of qualified labor, and rapid technical innovation were becoming facts of life. Responding to concomitant requirements for higher skill levels combined with a growing scarcity of trained personnel, many state highway departments actively entered into the area of manpower planning and personnel training.

Manager development is a partnership approach between the management of the state highway organization and individuals within the organization. It is based on a commitment by top leadership, and the active participation and support of all involved. Manager development also is an individual responsibility, just as continuing medical or technical education is an obligation of the doctor or engineer. Inasmuch as the greater number of college graduates joining the highway agency will be engineers, they will have to be developed into good managers after joining the organization if they are to manage well. The Highway Research Board has attempted in this project to set down those management development practices found to be most effective. The report discusses these innovative practices from the standpoints of motivation, training, and performance.

To develop this synthesis in a comprehensive manner and to ensure inclusion of significant knowledge, the Board analyzed available information assembled from many highway departments and agencies responsible for highway planning, design, construction, operations, and maintenance. A topic advisory panel of experts in the subject area was established to guide the researchers in organizing and evaluating the collected data, and to review the final synthesis report.

As a follow-up, the Board will attempt to evaluate the effectiveness of this synthesis after it has been in the hands of its users for a period of time. Meanwhile, the search for better methods is a continuing activity and should not be diminished. An updating of this document is ultimately intended so as to reflect improvements that may be discovered through research and practice.

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Information on current practice was provided by many highway agencies. Their cooperation and assistance were most helpful.

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DEVELOPMENT OF MANAGEMENT CAPABILITY

SUMMARY

If top officials of a highway agency have never invested time, effort, and money in educating the staff in their management philosophy, the organization is being operated with someone else's ideas of management. In such instances, the officials have lost a degree of control of the organization.

Engineers have helped establish that management is a field of knowledge separate from engineering and other professional fields. Personal success in highway organizations often requires additional knowledge in management practice and principles. This is equally true for accountants, ADP specialists, lawyers, and others. Performance in any position requires a combination of abilities. As an individual ascends the organizational ladder, the mix of abilities becomes weighted in favor of managerial competence.

In a state highway organization, management capability is required for many positions, including: squad leader; party chief; design engineer; resident engineer; district engineer; bureau or division heads; chief counsel; chief engineer; director, or commissioner. When managers are mentioned in this synthesis, these professionals and others are the people being talked about. There is also concern with the training efforts put forth to help them perform the management functions associated with their professional work.

Organizational success is inextricably linked to management and, because organizations are made up of people, management success involves working with people.

There is a relationship between knowledge and management capability, and those who desire to acquire managerial competence in engineering organizations can begin by acquiring a knowledge of management.

Those already in positions of high responsibility in highway organizations who depend on middle and supervisory levels of management need to be concerned about what they know, or think they know.

Industry has found that employee training is vital to corporate survival. But, reports and studies indicate that employee training and development, and especially manager development for professionals in state and local government, remain badly neglected.

The development of managers is a partnership approach between the management of the organization and individuals within the organization. It implies—it requires—a commitment on the part of top leadership, and the active participation and support of all involved. Manager development also is an individual responsibility, just as continuing medical or technical education is an obligation of the doctor or the engineer. But because few professionals begin their careers in management, self-recognition as a manager is a key to the self-development process.

Key elements of the manager development system are:

1. Identification of development needs.
2. Establishment of development objectives.
3. Planning and programming development activities.
4. Implementation.
5. Evaluation.

The commitment that is essential to the success of any development program is that the program be made a function of every manager in the organization. The responsibilities of each individual manager up and down the organization become the same in a system of interaction in which each one:

1. Undertakes a coaching responsibility with his subordinates.
2. Understands his own development needs and responds to the coaching assistance of his superiors.

Planning for formal training efforts is important. What subjects to cover, trainer resources, sites for training, physical layouts, and training methods are a few of the considerations requiring study.

Too many close to the business of training still talk in terms of number of students enrolled and number of training hours, and evaluate by asking questions relating to "happiness factors" (e.g., "Did you like this seminar?"). Because the goals of government operations are often difficult to define, training has been sold on blind faith alone as an end in itself, without being associated with tangible payoffs.

In the highway agency, the greater number of college graduates joining the organization will be engineers. They will have to be trained in management capability after they join the organization if they are to manage well. This training must be organized and provide a selective blend of theoretical with empirical, practical experience.

Training practices vary among highway agencies, with several conducting regularly scheduled courses for different management levels. Most agencies report that they send or have sent personnel to the Highway Management Institute 5-week course at the University of Mississippi or to the 1-week National Highway Management Conference held annually twice in Santa Fe, N. Mex., and Stowe, Vt.

Those few agencies that have made attempts to evaluate the results of training, report specific, measurable, tangible, beneficial effect on the practice of management in their organizations.

CHAPTER ONE

MANAGEMENT IN THE ENGINEERING ORGANIZATION

What is *management*? Is it an art, a science, a process? Or is it just a glorified name for common sense?

Management is probably as old as civilization. Certainly the great public works of ancient civilizations—the Great Wall of China, the Egyptian pyramids, the Appian Way—

reflect the results of managed effort. Public management and the administrative organization of government as we know it today, including the separation of public works from other functions of government, are derived from the Roman State.

Contemporary concepts of management and administration (terms used interchangeably here in a generic sense, although capable of more precise definition) owe their origins to developments in the late 19th century.

THE MANAGEMENT MOVEMENT

An engineer is generally credited with providing the spark for the development of what has been called the "management movement" in private industry in the United States. Henry R. Towne, in a paper presented to the American Society of Mechanical Engineers in 1886, initiated the concept that management is a discipline separate from engineering and equal in importance to it. He decried the lack of an organized approach to its study and called for the development of management as a profession separate and apart from engineering. A young industrial engineer, Frederick W. Taylor, heard Towne's paper and was inspired by it. Later he and other pioneering industrial engineers developed what has become known as the school of "scientific management" ("Taylorism"), distinguished from the contemporary practices of the day by the application of scientific methodology to solve problems.

MANAGEMENT AS A PROFESSION

As Taylor later pointed out, his approach was significant for the definition of management as a philosophy, a way of thinking, and the identification of certain people—managers—as responsible for applying its principles and techniques.

In the public sector a professor of political science, Woodrow Wilson, in "The Study of Administration," published in 1887, identified public administration as a "field of business" separate from that of politics. He urged further study to identify its "stable principles" and he suggested drawing on the experiences of the business community.

Thus, it can be said that the development of the concept of management as a field of knowledge separate from that of engineering, worthy of study, and capable of being practiced was first articulated by an engineer and later confirmed by engineers, while about the same time a future President said many of the same things about the relationship of administration as separate from the laws and the political processes of government.

WHAT MANAGEMENT IS

Management is a science, meaning that there is an organized body of knowledge about management that can be learned and applied, a discipline as subject to the rigors of the scientific method as engineering and also as subject to further refinement into more specialized applications. It is a dynamic science, evolving with the addition of new research and knowledge.

It is not the purpose of this synthesis to present these principles. Suffice it to say that they exist. What is significant is that this is "good news" for all engineers and other professionals who hope to become managers or better managers. *Managers are not born, they are made.*

All who discharge managerial responsibilities are not equally good at it. *The practice of management is an art*, a skill that combines what we know with what we are, our personal qualities, with the result that what we do, our behavior as managers, is a blend of all our talents, both natural and acquired. Just as knowing how to hit a baseball with a bat does not mean one necessarily can do it well, so being a successful student of management is no guarantee of being able to manage successfully—but it helps.

Management is also a process, a system in modern terminology, by which resources—men, money, materiel (inputs)—are acted on or utilized so as to produce desired results (outputs). Of these resources, the most precious and unique are people and the work they do.

MANAGERS—WHO, ME?

Who is meant by the term manager? Self-recognition as a manager is important to managerial development, as is discussed later in more detail. Who are the managers being talked about here in the context of the state highway organization?

If management is the process of utilizing resources to achieve organizational goals, managers are those who are responsible for the use of resources. But in this synthesis the concept is further defined to say that if you are responsible for the actions of other people, even if only of a small number—even one—you are a manager. You are in the people business, trying to achieve results through the work of others.

A "manager" therefore in a state highway organization can be found at many positions—from party chief through design engineers, resident engineers, district engineers, bureau or division heads, to the chief executive. Figure 1 shows the findings of a recent survey as to the percentage of total personnel in the various levels of management in a state highway organization. These percentages are not exact, and what really exists within the management group is a continuum of increasing responsibility, from the supervisor to the chief administrator. If you supervise the work of others, you are the manager talked about here.

PROFESSIONALS AS MANAGERS

But make no mistake about it. If you are a manager, you are no longer an engineer, lawyer, or accountant only; and the further you progress in management, the less purely professional work you will be expected to do.

Academics involved in the education of both engineers and managers have observed that there is a significant difference in the background and training of the two professions. The engineer is oriented primarily toward things, whereas the manager is "people oriented."

The engineer or scientist must remember that his background and previous training have oriented him to a consideration of things rather than people. It is generally recognized as a result of sociological studies of engineering students that the more satisfied men with this career choice tend to be "inward looking" rather than "outward looking." They are not greatly interested in the world about them, the sociological changes that are taking place, the social scientists' and psychologists' view of

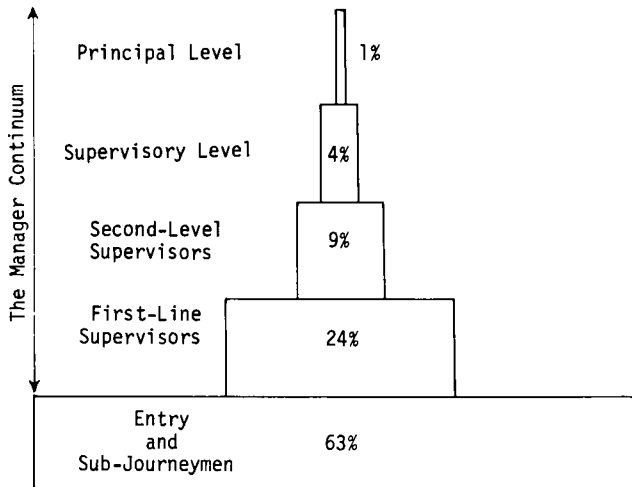


Figure 1. Percentage of personnel in various levels of management. Source: Hwy. Res. Record No. 266 (1969).

people, etc. *In a managerial job the primary emphasis will be on people, not only on the technical jobs to be accomplished.* Although the success of many technical assignments depends heavily on careful planning and organization, most of the technical managers' problems will be "people oriented." Successful managers realize that the human factors can make or break a project (1, p. 510). (Emphasis added.)

Three important points need to be made here. One is that a distinction between those who manage people (managers, for the current purposes) and those in other professions, such as engineering, does not imply that one is superior to the other. Because those who practice management usually have entered from another profession, there is a tendency to depreciate management as an alternative career that befalls those who fail in their first love. But this is not necessarily so.

Likewise, the fact that, in any organization of size, managerial responsibilities increase at the expense of other subject-matter responsibilities, be they engineering, finance, or data processing, as one ascends the organization, may lead to the fallacious conclusion that management is a more important profession than another.

To say that management is different is not to say that managers are superior or inferior to engineers or other professionals; each contributes in a unique way to the success of the highway agency or any other organization.

Another point that can be made is that unlike in other fields, such as engineering, few managerial tasks can be accomplished individually by the manager. He is inextricably involved in working with others in accomplishing his own goals. Management is not for those of the "prefer-to-do-it-myself" school.

Since the beginnings of the modern management movement there has been continuous interaction among private and public managers and engineers. Frederick W. Taylor and other engineers have continued to influence management in both business and government up to today. The first city manager in the United States was an engineer, and engineering was a dominant influence on the early growth

and development of the city management profession in the early decades of this century. So, although management and engineering are not synonymous, the growth and development of the management movement in the U.S. can be attributed to its early identification with and the continuing contributions of engineers.

But of what significance is management to a contemporary highway agency? Like any other organization, its success can be related to whether it achieves its purposes. And that process, as has already been identified, is a function of management.

Just as the identification and recognition of management as a discipline was important to the industrial revolution in the U.S., so it is even more important to those who would achieve personal success in the much more complex and organized society of today—for almost inevitably the success of an organization *and those in it* relate to management. It is no longer possible, except in the smallest of organizations, be they engineering-oriented or otherwise, to achieve success by aspiring to know all there is to know about the technical subject matter or service that the organization provides.

There are those, however, who still believe that a mastery of the technical subject matter is the secret of success in an organization. They have not yet learned what Henry Fayol first described in 1916 in his essay, "The Relative Importance of the Various Abilities Which Constitute the Value of Personnel of Concerns" (2). Fayol, in explaining his success as chief executive of a large French combine, suggested that performance in any position requires a combination of abilities, and that as one ascends the managerial ladder the mix of abilities becomes weighted in favor of managerial competence rather than technical or other substantive proficiency. It might be diagrammed as in Figure 2.

Some are troubled by the suggestion that managerial ability displaces subject matter competence as one moves up in the organization. It is undoubtedly true that for all, except those at the lofty pinnacles of an organization, a knowledge of the substantive field in which the organization works continues to be needed. But as a person works up the ladder, the nature of his technical competence becomes more sophisticated, and he works more and more in management. Generally, then, the higher a person goes in an organization, the more responsible he becomes for, and the more time and effort he spends on, the managerial aspects of his job.

The goal for the ambitious engineer is to get off the ground and onto the ladder. Once he is on the ladder, he has joined a new group and should begin the process of establishing himself as a manager—*not as an engineer.* This concept is important and he should not fall into the trap of claiming and believing that he is primarily doing engineering work. . . .

The manager must spend full time in planning, organizing, guiding, coordinating, and measuring the work of his men. He utilizes his technical knowledge in these processes and in making decisions. . . . He must accomplish his goals through the technical efforts of his people. This point is so fundamental that the rising engineer should not be led astray by any illusions (1, pp. 511-512).

But is this saying that "he who can manage can manage anything"? L. A. Appley, chairman of the board of the American Management Association, says the following by way of answer:

While I am probably one of the strongest believers in this philosophy, I feel that it, too, must be put in its proper perspective. In the first place, it is truer in top management than in first-line management—and it varies in acceptability between these levels. The farther removed a manager is from the actual operations of a business, the less he has to know about them.

The closer he is to the supervision of the operations, the more he has to know. No professional manager, however, under any conditions, can go into any business and manage it without learning something about it (3).

Another management expert, thoroughly experienced in the demands of the public service, suggests that it is not a case of "either . . . or," of knowing about building roads or about managing people, but instead of knowing both. Corson has extended Fayol's work by suggesting that today's public official needs to have a solid grounding in the subject matter in which he works, but that he will need to know more about management as he accepts greater managerial responsibilities. See Figure 3 (4).

What conclusions can be drawn? For individual members of the organization, engineers and others, the key to greater personal advancement and financial reward often

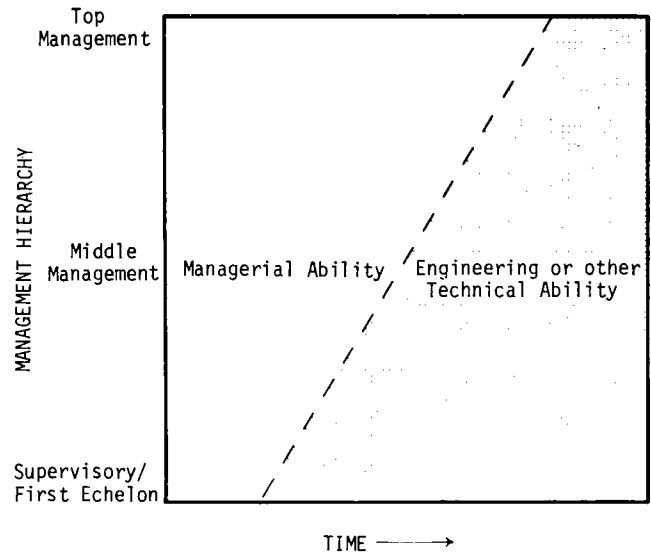


Figure 2. The mix of abilities and their relative importance in the management hierarchy.

lies in developing competence in management. Promotions and increased organizational responsibilities often relate to managerial ability.

CLASS OF EMPLOYEE		OF THE SUBSTANTIVE FIELD IN WHICH HE WORKS	OF WAYS AND MEANS OF DIRECTING THE WORK OF OTHERS	OF THE FUNCTIONS OF OTHER UNITS WITHIN THE ORGANIZATION AND OF RELATED GOVERNMENT ENTITIES	OF THE SOCIETY, ECONOMY AND THE CITIZENS HE SERVES	OF WAYS AND MEANS OF PROJECTING THE POLICIES AND PROGRAMS THROUGHOUT AN ENTERPRISE AND SEEING TO IT THAT THEY ARE CARRIED OUT
TOP PROFESSIONAL LEVEL	BUREAU DIRECTOR, COMMISSIONER OR ADMINISTRATOR	[Stippled area]	[Stippled area]	[Stippled area]	[Stippled area]	[Stippled area]
	DIVISION CHIEF OR REGIONAL DIRECTOR					
SECOND PROFESSIONAL LEVEL	SECTION OR BRANCH CHIEF	[Stippled area]	[Stippled area]	[Stippled area]	[Stippled area]	[Stippled area]
	FIRST LINE SUPERVISOR OR UNIT CHIEF					
FIRST PROFESSIONAL LEVEL	BEGINNING PROFESSIONAL, TECHNICAL OR ADMINISTRATIVE EMPLOYEE	[Stippled area]	[Stippled area]	[Stippled area]	[Stippled area]	[Stippled area]
APPRENTICESHIP						

Figure 3. Requisite understandings of the public servant.

However, there is a need for more than one path for advancement in any organization that employs a number of professionals in scientific and technical disciplines; without an avenue for personal and professional growth, advancement, status, and compensation outside of the field of management, individuals with outstanding contributions to make in the technical fields may be forced to seek their rewards as managers or take their talents elsewhere. Management should be an alternative career field rather than the only one in an organization in which engineering and technical competency plays such an important part. Man-

ager development and promotion need not be inextricably linked. See Chapter Three for a brief discussion of the concept of managerial growth. Also see Flory (5).

For those concerned with organizational success, the key is also apparent. Organizational success—that is, the achievement of organizational goals—is inextricably linked to management. And because organizations are made up of *people* (not little boxes, as some organizational charts might suggest), management success is a function of manager success in working with people.

As simple as this relationship is, it is often neglected.

CHAPTER TWO

MANAGEMENT DEVELOPMENT IN ENGINEERING ORGANIZATIONS

If an engineer, or any other professional in an organization for that matter, perceives that it is via the managerial route that he wants to attain personal success as well as achieve the satisfaction of contributing to organizational goals, how does he set out to be a success in management?

There are a number of false premises about being successful in management. One belief is that it helps to “know somebody.” Undoubtedly, this is not a bad idea. But what people? Know whom?

Other ideas include the concept that it is helpful to marry the boss’s daughter—not a very useful concept in the public sector.

It seems obvious that these ideas hold no promise for the person seeking to be successful in contemporary public management. Not only do they provide little rational answer to the question of what to do, but many are negative in nature, suggestive of the attitudes of an earlier era when ability might not have counted so much as class, status, race, or sex. They suggest that management success is controlled by destiny—by fate—or that there is a power structure that need only be identified and patronized. But we know better.

The answer by now perhaps is obvious. There is a relationship between knowledge and management, and the person who wants to be a success in management can do something about it. He can begin by learning something about management. Plainly stated, those who desire to acquire managerial competence in engineering organizations can begin by acquiring a knowledge of management, for it is a competence in this area that will become of value as organizational responsibilities increase. In management, it is not who you are, but what you know, how you use it, and what you do that counts.

Likewise, those already in positions of high responsibility in state highway and other organizations who depend on middle and supervisory first-echelon levels of management

to accomplish the work of the organization need to be concerned about what managers at all levels know, or think they know.

Why? Because what people know or think they know about management affects their behavior, the way they manage. If top management of an organization has never invested time, effort, and money in educating the staff in its management philosophy, the organization is being operated with someone else’s ideas of management. In the absence of a knowledge of fundamentals of management and a commitment to their practice throughout the organization, the organization may operate on the basis of folklore. Certainly in such instances the top management of the organization has relinquished a conscious influence on the management process, and in so doing loses a degree of managerial control of the organization.

Another reason for concern about manager education is based on a realization that humans learn constantly. It is simply not possible to influence the learning process only at certain times. Man is not a robot. If top management is not consciously teaching its management team about management, it may be influencing managerial behavior unwittingly—and unknowingly. It is from this “unconscious” school of management that the folklore grows. “Don’t hit the boss with a new idea on Monday morning” may develop as a ritual because of a chance occurrence on one particular Monday morning. It may develop into a habit of avoiding the boss with any new ideas.

WAYS OF ACQUIRING KNOWLEDGE ABOUT MANAGEMENT

For those who consciously seek to learn more about management, several avenues are available. One school suggests that it is instructive to study the careers of other managers in the belief that the traits and characteristics

of successful managers can be isolated, identified, and emulated. Yet in hundreds of instances when successful managers were asked what characteristics and traits they believed are most important in management, there was widespread difference of opinion as to which ones to include and their priority.

This "traitist" approach to learning more about management has fallen from favor. We need not try to change our personalities and attempt to adopt personality traits foreign to our own make-up (an effort doomed to failure anyway) to be successful in management.

There is another approach to management that suggests that work experience is the best teacher. This is usually voiced by seniors to juniors, and like many old cliches there is a germ of truth in it. Man can and does learn by experience. But by what kind of experience? Unfortunately, there are positions in which one repeats each experience over and over again, jobs in which one repeats the same year 20 times rather than acquiring 20 years of experience.

The other dimension of the "management school of hard knocks" is that about the time one has survived and is ready to graduate, he is also ready to retire. Unfortunately, experience alone is valuable but a slow teacher; and its teaching tools—mistakes—affect the entire organization. In an era when 50 percent of current college graduates are being employed in occupations that did not exist when they were born, work experience alone is neither an efficient nor an effective way to learn.

Obviously then, the educational experience, if it is to be of assistance, must be organized in order to be effective, and provide a selective blend of the theoretical with empirical, practical experience.

EDUCATION—WHOSE RESPONSIBILITY?

Although it is directly related to organizational success and has become increasingly supported by private enterprise over the last 20 years, manager education and employee training and development remain an afterthought for most public employers. A report of a recent conference of the American Society for Training and Development indicates that private employers now consider employee training vital to corporate survival. For example, Union Carbide is reported to have budgeted \$1,402,000 for training 6,000 employees in 1971 at three levels of management as well as technical/professional personnel. Industry is reported to be spending from \$250 to \$750 per man per year to train all employees because of the positive influence training has on employee performance, which in turn relates to organizational performance.

Yet report after report, study after study, indicates that employee training and development—and especially manager development in state and local government—remains badly neglected. It is not the purpose here to analyze why. Perhaps government organizations do not share the same sense of concern with survival and its relationship to management because measuring government success is more difficult without the profit yardstick.

Yet manager development is a function of management, regardless of the organization. The degree to which it exists

and flourishes is a measurement of management competence. In the larger sense it is part of management's total responsibility for developing its resources to their full potential.

Manager development is a partnership approach between the management of the organization and individuals within the organization. It implies, it requires, a commitment on the part of the top leadership. But it also requires the active participation and support of those involved in the program. Education is not something that can be applied like a veneer to unwilling or unmotivated subjects. It is all self-development.

The point is, simply, that although executive development may benefit the junior engineer, if he does not have the right attitude or if he is not conscious that it will benefit him, the program cannot be useful. The engineer must develop a need within himself to pursue any training and development program. He must have a strong inner desire to do so (6, p. 355).

People must be aware of the existence of their educational needs if they are to learn. It is not enough to have a high personal receptivity to education as an ethic. McGregor pointed out that

. . . [Y]ou cannot help people who don't want to be helped. You cannot force training into them the way you force grease into an automobile. It just simply can't be done. Whether we like it or not, we must face the fact that to be successful, any training program must meet needs which the people being trained are conscious of. . . . (6, p. 355).

The staff of a well-known firm of management psychologists has commented that the concept of manager development being self-development has sound psychological foundations and demands the full-fledged participation of those involved. They note that the growing manager changes because he wants to and has to, based on new knowledge and insight, not because he has been forced to do so (5, p. 62).

An individual's need perception relates to the career path the employee is following. If he can see a relationship between management, manager education, and his own future career, the motivation to participate is going to be higher than if the relationship is not evident or the employee has other goals, such as technical proficiency.

Manager development is an individual responsibility to those managing at various levels in the organization, just as continuing medical education is an obligation of the doctor and technical education is a continuing responsibility of the practicing professional engineer. Many professionals fail to recognize that they are a part of the management team; however, this self-recognition as a manager is a key to the self-development process.

WHAT MANAGER DEVELOPMENT IS AND IS NOT

Manager development is a total approach that focuses attention on the personalized needs of the individuals on the management team. Desatnik defines it as

. . . an individual process involving the interaction of a man, his job, his manager, and the total work environment. Individual development then results in the acquisi-

tion of new knowledge, skills and attitudes in a planned, orderly manner to improve present job performance while accelerating preparation for advancement into more responsible positions (7, p. 11).

Manager development has also been distinguished from management development.

We find it helpful to distinguish between manager development and management development. *Management* is a vague, general term that by definition refers to the function that controls others toward desirable goals. It is an impersonal, quasi-academic term. *Manager* development, on the other hand, is highly personal, as we believe it should be. Manager development is a conscious, purposive change in behavior on the job so as to increase personal effectiveness. And because it is the personal process of growing on the job, it focuses on real-life situations instead of on formalized training (5, p. 172).

This philosophy represents a departure from the conventional view of management development as a euphemism for training or education, typically something that happens in a classroom. Educators and consultants probably have been as guilty as any for fostering the idea that training is a goal in itself, and that all management has to do is institute in-service training programs and its on-the-job problems are solved. As training has become more popular, it has also become more sophisticated. The revolution in training and growth of the knowledge industry, which now accounts for about 30 percent of the GNP, has been influenced by the technological revolution that has affected other fields.

Too many close to the business of training still talk in terms of number of students enrolled and number of training hours, and evaluation is accomplished traditionally by asking questions relating to "happiness factors" (e.g., "Did you like this seminar?").

One reason is that management has not expected training to deliver more tangible results as the means to an end—improved management performance. All too often management has not decided what the educational experience is to accomplish. Perhaps this is another factor explaining the lack of appreciation that state and local governments have for manager development. Because the goals of government operation are often difficult to define, and in many agencies are not defined, training has been sold on blind faith alone, as an end in itself, without being associated with tangible payoffs.

There is no reason why management should not expect organized training activities to have a major and measurable influence on its management staff, as one element in the total manager development approach. But it remains for management to define what it is trying to accomplish with such efforts.

Manager development then, in the sense that it is presented here, is not just a collection of procedures, techniques, inventories, plans, or training experiences—it is a total approach. Although there are discrete elements in a total approach to manager development that can and will be identified, the underlying assumption is a philosophical approach to management. The total effort is to encourage the growth and development of all managers throughout

the entire organization, a process that charges each one with growing his own replacement and that suggests that each manager in the organization should have an opportunity to develop his full potential.

THE CONCEPT OF HUMAN ASSETS

Manager development as an attitude is closely related to the concept of human assets in organizations, which has been developed to a high degree of refinement by Likert and others. To renew an appreciation of the value of the human assets of an organization, Likert asks:

Assume that tomorrow morning every position . . . is vacant, that all of the present jobs are there . . . but no people, how long would it take and how much would it cost to hire people to fill all of the present jobs, to train them to their present level of competence, and to build them into the well-knit organization which now exists? (8, p. 103).

Key managers of a highly successful firm estimated that it would take several years and cost twice the annual payroll to rebuild the human organization that presently exists there. Twice the annual payroll for that particular corporation was \$700 million (8, p. 103).

Compared with a similar total loss of physical assets (not unheard of in times of natural disaster, and which can usually be replaced by emergency shipments, rental agreements, loans, and other special arrangements), the human assets clearly are more valuable to an organization because their talents are so difficult to replace.

Yet attitudes have developed, especially in public employment, that belie this appreciation of an organization's human assets. Public organizations that spend thousands of dollars on the maintenance of fixed assets and rolling stock spend neither time nor money on employee development. The same organizations that request funds annually to replace outmoded equipment do nothing to replace outmoded ideas in the work force. Thousands of dollars and hundreds of man-hours can be spent annually on the development of equipment specifications, but no time or attention is given to job specifications or recruitment.

A major purpose of manager development is to develop people capable of managing the human organization. As Likert explains: "Of all the tasks of management, managing the human component is the central and most important task, because all else depends on how well it is done" (8, p. 1).

WHY DEVELOP MANAGEMENT CAPABILITY?

If there is a philosophical basis supporting manager development efforts for professional employees, there are also other good reasons for giving it high priority.

Supply and Demand

Managers are a product of their total experience, only part of which is formal education. That experience takes place largely on the job. In other words, few organizations today can expect to recruit pre-service college graduates with appropriate managerial or administrative education. There are few college students graduating in such fields, and

almost all are at the graduate-school level. A survey in the middle 1960's reported less than 4,000 students graduated each year with any college emphasis in public administration. Majors in that discipline were few. Yet the federal government alone hires more than 20,000 college graduates each year.

Some have suggested that college graduation, in any event, is an imprecise measure for determining leadership capacity, as are intelligence tests.

College graduation is an inadequate instrument for necessary leadership capacity. Similarly, superior intelligence is not an essential requirement for the leader. Most people have far more capacity than they ever use, and it is not unreasonable to suppose that if given the opportunity for growth and training, many would succeed (9, p. 128-129).

This is not to suggest that a college education is not an appropriate foundation for manager development; it is. A study at Michigan State University led by sociologist Lloyd Warner has been examining the attributes of successful corporation executives for four decades. The first conclusion is that ability counts more than social background, and the second is that a college education—perhaps to be distinguished from the degree—is virtually essential. But the point is that the degree is likely to be in a discipline other than management.

In the state highway organization, the greater number of college graduates joining the organization will be engineers. They will have to be developed into good managers after they join the organization if they are to manage well. *The chances are, they will be the managers of tomorrow, qualified or not.*

The growth of employment in state and local governments has been larger than in any other sector of the economy. By 1975, employment by state and local governments is predicted to be more than 11 million—nearly 50 percent above the 1965 level. Employment of engineers and engineering technicians by state and local governments during this same period is expected to increase by 58 percent and 57 percent, respectively (10, p. 14-15).

It is reported that to provide for current levels (quantity and quality) of services only, state and local governments must recruit 1,000 new employees every work day (assuming a 250-day work year) during this ten-year period.

In addition, and perhaps more significantly, there will be greater losses of those already occupying senior managerial positions in the work force due to death, retirement, and separation for other reasons.

In California the "developmental gap" of administrators needed in municipalities in the ten-year period 1966-1976 is estimated to exceed those remaining in the system during that period by about three times (300 percent), as Figure 4 indicates.

In New England a recent study indicates conservatively that in the next ten years the number of trained public managers in state and local governments there that must be found equals the number of middle and upper management positions now existing. There will be total replacement.

It is evident that these managerial positions will be filled,

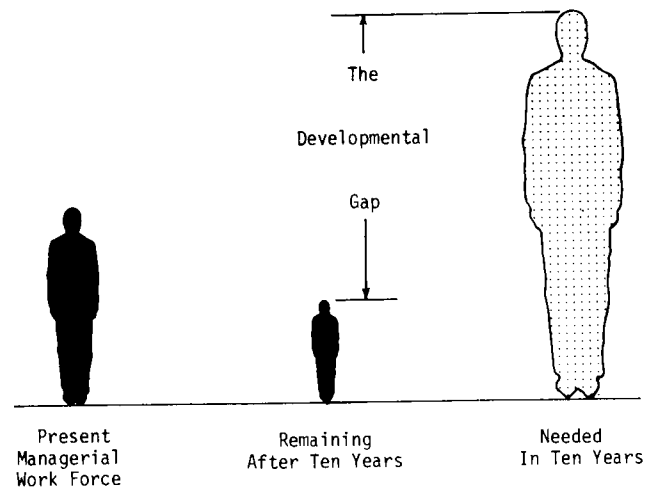


Figure 4. Projected department head needs, California cities, 1966-1976. Source: Municipal Post-Entry Training Needs and Resources in California. League of California Cities, Sacramento (Dec. 1966) p. 15A.

not from outside the existing organization, but from the ranks of those already employed in lesser positions. Developing managerial capabilities thus becomes an imperative.

Obsolescence

Engineering organizations are familiar with a variety of ways by which fixed assets can be depreciated, which involves calculations for obsolescence. Unfortunately, techniques have not yet been developed to quantify managerial obsolescence, but we know it exists. Middle- and upper-level managers may become so wrapped up in the practice of management that they find it difficult to remove themselves from handling day-to-day problems to learn how to manage better. They may particularly resist the acquisition of new knowledge if it contradicts their present understanding of management principles and challenges their present practices.

Yet management is dynamic. It is a field, like others, in which new knowledge is developing at an increasing rate. Thus, the rate of managerial obsolescence will increase. Only continuing development will be adequate to immunize the practicing manager from obsolescence.

Technology and Specialization

Perhaps in a larger sense the public manager is being challenged as never before because of a new awareness of the possibilities of achievement, both by the general public and by government managers. One definition of a problem is the difference between where one is and where he wants to be, and the distance is a measure of the problem. We create our own problems. De Tocqueville observed more than a 100 years ago that society constantly gives definition to new needs which government alone is in a position to satisfy.

The impact of technology on the engineering organization is particularly challenging. Not only is the technology of engineering changing so rapidly as to prompt one en-

gineering school dean to remark that what his students were taught as freshmen was already obsolete by the time they graduated, but the goals of the state highway organization are also undergoing change. No longer is it sufficient for public highways to be designed as the shortest distance between two points. Other considerations, often outside of highway design and construction technology, must be taken into account.

Particularly in engineering and other technology-oriented organizations, the effect of the knowledge explosion has been to place an emphasis on specialization. No longer is an engineer able to specialize just as a civil engineer; he may in fact specialize in pavement materials. Precisely because of this specialization the modern engineer needs to develop his skills as a manager even if he does not aspire to become the top administrator of the entire organization. At the very least, as he gains seniority and more responsibility for larger aspects of the engineering function, he will of necessity be managing other engineers and technicians.

As a responsible engineer with the U.S. Army Corps of Engineers put it,

Managing men is, in fact, the principal function of the engineer—whether he likes it or not. One can understand the engineer's being absorbed in the fascinating tasks of designing and constructing new projects, and this training and experience are essential; but why is it that so few make any attempt to acquire the knowledge, skill, and expertise needed to handle human beings—a material that is often more intractable than steel or concrete? (6, p. 357).

The Public Milieu

Corson has written of the need of the public official to understand the "external realm," of which the organization is a part. He suggests that the public administrator must understand the consequences of his decisions on the lives of the citizenry; he believes, secondly, that the careers

of many civil servants are limited to a single organization and therefore their experience does not broadly acquaint them with society in general or the diversity of groups within society. Third, he believes that many in government become "hemmed in" by serving a limited constituency; and fourth, he suggests that a public official may become unduly impressed by the views of those few he regularly comes into contact with (4, p. 6).

A particular manifestation of the need for broadening exposure to the environment of the public manager may be found in his attitude toward the legislative branch of government. The view that the legislature is the "enemy" may reveal a deeper lack of understanding or appreciation of the environment of the public administrator.

The importance of developing management capability in state highway organizations thus is not limited just to the internal necessity and beneficial effects such a process has on the organization—as fundamental a purpose as that is. In the larger sense, the development of managerial talent at all levels, and particularly at the top, has to do with the setting of goals and direction of the organization and, ultimately, its role within government and society. No one can deny that government agencies are becoming increasingly influential in the total society. Public administrators today cannot be content to maximize the efficient and effective use of resources in the abstract, or toward goals imposed by others. Management influences the goal-setting process, consciously or not, even by adherence to the status quo.

It has been said that resources are always limited, but their use is infinite.

Modern public managers need to be able to answer the questions, "Where do we want to go?" as well as "Where are we going now?" before they perfect the ability to get there. That is part of the management process, of which manager development is a part.

CHAPTER THREE

THE MANAGER DEVELOPMENT SYSTEM

To those unfamiliar with cybernetics, a system is something that has a beginning, a middle, and an end, plus some element of control. To those more systems-oriented, it means a cycle of input, process, output, and feedback.

A system of manager development in an organization is conceptually like any other system; this chapter identifies and discusses the components that are directly related in it. It is important to recognize, however, that manager development as discussed earlier also represents an attitude, an environment, an approach to management that should

pervade the entire organization. And earlier it was noted that the "managers" being discussed are those in the management continuum, from party chief to chief executive.

THE COMMITMENT

Manager development, and indeed the development of the human resources of the organization, requires a commitment on the part of top management. What kind of commitment?

Unfortunately, all too often when top management decides that it would be advantageous to undertake a manager development program (possibly because it is becoming the popular thing to do, or because it is receiving attention in the literature and professional meetings) it begins and ends by hiring a training officer in the personnel department. The training officer is told only to "go to it," and is promptly left alone. Having been given no sense of what he is supposed to accomplish, the training officer redoubles his efforts in search of an objective. He works up a master plan for employee training that begins with a computerized personnel inventory, is implemented by taking everyone away from the job for 30 days of training each year, and plots the career path for everyone in the organization. As a self-critic wrote in a trade journal for training officers, "Never has the quality of career development scaffolding exceeded the quality of effort expended on that which is being built or developed to such a degree as we see it today" (11, p. 47).

The training officer's comprehensive training program usually calls for an allocation of money to implement it—a different commitment of resources and perhaps a less challenging one than that stressed in the following—whereupon the chief administrator feels he can reject the program as a staff frill that cannot be afforded in view of the needs of managers on the firing line. The training officer, defeated, searches for a new objective while top management wonders how and why they got into the training business anyway.

The commitment that is essential to the success of any manager development program is to make it a function of every manager in the organization, an important part of the operating managers' responsibilities at every level in the organization and one for which each manager will be every bit as accountable to his superior as he is for productivity.

In this sense, then, the commitment is not to a baseless, insipid philosophy. Nor is it satisfied by adding a training officer or establishing a training budget, laudable as these may be. The commitment is to adopt manager development as a part of management practice, recognizing that it is literally part of a system of management.

THE LINKING PIN

Likert has a simple, yet profound concept of the relationship of people in an organization. He sees it as a linking pin relationship, in which a manager at virtually any point in the organization is at once both a superior and a subordinate (see Fig. 5) (12).

Thus, Likert suggests that no matter how large an organization is, or under what style of leadership it operates (and he, with others, has identified several), there is always a man-to-man, superior-subordinate relationship that exists up and down the organization, at every level. It is here that the manager development process happens, if it is going to.

Although a commitment to manager development at the highest levels of the organization is primary, it is misleading to suggest that it is there that manager development happens. The commitment is to make manager develop-

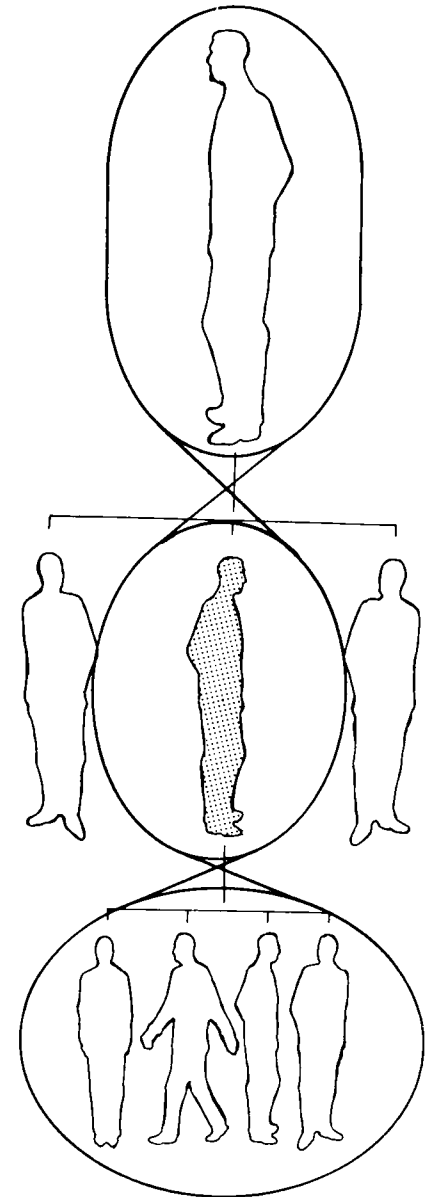


Figure 5. The manager as a linking pin between superiors and subordinates.

ment happen throughout the organization, at every linking pin.

Manager development must become built into the working relationship between superior and subordinate. For one thing, what happens on the job is *the most important influence* in manager development. The responsibility of top management is to effectively communicate the developmental responsibilities that each manager has to his subordinates and himself.

A research project in which 75 managers and personnel officers from 25 companies were interviewed caused a college business school dean to conclude:

All members of the . . . organization *must* be sold on the importance of management development. Furthermore, they must understand their roles in the de-

velopment process. Each manager is a teacher of his subordinates and, in addition, a communicator of development needs to his subordinates. Each manager is also a learner in that he is also in the process of developing in his present job (13, p. 52).

Thus, the responsibilities of each individual manager up and down the organization become the same in a system of interaction in which each manager:

1. Undertakes a coaching responsibility with his subordinates.
2. Understands his own development needs and responds to the coaching assistance of his superiors.

The more explicit elements of the manager development process then become supportive and secondary to the implicit relationship that should exist between superior and subordinate in the organization. Manager development thus becomes a part and supportive of management.

THE IMPORTANCE OF KNOWING WHAT IS EXPECTED

There have been more than enough studies to indicate that people basically want to succeed in their jobs. Furthermore, people are more likely to succeed if they know what is expected of them and how they are contributing to the larger purposes of the organization. Likewise, when people do not know what they are supposed to do, they become frustrated, and performance suffers.

A system of management has developed based on this awareness. Sometimes called Management by Objectives (MBO), Managing by Objectives and Results (MOR), or just results-oriented management, it was first defined in the 1950's and has spread rapidly. Although it is not the purpose of this synthesis to lay out the fundamentals of this approach to management, or to suggest that manager development programs can succeed only when incorporated into such a total management system, it nonetheless remains important that, whatever system of management is employed, the subordinate understand clearly what is expected of him if he is to perform well.

Unfortunately, research accomplished by Michigan psychologist Norman R. F. Maier and others indicates that this is not often the case in organizations that do not consciously work at it. Maier's findings indicate that subordinates often do not really fully understand—by as much difference as 25 percent—what it is their bosses expect of them. They are doomed to be only 75 percent effective in the eyes of their superiors unless the gap can be reduced. Fortunately, the differences can often be reconciled by the two—manager and subordinate manager—sitting down to talk about what are the subordinate's responsibilities and how well he is meeting them.

Odiorne relates the following story by way of illustration:

[T]here was a chief engineer who differed greatly in temperament from his engineering supervisor. The boss was a genial, outgoing, affable person, and the subordinate a tense, withdrawn sort of man. The chief often declared that he "didn't understand" his subordinate, and furthermore didn't think he was an especially good engineer. They seldom discussed the man's work, he said, because he felt that a "smart" manager would figure out what the situation was. The subordinate acted in accord-

ance with his perceptions of his job, with the result that his performances differed widely from his boss's expectations. Then a formal program was set up. Together, the two reviewed the subordinate's technical program and his major areas of responsibility, and then agreed upon the ways in which he would be measured. The result was a marked improvement in the subordinate's performance as his boss measured it. This the superior attributed to "a change in the fellow's attitude." In fact, his attitude had changed little. What had happened was that he now knew better what was expected of him (14, p. 192).

ELEMENTS OF A MANAGER DEVELOPMENT SYSTEM

The key elements of a manager development system are really processes for the most part, and in themselves represent smaller systems. They are:

1. Identification of development needs.
2. Establishment of development objectives.
3. Planning and programming development activities.
4. Implementation.
5. Evaluation of effect of program.

Unfortunately, a conventional listing of the elements or processes does not show that here is a dynamic interacting system; it is better illustrated by Figure 6.

Identification of Manager Development Needs

Probably the most important phase of the entire manager development system is that which appraises the development needs of those within the system and of the organization. All that happens at other points in the system, whether in sending a manager away to school, running a training program in-house, arranging a job rotation assignment, or the myriad of other possible training activities, should occur on the basis of an assessment of need. Unfortunately, this is often not the case.

Probably one reason is that it has not been sufficiently clear how the assessment process should be undertaken. For some it has suggested a major task force effort that either has never been properly launched, or has been too unwieldy to continue. To others it has been something that the personnel department or training officer has been "going to get around to," but never does. There may be other equally imaginative excuses.

Identifying manager development needs is a process of establishing the difference between where one is and where one wants to be. It is based on better understanding the employee's present performance and his aspirations, together with the organization's requirements.

Individual Development Needs

Two people know best the answers to how the employee is presently doing and what his development needs are: the manager and his superior. The linking pin partnership is where the personal development assessment process should take place.

The method—the how—by which this is accomplished is simple. It requires that the manager and his boss periodically sit down together to discuss objectively the subordinate's *performance* for purposes of analyzing the em-

ployee's growth and development on the job. It should be emphasized that where appraisals or personal reviews also are conducted for salary, promotion, or the pro forma "annual employee rating," they should be entirely separate from these periodic "coaching" sessions.

The manager and subordinate should get together informally and periodically—not on a rigid timetable and more often than once a year—in such coaching sessions. Although manager development is sufficiently important to be dealt with separately from other rating programs, performance on the job forms a basis for much of the development discussion. Because the job and its surroundings are an influential part of the development process, slavish adherence to a separation of manager development appraisal from other performance-oriented subjects in the coaching session seems unnecessary and unrealistic.

The coaching sessions should lead to establishing separate personalized development objectives for each manager as part of a manager development plan (to be described more fully), and subsequent coaching sessions can use the development objectives for continuing review and evaluation leading to establishing new development objectives.

The coaching session should allow for a good give and take between the two principals—the supervisor and subordinate—and should provide ample opportunity for the subordinate to express his own career aspirations. If the subordinate can sense that his manager is genuinely concerned about assisting him in reaching his own development objectives, he will be motivated to make the necessary self-commitment toward their attainment—a vital first step in the learning process.

From a reported appraisal of manager development practices, it is apparent that too little time is being devoted to such sessions when, indeed, they are held at all.

In the whole area of identifying development needs, it is extremely important to spend the time necessary to do it. This has been neglected in the past. It has been the last item on a priority list rather than the first item (13, p. 53).

One reason that such an apparently easy thing for a manager to do—sit down with his subordinate and talk about a subject that is one of the *most important* to the subordinate, his own career—either is not done, or is not done well, may be that the manager does not know how to go about it.

Because such a coaching session needs to be objective and job-performance-oriented rather than subjective, personality-oriented, it suggests that the manager has to develop some ideas about what performance he expects from the subordinate. That in itself may be so challenging that it is reason enough to evade a coaching session. It is easier to rely on hindsight, but it does not promote constructive self-development. It is rather like nagging: criticizing someone for not doing something he didn't know he was supposed to do in the first place.

Thus, a key to implementing such a vital element in the manager development program may lie in initiating a training program in how to coach an employee. Such a program

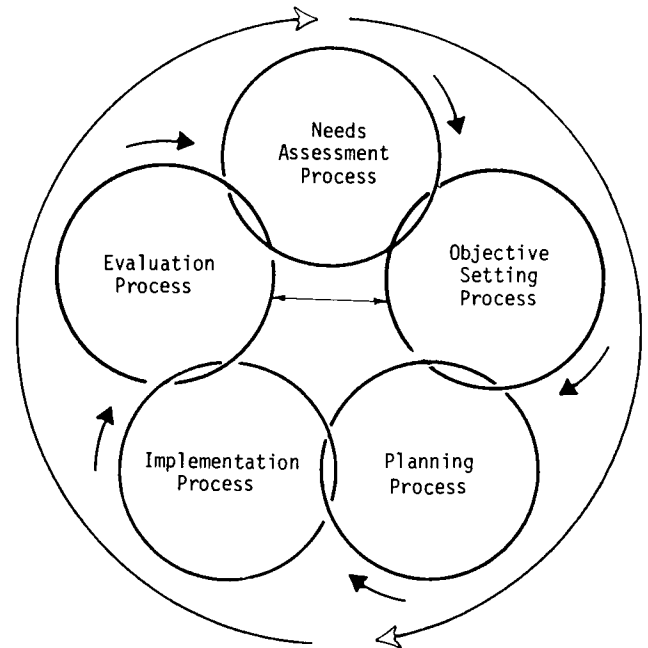


Figure 6. Concept of management development as an integrated system. Source: Adapted from Miller (23, p. 5, Fig. 2).

will help the boss get better performance from his subordinate managers as well as contribute to their development (and his own). (See Appendix B for coaching tips.)

Identifying Organizational Management Development Needs

Although manager development needs can best be appraised at the various linking pin centers, the organization's over-all management development needs must be centrally developed. Although such a plan must inevitably summarize and forecast personnel needs at the various levels throughout the existing organization, the influence of over-all agency planning of the future organization also comes to bear. Is an expansion planned because of new projects? Is a reduction in personnel forecast because of programs being phased out? Is a reorganization going to affect the number of managerial positions? Does top management intend to introduce a new system or style of management?

Such management planning must be fact-based, and requires that the personnel characteristics of the organization be established and recorded in such a way that the data can be retrieved and manipulated. From such a data base, management manpower development forecasting can be undertaken. Yet such personnel inventories—limited even to management personnel—are not common to many state or local governmental agencies, and only one state has made an effort to establish an executive inventory for all its agencies.

One management expert has suggested a diagram that schematically represents the manpower planning process and includes a concern for both organizational requirements (demand) and filling manpower needs (supply) (see Fig. 7) (14, p. 194).

One reason that manpower planning has not been a

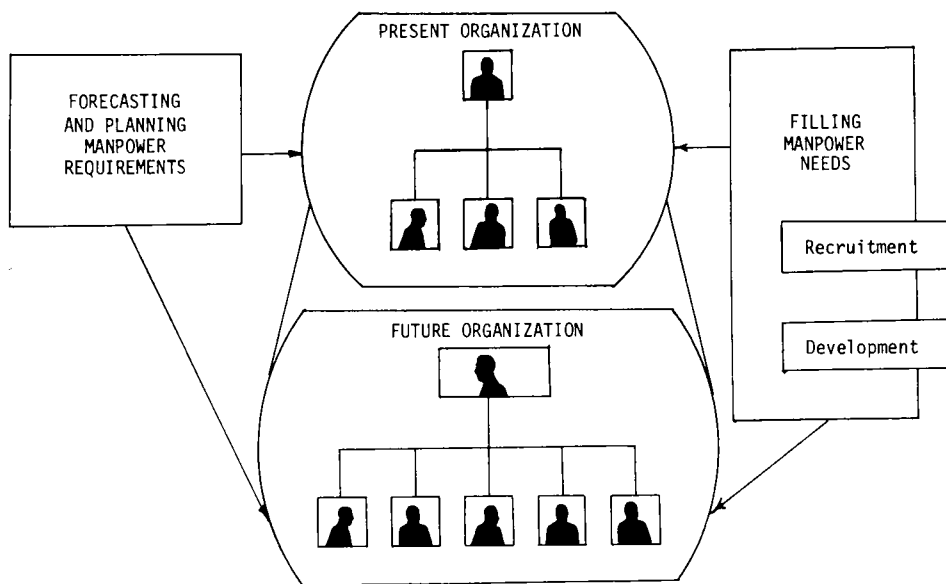


Figure 7. The manpower planning process.

highly developed management activity of state and local government agencies in the past may be that the relative stability of the present managerial staff has obscured the impending managerial crisis and the need for manpower planning. Many were recruited into government in the late 1930's, 1940's, and 1950's, and only now are beginning to retire. For virtually all state and local governmental agencies, the management problems of the 1970's will include the complete replacement of present managers. This does not simply mean that there will be a ladder effect displacement upward, with only the top level leaving. National figures indicate that 50 percent of the replacement management personnel in the representative public jurisdiction also will leave the organization within ten years, due to death or retirement—a total loss of more than 75 percent.

The recruitment of personnel at entry-level professional positions (for engineering organizations, mainly in the technical and engineering positions) is virtually the only point at which entry is accomplished, because lateral entry is almost unheard of in government management positions below the chief administrator's position. The identification of management potential in a candidate still outside the organization, possibly in college, is admittedly difficult and challenging, and it probably suggests the use of selection criteria different from those that would be indicative of technical competence alone. Demonstrated leadership in campus activities and organizations is but suggestive of the characteristics that recruiters might be aware of, knowing that those recruited today will be tomorrow's managers.

Another consideration that should be included in the manpower planning effort is the personnel policies and procedures in effect, both within the governmental jurisdiction and within the agency, that might be inimical to the objective of management development to advance qualified people into managerial positions on the basis of their demonstrated and potential abilities and knowledge of management. Thus, provisions that require a certain

amount of "time in grade," or that limit appointment to higher positions from a limited number of lower ones, are inconsistent. Likewise, if lateral entry from outside the jurisdiction is not likely, it should be possible to hire management personnel doing similar work in other departments within the governmental jurisdiction.

Unless there is provision for mobility of the managerial work force within the organization, an agency's own employees will not be encouraged to equate managerial development with promotion and job advancement, and they will be encouraged to look outside the organization for advancement. Likewise, management's ability to hire good managers will be inhibited if the accession route is limited.

Some agencies have resisted training programs and other means of manager development for fear that they would lose their managers, once developed into better managers, to other organizations; for much the same reason, the traditional attitude in personnel training for the past 50 years has been to emphasize on-the-job improvement in the present position. Training for personal improvement was thought likely to stimulate a more aggressive interest in advancement and therefore was not in the best interests of sustaining the incumbent's satisfaction with his present job. Thus, public employees almost inevitably have begun learning how to do a new job only *after* they have been appointed to it.

This attitude, especially in today's mobile management market, is out of date, if not fallacious and self-defeating. Those agencies so afraid they will lose the men with the greatest managerial potential if they help them improve their managerial skills will obviously lose the good ones even faster if they attempt to hold them back, and in the process will not attract competent replacements. Management will stultify itself and the organization will go into decline. On the other hand, the agency with a vital growing management not only will enhance the management talent it has, and keep it more content in the process, but

it will also attract more competent replacements when some managers inevitably “grow out of the organization.” Finally, it is one way to avoid “organizational dry rot,” as it has been so aptly described.

For the same reason, agencies are well advised not to develop elaborate ladder plans for vertical promotion that plot the life of the individual in the organization, based on the likely number of vacancies, and the employee’s “development” (in this sense, usually equated with length of service). As Salvagno puts it:

Career development plans overly preoccupied with individual and precisely pre-defined career ladders invite their own collapse; first, with the burdens of staff and paperwork overhead, and second, with a priori value judgments about both persons and positions which practical operating requirements too often repudiate (17, p. 47).

Although there ought to be alternative career paths for managers and other professions, it is unfortunate to equate manager development solely with hierarchical promotion. What is involved in manager development is managerial growth, and growth can occur without vertical advancement.

For example, must the state highway chief executive stop growing simply because he has reached the top of the organization, or must he aspire to be governor if he is to be motivated? Clearly not. Just as clearly, unless he does continue to grow on the job, the organization will suffer from managerial obsolescence in its most critical position.

Establishing Manager Development (Action) Objectives

Once development needs are generally perceived, both for the personal development of individual managers from coaching sessions previously described and for the organization, through management manpower planning efforts, it becomes an important part of the manager development process that specific objectives be more explicitly established to define the intent of training/development efforts.

Both the linking pin manager teams and those responsible for over-all manpower development should summarize the impact of their training needs appraisal by the development of specific manager development objectives that are job-behavior-oriented toward what the professional trainers call *terminal behavior*, meaning, “An observable behavior that the learner will be able to demonstrate. . . .” (15, p. 104). They can be called *action objectives*.

Instruction in the writing of such objectives has been well covered by Mager and others. The pertinent points have been summarized:

In order to be functional, an [action] objective should:

1. Describe what the learner *will* do to demonstrate that he has attained the objective.
2. Stipulate significant conditions under which the learner will demonstrate that he has actually learned the behavior.
3. Specify the standards of performance (acceptable level) that will be expected (15, p. 104).

Not all manager development goals will be readily reducible to a behavioral action description, because they may involve learning that contributes to knowledge, understand-

ing, and attitudes rather than to immediate management application. These latter objectives have been classified by some as learning for ideation. An example might be “to teach all managers about management by objectives.” Most experts agree, however, that such general, intermediate objectives should be reduced to the point where individual action is described. In such case, the foregoing general organization-wide objective might be improved on by adding, “. . . so every manager can manage his unit by objectives to the satisfaction of himself and his immediate superior by the end of this year.” If the management of the organization has no intention of implementing such a program, however, then the learning experience is of little value and actually may be harmful in the raising of unwarranted expectations. It is better to make decisions about the use of training before the training gets under way, and involve only those who reasonably expect to utilize such training.

The purpose of writing action objectives is to answer the question *why?* An organization can hardly afford to have its managers acquire knowledge at its expense that they will never use; likewise, most managers would prefer to be involved in developmental experiences that are relevant to their present work or career goals. Spending the time and effort to answer the *why?* question before manager development activity takes place may help to make such development meaningful to the job, to the individual manager, and to the total organization. It may also help management think through the consequences of its development activities rather than being content to “train for the sake of training.”

Developing a specific plan of action objectives for each manager includes determining what results the manager seeks to attain during the next period of time, what supportive and helpful actions the manager’s superior will take during the same period, and what actions are to be expected to the unit responsible for planning and programming manager development activities.

At least four guidelines have been suggested in developing such action objectives:

1. There should be a specific reason in mind for undertaking the activity.
2. The likely effect of the activity on the man’s present or potential job performance should be ascertained.
3. A commitment in writing should be developed that specifies what will happen, by whom, and when.
4. Provisions should be established for evaluation of the actual results (14, p. 138).

A copy of the plan should be sent on to the appropriate unit responsible for planning and programming the over-all organization’s manager development activities. The specifics of the plan are not nearly so important as the process. As an observer of just such career development planning in a government agency points out:

Obviously, the particular form is of little importance. What is important is that the staff member has an opportunity to relate his own career objectives to the office objectives, that he is given a part in stating what develop-

mental programs he needs to accomplish his and the office's objectives, and that he is properly counseled in his development plans and the means of accomplishing the plans (16).

Planning and Programming Manager Development Activities

The action objectives, once established, also become a criterion for the selection of particular training, educational, or experimental activities; i.e., Will the training activity enable the participant to take the desired action? An evaluation of more than 400 business management training programs led to a negative conclusion. "These programs have contributed little or no demonstrable or measurable effects on business performance or manager behavior" (17).

Many management experts believe that one of the main reasons manager training programs fail is the lack of established objectives, either for their application on the job, or for the program, or for those taking the course.

The utility of training objectives is that they provide an effective set of guidelines and sign posts, so that the training system can produce its desired product. In training for the work environment, that product is improved employee performance. To the extent that objectives accurately specify the behaviors required of employees, then to that extent will objectives provide effective guidance for the entire training program. . . . (15, p. 109).

If life were so simple that all a manager and his boss needed to do to implement the individual action plans was to choose from a well-known and limited range of choices the training/development activity that was most likely to produce the desired training/educational effect, the planning process of the manager development program would not be needed. The manager and his boss could implement their agreed-upon development program at once, and those concerned with over-all organization management development could busily set out to orient new recruits and run pre-packaged management development courses.

Unfortunately, life is not so simple—and neither is the planning of appropriate training and development experiences. There is more than just classroom activity to consider. It is generally recognized that about 90 percent of development takes place *on the job*. One reason that classroom learning has been given such attention over the years, however, is that those responsible for typical training programs in many organizations do not have the authority to influence management practices and other development influences on the job. They have had to be content with the hope that developing new intellectual understanding and even attitudinal changes will affect behavior on the job—an expectation that has not been authenticated by much experience.

With defined action objectives, however, those responsible for planning training and other development experiences have some objectives. As someone once said, "Training doesn't come first, it comes last"—meaning that the perception of need and development of on-the-job action objectives gives direction to the training effort.

What is Training?

The remainder of this chapter discusses the training function in the sense that it applies to an educational experience that is provided for groups by those primarily assigned responsibility for training or management development within an organization, and not the continuing coaching responsibility inherent in every manager's linking pin relationships. Up to this point, this synthesis purposely has avoided a discussion of training in the context of something that only certain people do, hopefully so as to avoid the attitude trap that training is something that somebody else does. A few comments regarding the training professional follow.

Perhaps the first point is that training is a profession. The American Society for Training and Development (ASTD) alone has more than 10,000 members, most of whom have major and significant responsibilities for employee development in their respective business and government organizations. Advanced degrees (including the PhD) are offered in training. Another point worth mentioning is that the training director is not necessarily an instructor. A study of training directors' duties indicated that less than 9 percent related directly to instruction, whereas more than 40 percent of their tasks concerned the development and preparation of programs, and another 19 percent concerned over-all program administration.

In the formulation of training activities outside the scope of a manager's coaching relationships, any organization needs professional assistance. If the organization has not yet reached the point where the talent is available from within, it should seek assistance from potential outside resources. Some state universities have bureaus of public administration and adult education divisions that can be helpful, and there are members of ASTD in nearly all states. Private industry training directors may be of assistance, and private training consultants are available. The point is that in the design and development of training programs to meet defined action objectives, professional advice can be of great help.

Also, a word might be said here about a continuing semantic debate over the definition of training as distinguished from education. *Training* has to some a narrow connotation of skills training in the most basic manual sense (e.g., typing). In this synthesis, however, the word *training* is used in its more contemporary meaning as being concerned with knowledge applied to the job rather than for the improvement of the individual as an end in itself, which might be a more appropriate definition of *education*. Thus, this use of the terms is concerned more with the results that are obtained—ultimately an improved public service—than with the means by which they are achieved. Conceivably, all training experiences are educational, but not all educational experiences have a "training effect" that can be observed on the job.

Planning the Training Effort

Planning the training activity is part of the over-all design phase of a manager development program; the other part is programming the activity. The planning phase helps the

training staff determine how best to respond to the development/training needs, while the programming phase charts the course by which the plans will be implemented.

Identifying Root Causes

The professional training officer, like the professional manager or physician, knows that he should not develop solutions that act on symptoms. At least tentatively the training needs appraisal has been made by the linking pin management teams or by those responsible for over-all manpower planning, but the training unit will need to determine whether to use classroom techniques to increase knowledge or to develop opportunities for existing knowledge to be applied in practice. What may be assumed to be a lack of knowledge may be instead a lack of experience, and the development of a solution will require the application of different methodologies (Fig. 8).

Program Design Factors

There are a variety of variable factors that must be taken into account by those developing the training program. Only some of them are discussed here.

One of the more important design considerations has to do with the *nature of the training group*. Presumably, many of those for whom the training program is being developed have already been identified. At least such is the case in a well-functioning manager development program. Is the group relatively homogeneous as to management level, experience, and sophistication? Are most of those to be involved in one geographic area, or are they widely scattered? What is their present educational attainment level? What prior training experience have they had? The answers to questions such as these will affect the development of alternative training because the whole purpose of training experience is to serve the development needs of those in the group.

Instructors usually can be found outside of the organization, from the talents of universities and consultants, but there is considerable value in using talent within the organization as well. This does not necessarily mean that the department chief administrator suddenly should become the chief instructor, but there are opportunities for members of the management staff to participate as discussion leaders and special resource contributors, as well as in more conventional teaching roles. Some "package" programs prepared by professional firms feature a variety of filmed presentations with well-prepared and carefully detailed lesson plans for the guidance of the novice instructor.

Use of in-house members of the organization in the training program has at least two beneficial side effects in addition to the actual contributions made in the classroom or other learning situation. One is the face validity that such participation gives to the program and its content. Nothing convinces trainees more readily that the training activity is important than for top management to demonstrate that it is something worthy of their own participation. Hearing the training message from management's own members strongly encourages a belief that the material is relevant. Second, preparation and participation in such a program

will have its own training effect on the manager-instructors.

The location and physical setting of the training activity is an important and easily overlooked design factor. *It does make a difference where the training program is held.* For some types of programs, an in-house location is appropriate; for others, a location away from the work setting may be more desirable. The object is that the physical setting adequately support and enhance rather than detract from or intrude on the learning process. Often this means eliminating negative influences (noise, uncomfortable seating, poor lighting) that might detract from the learning situation. Also, it means arranging for the type of physical facility that caters to the needs of adult learners rather than adolescents. Potential outside resources include local colleges and universities, private corporate training and meeting rooms, and commercial facilities such as are provided by hotels. Likewise, convenient access for the majority of those attending is important. Nonetheless, the physical facility can at best only support the training effort; the subject matter still must be there.

Training methods can be enumerated at length and the techniques of categorizing them are varied. Among those that are often associated with group training are: the lecture, the conference, the panel discussion, workshops, laboratory training, role playing, the case method, the incident process, brainstorming, management games, and the in-basket method. Appendix B contains more details on each of these methods, and explains what they are, how to use them, and when to use them.

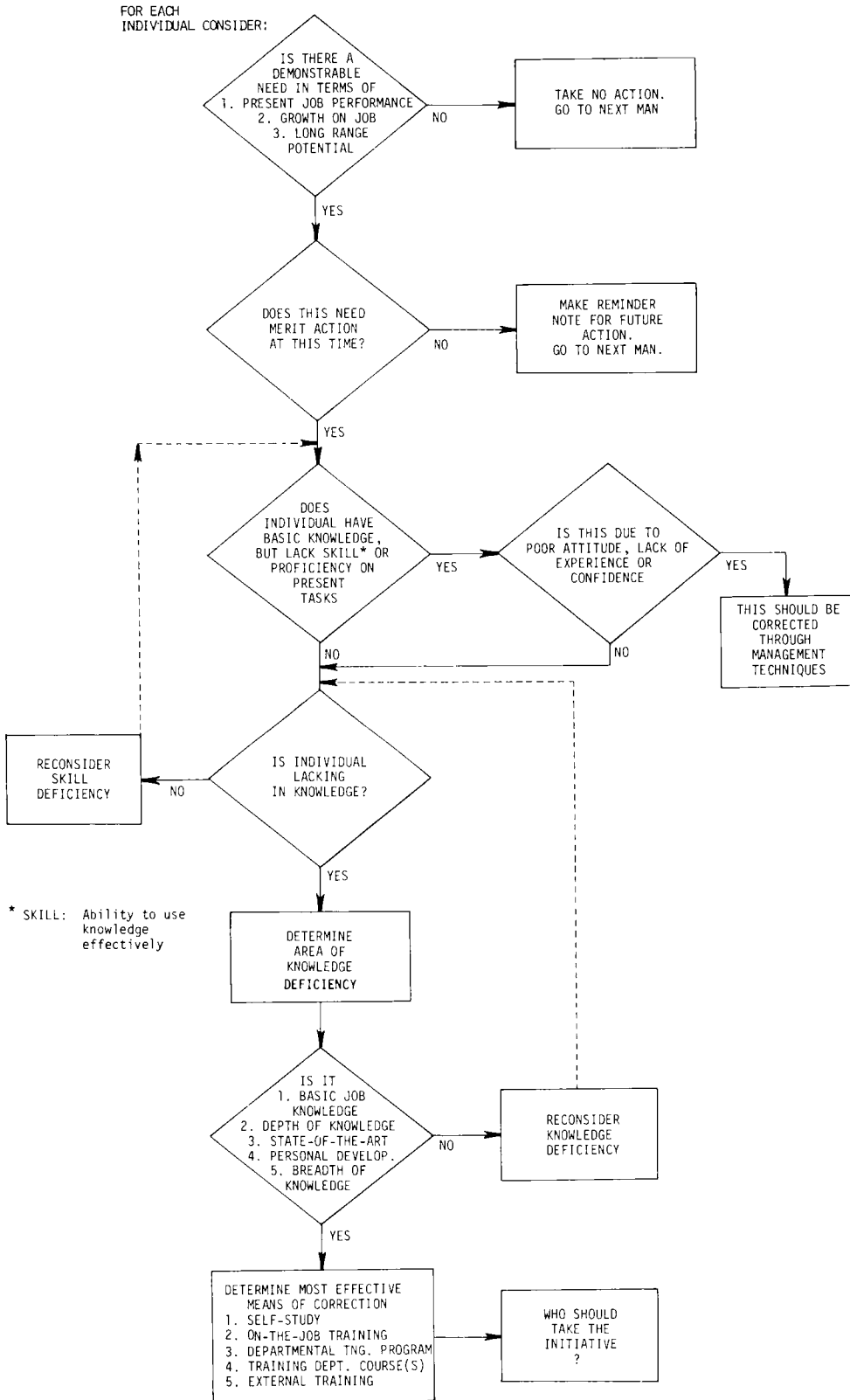
Although this discussion is primarily on techniques useful to training groups of people, there are methods of promoting individualized training, in addition to coaching on-the-job. They are: correspondence and individual study, job instruction training, programmed learning, job rotation, and the planned experience. These also are outlined in more detail in Appendix B.

The method of delivering training can be as important as the content of the program. There have been some notable trends in recent years toward the use of more participative techniques within a format to reinforce new ideas through immediate use and feedback rather than dependence on the passive lecture approach. Also, program formats are becoming less tightly structured and more informal, which places a greater burden on the planning of the program.

An experienced manager development authority gives this advice for structuring class groups and sizes:

The first rule is that groups should be small so that the conference leader can get full participation of all conferees. We recommend a group size of from fifteen to twenty, never more than twenty. The second rule is that bosses should not be in the same groups as their subordinate managers. Nothing so inhibits the subordinate manager as having his boss listen to [his] discussion and opinions. The third rule is to mix functional managers in your class groups (18).

Another design factor is the constraints on when training activities can be offered. The trend is to provide training time during the manager's duty period, in part because (by the definition of a well-organized manager development program) the training experience is intended to pro-



} INDIVIDUAL TRAINING NEEDS = DEPARTMENT TRAINING NEEDS SET PRIORITIES

Figure 8. Industry analysis of individual training needs.

duce an effect that is specific and measurable on the practice of management in the organization by those individuals participating. Thus, because the training experience is for the ultimate benefit of the organization, it is logical that the employee should not have to donate his own time to it.

Another consideration in providing on-duty time or compensation for off-duty training time is that, because so much of the development process relates to the individual (all development is really self-development) there is little that management can do specifically to enhance the learning process. Eliminating concern for the personal time invested by the participants and, at a minimum, paying for all out-of-pocket expenses, is believed by many progressive organizations to be a reasonable way of tangibly demonstrating their support for manager development. Top management may have little other way of bearing witness to its own support of manager training.

Consideration of the content of training activities directly relates to the development of some explicit end-of-course training objectives. These are not the same as the action objectives discussed earlier, which were oriented toward training effect on the job. Those responsible for the training activity typically work backwards from the action objectives given them to determine what results the course or other learning experience will need to have on those involved in it. For the most part, such end-of-course objectives will relate the likely new knowledge, understanding, and attitudes developed while in the formal course, a before-and-after comparison; and, because everyone forgets 75 percent of what he has learned within a week, we really want to predict how much knowledge the student will have acquired and retained that he can use (i.e., after one week). Then, a prediction can be made of how such new knowledge might be used.

This approach is based on the understanding that what we know (or what we think we know) affects our behavior; and, by influencing these variables, we can influence behavior. In addition, training courses, even carefully planned ones, are not the only influences on man's concepts and values, so the relationship is imperfect, at best.

But what should be taught? In part, the answer to this question comes from an analysis of development needs as appraised and reported from the linking pin teams and organizational needs as determined by manpower planning. A third input here, however, is an appraisal of the changing body of knowledge about management. There are more things to know than anyone can ever learn, but there are also new insights, new concepts, and new ideas about management that could be of genuine benefit to managers. This is another reason why the highway organization needs a readily available professional in the management training and development field, preferably one acquainted with the environment of the organization. New developments in management are not likely to appear in engineering or technical journals and publications that are received by engineering organizations.

There are a variety of "schools" of management. One author suggests five: (1) *the process or operational approach*, where management is analyzed from the point of view of what a manager does; (2) *the human behavior*

approach, where the art of management is stressed and the entire realm of inter- and intrapersonal relations and interdisciplinary concepts are related to management; (3) *the social system approach*, where management is viewed as a social system and sociology is applied to management study and theory; (4) *the systems approach*, where management is related to a systematic framework for describing activities and their interrelationships; and (5) *the quantitative approach*, which stresses mathematical models and processes, relationships, and measurable data.

Pfiffner and Presthus identify three approaches to the study of public administration, and relate them to a historical evolution in the discipline. They identify (1) a *constitutional-legal-historical approach*, more popular in the late 19th century; (2) a *structural-descriptive approach*, which has been a dominant "school" and has stressed formal organizational concepts and functional operating techniques (finance administration, personnel administration); and (3) the more recent *socio-psychological approach*, which is concerned with human behavior in any organizational context and which deals with the action processes of administration (19).

As the study of public administration is a blending of several schools of thought, so is its practice. The basic practitioner skills identified by Davy and generally confirmed by a panel of practitioners are: problem identification and analysis, situational analysis, operational analysis, communication, delegation and review, and negotiation and conference (20).

This is not to suggest that the successful manager uses all his knowledge and skills at the same time. Indeed, he does not. He calls on a variety of knowledge and skills at a given moment, depending on the situation.

The manager of the future will be the manager of situations:

To sum up, the changing economic and social milieu has brought into existence a new type of manager. The ability to organize, get results, and adapt to rapidly changing circumstances will be the primary criterion for executive success in the future. The manager may be a specialist in his own field, but as manager he will use his analytical ability at the [organizational] helm, and he will allocate responsibility among his subordinates (14).

This is not to suggest that manager development programs should include a garden variety of training efforts so that managers can sample them all and utilize a variety at random. Many programs in new concepts of management are being offered, and they are popular. An experienced manager development observer comments, however, that enrollees in such programs are often managers who are looking for easy solutions.

Why are management development experts able to sell their programs which purport to have something new in management? The reason is simply this: many managers have not been following good practices of management over the past years, and they are in very deep, very real trouble. They are like drowning men grasping at straws (18).

Instead, manager development programs not only should relate to the managerial needs of the organization, but, in

the view of Likert, "Training to bring about cognitive, attitudinal, and skill changes must be compatible with the system of management in which that training is to be used" (8, p. 125). This suggests that management should determine what its present style of management is (or what it is perceived to be by managers and other employees within the organization) before top management sanctions training programs that promote change. Likert pioneered scientific techniques to identify such styles. Furthermore, Likert cautions that an effort to change a management style or system must be approached by changing all elements of the system in a total approach, not just through training per se.

Likert also suggests that manager development programs must be internally consistent and should not be promoting different management concepts to different managers or advocating management principles that are not practiced. He cites research findings for the conclusion that few managers attain successful performance when they attempt to use a mixed bag of principles and procedures.

There is value in exposing managers to new ideas and conflicting concepts of management, not only because of the intellectual stimulation they produce but also because the process of introducing new ideas leads to innovation in management. But the objectives of such sessions should be labeled at the outset as primarily cerebral, so that operating managers do not feel somehow that top management is expecting in some obscure way to affect management practice. The danger in such sessions, of course, is that unless operating managers do have an opportunity to be creative and can apply new concepts to their management practice, they will feel frustrated when stimulated with new ideas and may seek a different management environment where innovation is encouraged and rewarded, or they will give up and retire on the job. So, again, training experiences that do not reasonably lead to validation on the job, or that are not relevant to the individual manager's career objectives or to the practice of manage-

ment in the organization, may produce undesirable side effects because by their nature top management will have little awareness of or direct control over them.

In developing training program alternatives, it may be helpful to determine whether the training need can really be focused and used only by individual managers or whether there are some organizational implications. Rehffuss believes

. . . that the type of training employed should relate to some evaluation of the likely shape future organization changes may take.

I suggest two "ideal types" of training, individual and organizational development, and view them against two "ideal types" of organizations. One is the present bureaucratic type, and the other a drastically restructured, loose combination of people and jobs. One's view of the future organization should largely determine a conscious choice of training types and strategies (21, p. 118).

Rehffuss believes that if the future organization is to continue without substantial reorganization or other major changes, training can be group oriented. If major changes are in the wind, however, training might better be directed toward building the individual skills of managers so they can perform better, regardless of their future assignment in the organization. His identification of the two basic types of training is shown in Figure 9.

This analysis of the focus of training programs and their organizational implications seems particularly relevant to the work of those concerned with manpower planning. It is yet another factor that the training staff must consider in the design and development of training alternatives.

Selecting the Final Program

After reflecting on the several design factors, the training staff should produce several alternative training programs. It is important for the training staff not to commit themselves to the one best method of implementing the training

Individualized	Organizational Development (group oriented)
<i>Examples of Courses</i>	
University Training Correspondence courses Electronic Data Processing Managerial Economics Letter Writing for Executives Management Techniques Creativity Workshop Executive seminars	Blake Grid Work Human Relations Techniques Middle Management Workshops Sensitivity Training (latter two organizationally oriented when taken by members of same organization)
<i>Intent of Courses</i>	
Develop individual capacities Broaden views as individual Upgrade skills Provide new information	Improve awareness of self as affecting others Break down intraorganizational barriers Increase knowledge of organization

Figure 9. Two basic types of training.

program until they are confident that all the possible alternatives have at least been identified.

Now comes the time when a decision must be made. Instead of groping for the right training alternative, professional trainers are increasingly using the systematic approach to decision making that other managers as well are using, which involves screening the options through some criteria. Numerous references can be consulted for a more elaborate consideration on decision-making than can be given here, but the principles are the same.

Choosing Criteria

The first procedure is to decide on the criteria that will be used in making the decision. The training staff will have used a variety of design factors to develop some training alternatives; now they should be evaluated against themselves. The use of criteria will help determine the final selection.

One primary criterion will be the likely contribution to the action objectives the training activity will make—those objectives that got us into the entire cycle in the first place. Note that these are not the end-of-course objectives referred to earlier, but instead are the on-the-job actions the training experience should support.

Another criterion that will help determine the final selection is top management's preference. If the chief administrator prefers a particular mode of training, whether it be an extension-type course or a "management retreat," that preference should be considered and weighted if necessary.

A great many other possible criteria (e.g., cost, effectiveness, feasibility, time, and possible side effects) can be included in the decision-making process, so long as they are really relevant.

The decision-making screen can be conceptualized as is shown in Figure 10.

Using the Criteria

At this point a decision is called for. The technique is to rank each option against the other available alternatives, criterion by criterion, based on reasonable prediction of the likely effect of the options on that criterion. By playing the options off, one against the other, through the various criteria, either one training option will be immediately top ranked, or several may still be in contention, in which case those options farthest away from producing the desired outcome can be dropped and the remaining options can be recycled.

Again, this is an imperfect attempt to describe a dynamic process by which a decision—any decision, in fact—can be made.

Assuming a training option has been selected, the programming phase follows.

Programming Training Activities

Once the most appropriate training response to the defined development objective has been selected, it is natural to expect that action will be almost immediately forthcoming. But such is not the case.

OPTIONAL CHOICES	CRITERIA					
	CONTRIBUTION TO OBJECTIVES	COST	FEASIBILITY	TIME	UNWANTED SIDE EFFECTS	MANAGEMENT PREFERENCE
1. Seminar						
2. Univ. course						
3. Job Rotation						
4. Retreat						
5. Do Nothing						
DESIRED OUTCOME	HIGH	LOW	HIGH	SHORT	LOW	HIGH

Figure 10. Screening training options through criteria. Source: Odiorne (24, p. 68).

Where to begin? Unless the training manager has the authority to implement his own decisions, wise counsel suggests that the approval of top management be secured. At this point, top management should not expect that the training staff will have completely detailed plans, but the foregoing shows that the training need, the recommended training program, the likely benefits, and the costs are in evidence and can be reported.

Once top management accepts the program (and, in some agencies, manager development is now so pervasive that management approval of individual training activities is no longer expected) more detailed programming can get under way. It is now no longer just the training staff's decision—it is a management decision.

Training programs—good ones—are available, and may do a satisfactory job for some. For others with special problems, however, top management is advised to get expert assistance in programming its training activities.

Essentially, the programming function answers the familiar questions of Who? When? Where? Why? and How?

Evaluation

Manager development has been likened to a cybernetic system of which the process of designing, planning, and programming training activities is a subsystem. In any system, whether it be the one that heats a home or the massive effort that landed men on the moon, the element of control through feedback is necessary if the objective is to be obtained. Just as any coach knows that his pregame plan will have to be altered by actual playing conditions, so too the plan for training must include provision for evaluation of actual experiences.

The evaluation is really of two types. There is the need for continuous feedback during the process of an event, as well as the need for periodic evaluation at planned points along the way. Both concepts are important in evaluation of the training cycle and the manager system.

The professional training officer plans for a continuous

monitoring of his training activities, either by assigning such a responsibility to a qualified observer or through other procedures. The American Management Association, for example, builds in a continuous monitoring of its conferences by having participants rate each session immediately following its conclusion and asking other questions to develop a feedback through participant evaluation. Although this technique may be imperfect, no feedback and, consequently, no control would be worse.

The implication of the feedback concept, of course, is that not only must it be planned, but also that the reaction it is supposed to stimulate must be possible. Otherwise, there is really no control and no need for feedback. The administrator who has made no provision for alternatives during a training conference is better off not asking for feedback during the program if it cannot be acted on.

The second concept of evaluation, that of periodic review, has two implications for those concerned with planning training activities. One traditional use of the feedback concept has been end-of-course questionnaires. They are capable of measuring a variety of factors, not all of them immediately apparent. The question, "How did you like this conference?" may tell everything but what the participant learned, but the question may not be unimportant.

In both concepts of feedback, it is necessary to have a previously established standard that will tell whether the system is operating properly. The action, job-oriented objectives, as well as the intermediate training objectives give a built-in standard of measurement and the evaluation answers the question: How do the results compare with the objectives?

For the end-of-training evaluation it may be necessary to evaluate what the participants now know that they did not know before the effort began, which suggests a before-and-after test as a possible procedure. Because we also want to measure what they take back to the job with them, it may be more appropriate to measure their new knowledge a week later. Again, unless the measurement techniques are well designed, we may be measuring other things. For example, the new employee just returned from a training school who is told by his experienced partner to "Forget all that book stuff and just watch me!" may in fact do just that, and a later test of what he remembers may measure instead how quickly he was able to adapt to an on-the-job situation by forgetting all he was taught.

The more significant evaluation has to do with whether the action objectives also are being met. Because their attainment falls largely outside of the formal training activities and relates instead to how the newly acquired knowledge is being used on the job, the evaluation of this portion of the total manager development system becomes a function of management, and takes place at the point of the linking pins. Appraisal of the results of the manager development effort gets the manager and his superior into the process of establishing new objectives for the future, based on the experience of the past—and the cycle repeats itself.

DEVELOPMENT FOR TODAY VS TOMORROW

One of the problems that apparently perplexes highway organizations as much as others is whether to concentrate on developing managers to do their present jobs better, or whether to develop for future jobs, promotion, etc.

A growing, dynamic organization also provides for the growth and development of its managers. An organization's management is the sum total of those who manage in it. How can those with management potential be identified, and should we develop for the future at a short-range sacrifice?

Although the entire manager development process is so vital to the success of management that it suggests that it be assigned as the major responsibility of a manager somewhere in the upper level of the organization, it is so comprehensive that clearly no one man or centralized staff can be charged with the identification of managerial potential from among those not now managers, or with identifying those with potential for accelerated promotion.

Individual managers throughout the organization must feel it is their responsibility to identify such potential and develop it to the degree that such a responsibility falls within the linking pin relationship.

Desatnick suggests some practical ways of identifying management potential. For one, he suggests that each manager in the organization be asked to prepare three lists of three to five people in each of three categories: (1) those key people under 40 who are most likely to be candidates for or to be recruited for jobs in other organizations, (2) those who are the most difficult to satisfy, and (3) those who, regardless of age, are the best performers. He suggests that many of the same names will appear on all three lists (7, p. 368-369).

Accomplishment on the present job remains a key factor and, with a results-oriented appraisal, high performance may come more easily to the attention of others. It also relates to the concept that if individual managers up and down the organization are responsible for developing their subordinates, they also are being developed by their superiors, and that the key to their success lies in developing superior performance from those who report to them.

Likewise, managers are also accountable when individual managers reporting to them do not develop to their apparent promise. "When a manager says a man is not working out, usually he is really saying, 'Either he was bad when I got him and I didn't see it, or he has become bad under my management.'"

ELITISM VS GROWING ALL MANAGERS

Are manager development experts advocating a system that will inevitably produce "crown princes"? Must only a few managers reap the benefits of the manager development program? How can all managers be promoted and rewarded when there are only a few positions at the top?

Clearly, a manager development program is intended for all managers, not just for a few elite. As an experienced firm of management consultants points out:

Manager Development Applies to All Managers. Real-

istically, many managers are not good enough for upgrading and are too good to fire. But this fact doesn't mean that they can't grow in their present positions. Indeed, for all managers the process of development is inevitable and continuing. We have no voice in saying

whether it does or does not go on. Our only choice is how to deal with it. Supervisors cannot decide whether they will or will not influence the development of their subordinates. They can decide only *how* they will influence them (5, p. 177).

CHAPTER FOUR

CURRENT TECHNIQUES OF MANAGER DEVELOPMENT

This chapter is based on reports received from many highway agencies throughout the U.S. and appraises the current state of the art of manager development practice as reported by them.

Over all, manager development appears to be a recent and intensifying interest of a majority of highway agencies. Some have gone so far as to establish training positions, and a few have created units with a broader commitment to manpower planning and development. Many suggested that manager training and development was a relatively new activity within their agency, however, and was still in the formative stages.

To synthesize present manager development practices in the light of the previous chapters, the elements of the manager development system previously introduced form the basis for the following review of present practices in highway agencies.

MANAGER DEVELOPMENT AS A PHILOSOPHY

The following is an appraisal of the degree to which the concept of manager development as a part of a total management philosophy has apparently been perceived and put into practice in highway organizations.

Although many of the respondents did not address this question directly, several alluded to it and a few made specific comments. Interestingly enough, it was not always the agencies with the biggest or best training programs that recognized the need for a basic philosophy relating to manager development. For example, one respondent reported a low priority presently for manager training activities in his organization but spoke more positively about its need:

It does not appear, however, that the [department] has yet realized the need for such training programs. There can, however, be no doubt as to the need for and value of such training in any organization. As the highway function becomes more complex and sophisticated, the burden on highway managers to meet changing conditions and new demands becomes greater. To meet this challenge, it is imperative that management talents be developed and expanded. . . .

In some other states the need for an over-all manager

development has been perceived and stated explicitly. One governor said that his administration was committed to a philosophy that recognized the importance of having competent personnel in state service if a high quality of service was to be delivered to the people of his state, and that he intended to provide "a coordinated system for the training and development of administrators, managers, supervisors, and all other employees in order that maximum use may be made of their knowledge, skills, and abilities."

Another state highway department sent a copy of the directive outlining its Career Development Program (CDP), which includes the following in its statement of purpose:

The CDP is intended to improve the use of the Department's present management resources, increase the available pool of qualified managers for the Department's and the State's future needs, expand the use of [a] multidisciplinary approach to State problems and contribute toward the objectives of the Governor's policy on Selection and Development of State Managers.

So, apparently several states have already developed and adopted specific statements expressing a management philosophy supporting the development and training of their human resources, their employees. Indeed, one agency explicitly states that its policy is "to meet the developmental needs of *all* employees," and then indicates a priority need for developing employees for middle and top management positions.

Paradoxically, the need for such a philosophy has been perceived by some middle managers in state highway organizations where top management has not yet recognized it.

THE MANAGER DEVELOPMENT COMMITMENT

In Chapter Two it is brought out that management authorities believe that manager development must become a part of every manager's responsibilities if it is to have the maximum impact on an organization. Is this confirmed in practice in state highway organizations?

In those few states that have attempted to state their approach to manager development in writing, the recognition of the role of the individual manager comes through

clearly. One state policy says, "The State also recognizes that training and development of employees is among the most important functions of *all* managerial and supervisory personnel and is related directly to their responsibility for developing and directing an efficient departmental operation." (Emphasis added.)

Another department training officer has written for publication explaining his agency's commitment that "Each manager and supervisor is responsible for promoting and encouraging development of his subordinates, for creating a situation in which it is possible for an employee to develop himself, and for providing appropriate training, experience and coaching for present and future job requirements" (22).

A third state's written Engineering Training Program states in its second paragraph, "Training is a continuing responsibility and process. It is a process for which every supervisor, manager, and administrator is held responsible within the program under his authority. . . ."

Apparently most highway agencies active in management training and development have not formalized their training policies in writing, however. In the few policy documents that have been developed, the role of manager development programs in supporting the growth and improvement of individual managers is clearly identified. Where there is no policy statement, the recognition of the importance of the role of the individual manager is less clear, however, and the function of training as a means to developing managers is also less clear, suggesting that a written policy on manager development is a helpful point of departure.

THE MANAGER DEVELOPMENT CYCLE

Identification of Manager Development Needs

". . . Rather than have training for training's sake, it appears that we should analyze our specific needs and explore the availability of appropriate training."

This perceptive comment by a highway personnel officer was made after his acknowledgment that about all he could report on for training activities in his agency were four academic courses, three of which were at the graduate level. He indicated that he seriously questions whether this approach satisfies the agency's needs.

Although state highway organizations were not asked specifically to comment on the method or techniques of identifying training needs, several departments volunteered comments. One department, mounting a major effort with a formal Management Development Program, reports that training needs evaluation is conducted by four functional subcommittees representing the major responsibilities of the department. The report indicates that "The subcommittees have gathered a detailed picture and profile of every Department manager in its functional area. Most managers were interviewed by the subcommittee and a program tailored to his individual needs was determined by the interview team *and the individual.*" (Emphasis added.)

Another department taking a passive approach reports that there was no formal manager training effort under way, and comments that exposure to management prin-

ciples comes by learning on the job only after appointment to a supervisory position. The writer indicates that individual employees in that agency determine their own manager objectives and pursue their own training.

At the other end of the spectrum is the highway department that describes its "individual development approach" and outlines several ways in which training needs are identified, emphasizing that each supervisor works primarily with his subordinate on a development plan. "This approach constantly keeps attention focused on the need for training and development and assists us in determining training needs and training program direction. It also helps each employee to plan his individual development," the department training officer writes.

Training needs also are identified in practice by training officers themselves, division heads, line managers, and top management.

The over-all training policies of another state acknowledge that the responsibility for training and development is shared by the individual, all managers and supervisors, administrators, and others, including the governor and his staff, and direct that each department in the state government shall develop a written departmental training policy, including "provision for continuous appraisal of training needs."

Most state highway agencies, however, do not report any organized efforts under way to develop a better comprehension of training needs within their organizations. In that regard, none reported any identification of the manager training needs of engineers, for example, as different from other personnel.

Establishment of Action Objectives

The identification of manager development objectives is tied so closely to the individual manager training needs appraisal process that no agencies reported that they did one without the other. Few did either. Apparently, few highway organizations make an effort to establish over-all manager development objectives either. Several agencies reported on their training efforts in terms of objectives, however. This indicates a tendency to concentrate attention on the training process in isolation, as an end in itself (i.e., management training, not manager training).

Almost invariably the reported objectives of management training were of the ideation type described earlier: that is, of an intermediate, end-of-course cognitive, attitudinal, or verbal-skills-oriented nature. Few described behavioral results intended to be demonstrated on the job. A typical comment from a department personnel officer reads, "Our management training objectives are to improve managerial skills through a better understanding of the principles of management and a knowledge of the departmental 'tools' available to our managers."

Another state highway department personnel officer comments, "[O]ur management training objective is to attempt to keep our management personnel abreast of both the latest accepted techniques in management and also the latest technological advances which might affect management activities, with a view toward enabling our management personnel to achieve maximum results with available

resources." The expected results are not identified, however, and one can only hope that they are clear to the trainers and trainees, and are those of top management as well.

An interesting correlation is that, in both responses, the writers went on to indicate that they had been unable to identify measurable results deriving from the training activities they sponsored, although in both cases they cited evidence of positive evaluation by program participants. The trainees were not able to use their training in practice, making the training of questionable value.

In both the cases cited, the respondents probably are more aware of the need for carrying the process of establishing objectives to their on-the-job application than are most other state highway agencies, which neither develop training objectives nor evaluate results. The comments of those who do struggle to establish objectives seem to validate the point, made in an earlier chapter, that without specific, tangible, measurable, performance-oriented objectives established for the participants in a training program it becomes difficult, if not impossible, to determine later whether the course or other training program was "successful."

Planning and Programming Manager Development Activities

Another purpose of identifying training objectives is to answer the question "Who goes?" when a training opportunity emerges or program is offered. With the possible exception of the few states that reported some effort under way to identify training needs and translate them into objectives the selection process for participation in training is vague. However, an observer of various state highway training programs reports three methods of assembling a class in common use.

One method is to take horizontal layers through the organization, as shown in Figure 11A. This results in a mix of various professional, technical, and administrative personnel, promoting an interdisciplinary discussion but a scattering and diffusion of the impact of the training on the organization, without an assurance that a higher level of management is aware of what subordinates are being taught.

A second practice observed is to include selected managers from specific levels either within a single operation or from an entire agency (Fig. 11B).

A third method (Fig. 11C) is to form classes by selecting individuals from throughout the agency. Such a training class contains participants with a wide variety of background and experience, but the tendency of juniors to be deferential to seniors was also observed.

One state highway official describes those who attend his agency's seminars, which is "the principal tool for the development of management personnel," as "selected from among upper and middle management personnel," but does not identify the selection criteria.

Apparently few highway agencies attempt to establish personal or organizational manager development objectives prior to involving their personnel in training. The guiding rule apparently is "training comes first," in contradiction

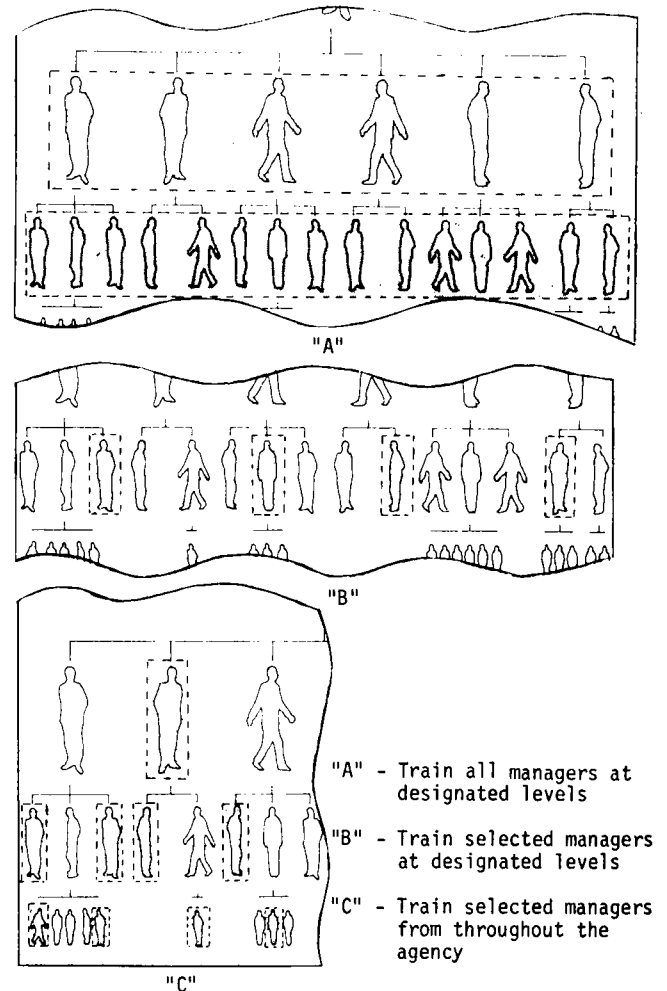


Figure 11. Practices for selecting management trainees.

to accepted training practices in more sophisticated private business and government agencies. And, again, those departments that report no established development objectives also report no means by which to measure the "overall success of . . . management training," as one official concludes.

One outstanding exception to general reported practice is reflected in the training philosophy of a highway agency that has had more experience in manager development than most similar agencies. The training officer reports:

1. We will have no special group or "crown princes" who are given priority over others with respect to training.
2. The program must follow an individual-development approach, by providing for the different abilities, attitudes, experience and goals of the participants.
3. Development must be tied directly to the needs of the [agency] and must be applicable to the job of the person being developed.

A variety of training resources are used by many of the state highway organizations active in manager and other training efforts. Several indicated that they used their own personnel as trainers, especially in introductory courses or

in orientation programs. Others involve university professors. Management consultants and professional training firms also have been used. Some agencies have taken advantage of courses offered via the state educational television network; others have enrolled in programs offered by the U.S. Civil Service Commission.

Numerous agencies made reference to their participation in the "Highway Management Course" (conducted by the Highway Management Institute at the University of Mississippi) and the "National Highway Management Conference" (usually held twice annually, once each at Santa Fe, N.M., and Stowe, Vt.). Both of these management training efforts are sponsored by AASHO and HUFFSAM.

The Highway Management Course first opened in 1967 and is offered annually. The participants attend for a 3-week period in January, followed by a 2-week period in March. The curriculum is varied to meet current management needs (Appendix C). Group participation and exchange of experience and views is encouraged. The following information from a recent program explains the purpose and objectives of the course.

The Highway Management Course is designed to supplement essential engineering capabilities with extensive training in management techniques oriented toward highway department operation. Subject matter ranges from fundamentals to advanced and sophisticated concepts. In the latter part of the Course some entirely new and developing concepts based on research and pilot-testing in highway departments are studied.

The Course is unique in several major respects:

- It is designed to provide a grounding in fundamentals and principles as well as more sophisticated concepts and practices in management as they relate to *highway department operations*. The material treated in the last two-week session will be at the graduate level and emphasizes the problems of the administration of highway organizations.
- It is specifically designed for personnel employed in highway organizations. Highway departments are necessarily large engineering organizations and are public agencies operating in a legislative, financial and legal atmosphere somewhat different than that in which private industry operates. Course materials and examples will be oriented to highway department operations.
- The faculty is comprised of persons who now work, or have worked, in highway organizations, executives from business and industry, consultants in highway management and engineering, and members of University faculties — a combination which will provide well-balanced presentations of materials.

In short, the Course is designed specifically for highway department managers and potential managers. It will be presented in a manner to facilitate the application of management fundamentals and principles to highway organization operations.

The National Highway Management Conference is only one week in length, with the curriculum somewhat like the Highway Management Course. More than 30 conferences have been conducted during the past 15 years.

One interested individual, intimately involved with both the "Course" and the "Conference," observed that the combined annual output from both efforts was less than the

number of managers lost to highway agencies from retirements, resignations, etc.

References were made also to the use of packaged training programs such as are available from the American Management Association (AMA) and other sources.

At least one agency has expressed a preference for programmed instructional materials that can be self-administered. Other training resources reported in use for individual self-improvement, as an alternative to an organized or group approach, include correspondence courses. One department required a considerable amount (80 hr) of assigned reading prior to participation in a management training program, suggesting another potential resource.

Although many agencies apparently have identified a variety of resources, few indicated a total approach to manager development that employed many of them. Most reported the use of only a few of the many potential resources.

Regarding *modes of training*, a variety of approaches to organizing group training were reported. Several agencies suggested the use of live-in, intensive, short-term (a week or less) seminars or workshops. No one, incidentally, offered definitions for these imprecise terms. Others mentioned extension courses of the one-night-a-week genre, either for credit or non-credit. Some agencies mentioned a tuition reimbursement policy for academic programs in which individuals enrolled on their own initiative.

Some mention was made of the use of more recent participative training techniques such as management games and other simulation techniques. A few agencies have used "paper districts" to solve real-world problems; these help to identify practical solutions, and also teach the process of problem-solving through actual participation. Some agencies apparently also use such training to help identify participants with potential for greater managerial responsibilities back on the job.

The Highway Management Institute makes an additional contribution by acquainting high-level highway management personnel attending the programs with a variety of training modes. Thus, the Institute performs a valuable if secondary role in educating managers in manager development techniques through involvement.

Teaching and other instructional techniques used at the Institute include:

1. *Lecture-discussion techniques*, with visual aids and seminar methods.
2. *Case problem analysis*, in which highway management cases are analyzed by participants working in teams. Individuals and groups are required to defend their analyses and decisions.
3. *Role-playing*, in which participants act out project assignments.
4. *Group and committee work*, in which participants are given opportunity to participate both as group members and as leaders.
5. *Text materials* are provided participants for use and retention.
6. *Reading and study assignments*, in which participants

become familiar with assigned materials and are given opportunity for self-study.

7. *Visiting discussion leaders* are invited in to provide special insight from other disciplines and management application.

8. *A bibliography* of texts, periodicals, and other publications.

9. *Association* with fellow highway officials from other states and organizations, designed to promote an interchange of ideas and views.

Thus, the Institute provides a valuable learning experience, outside of the subject matter taught through its use of innovative teaching techniques, that might be expected to encourage similar innovation with training programs conducted within state agencies. Unfortunately, little evidence exists that top highway managers have so influenced training practices in their own agencies. This "one-way looking glass effect" has been cited by other observers of manager training practices at the state and local government level too, particularly with respect to managers accepting teaching assignments at local colleges while failing to promote training within their own organizations.

Nonetheless, the Institute provides a unique opportunity to demonstrate the use of various training methods applied to highway management.

Some agencies encourage their professional staff, including managers, to belong to professional societies. No agency suggested that they helped influence the affiliation of individual managers (which might ensure a broadening of associations and outlook), but at least one state authorizes the payment of two simultaneous memberships in technical societies and also for second generalist affiliation in the American Society for Public Administration (ASPA).

Regarding program content, several respondents suggested a relationship between the level in the hierarchy of management in which the participants were located and the training program content. Thus, those at the first level of management (typically first-line supervisors) receive training in basic supervisory techniques. One agency reports its course content to be communications, human relations, motivation, and coaching methods. Another state reports the use of a course called *Effective Supervisory Practices* that includes topics such as "Developing Leadership Skills, Basic Concepts of Organization and Management, Planning and Organizing the Work, and Directing the Work." Several agencies indicated that it was more common to use in-service personnel to teach or act as discussion leaders in supervisory methods programs.

The second group, called by some the middle management group, typically is involved in "Principles of Management," or other similar training, covering such topics as line and staff relationships, leadership, and planning and controlling.

Indications are that the actual content of programs aimed at "middle management" varies and may differ less from supervisory courses than the titles suggest. This might indicate either a lack of professional course content planning or an intentional strategy. Some highway agencies

have their senior and upper management personnel sit in on lower-level programs, ostensibly to observe or audit but possibly reflecting a concern for the lack of knowledge by top management of basic supervisory methods and a hoped-for absorption by osmosis. The titling of a supervisory methods course as "Management Principles" may be an alternative way of presenting supervisory practices course content to upper-level personnel in an acceptable manner.

Although a few agencies indicated they planned different courses for top management personnel, they were less specific about course content. Apparently a prevalent practice is for top management and, to a lesser degree, middle management personnel to enroll in training programs sponsored and developed by others out of the organization and often offered at one or a few limited locations nationally. Much greater stress on in-house participation was given to supervisory training.

Only a few highway agencies offer a total program organized around a pre-planned central "core" of subject matter. Otherwise, the impression is that manager development training for middle- and upper-level managerial personnel is largely made up of training programs selected as targets of opportunity, dependent on the influence of other sponsors for organization and content, and more often administered away from the organization.

Virtually all of the training subject matter and modes identified were for the training of individual managers; almost no mention was made of organizational development-oriented training that might include team building (e.g., Blake's Managerial Grid). Very little mention was made of developing training that directly related to training needs. It was the rare report that said, as did one, "The content and scheduling of these programs are varied according to specific training needs. Managers are also encouraged to attend, on an individual need basis, management courses and seminars. . . ."

Finally, few state highway agencies reported the existence of a training officer in their employ. Fortunately, there are some, and the comments of such officers in the survey were among the more perceptive. Even so, only one agency confirmed the use in practice of a systematic approach to training (Fig. 12).

Evaluation

Many state highway agencies indicated they simply had not conducted any evaluation of their training programs. A number of imaginative excuses were offered. Some said it was premature, as their training activities were still new. Others suggested it was too difficult. More legitimate was the comment that

We have not as yet developed a valid yardstick to measure the over-all success of our management training. . . . We have observed individuals who obviously have benefited from management training, and also the participants in the departmental management seminar have generally progressed well with greater managerial responsibilities. We have been unable, however, to identify specific benefits from management training activities which derive on a general and continuing basis.

One agency reported a meaningful approach to evaluating actual benefit on the job: "Each . . . seminar is fol-

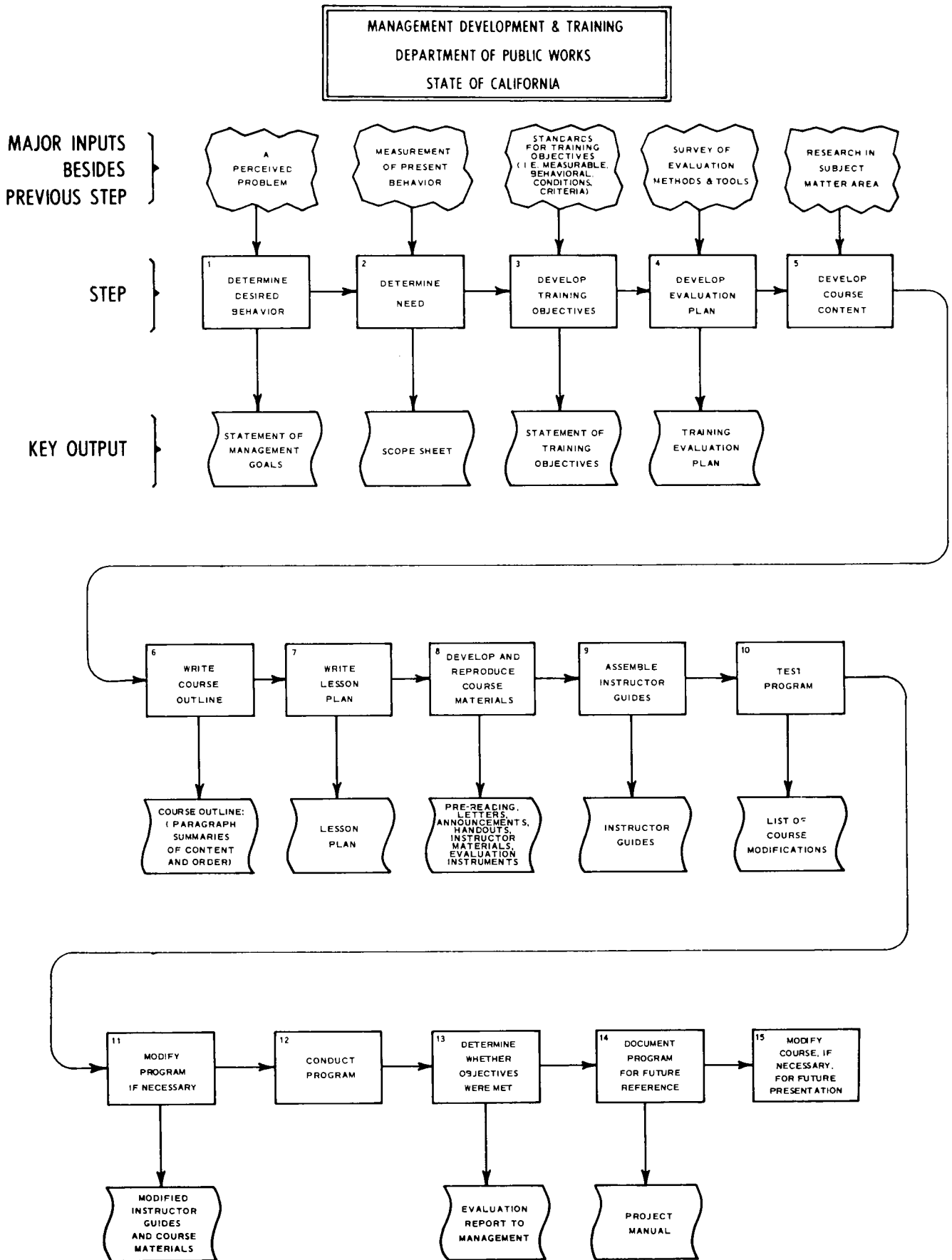


Figure 12. The systems approach to training.

lowed up with a one-day review meeting within six months of the original seminar. At this 'follow-up' seminar the management techniques are reviewed, and various *applications of the techniques are evaluated.*" (Emphasis added.)

Several respondents reported participant evaluation, but they tended apparently to reflect a high degree of "happiness factors" and were not too helpful to state agency evaluation interests.

We have required written evaluation by each participant upon completion of most of the sessions. Their comments were almost unanimous that the course was beneficial. Unfortunately, we cannot identify specific benefits to our department.

Another department is continuing training based more on faith than evaluation.

There have been no in-depth evaluations made of these programs nor have specific benefits been identified. However, from informal comments we have received from participants, we are encouraged and will continue these programs.

A few agencies report more success in evaluating the results of their training efforts. In one agency "... first-line supervisors evaluated the performance of each participant before attending the program and again 90 days after. The evaluations were then compared . . . and, in most cases, a significant improvement was reported." This agency, one of the few to touch on it, also reported the use of an analysis of exit interviews with employees who voluntarily terminated as well as an analysis of employee complaints.

Another department reported a more emphatic success story that was related to an over-all manpower management effort, of which manager training is an important part. They report that the "new approach" works.

1. Total employment has been decreased—by 11 percent.
2. Salaries have been increased—by 13 percent.
3. The total payroll cost has remained the same.
4. Work loads have remained the same.

The "new approach" features a refreshing, results-oriented approach to training. In an analysis of past training practices, the conclusion was that "... training effectiveness was measured in terms of dollars spent, hours of training provided, and numbers of persons in classrooms—not in terms of improved capabilities and decreased operating costs." The new program features training needs analysis, and training tailored to fit the abilities and needs of individual employees. One conclusion reported from the experience of this department is that successful completion of training alone is not enough to influence performance on the job; instead, it must be part of a larger effort aimed at improving performance.

Another department, perhaps with more experience in manager development training than almost any other state highway agency, reports that possibly the best over-all evaluation of its training programs (not to discount a multi-phased evaluation effort) is in a decreased resistance to training.

In addition, we believe that the quality and direction of training has improved. Our supervisors and managers have learned more about defining needs and determining objectives. They have learned also to expect and demand good training to meet these needs, and to help them accomplish their jobs. . . . training and development activities are now accepted as a regular day-to-day part of doing our job.

Finally, another department reported that it used a results-oriented evaluation of training by allowing younger engineers the opportunity of filling in for upper-level managers (assistant and division heads, as well as assistant and chief engineer positions) during vacation and leave periods. Annual performance ratings are also used.

In summary, although some agencies have discovered the value of appraising the impact of training on the actual performance of the organization and the practice of management in it, most agencies reporting do not conduct any evaluation of their manager development efforts. Most of those that do attempt training evaluation use end-of-course participant comments. Although some do use senior personnel as auditors, none mentioned this as an evaluation technique. Also, no mention was made of providing continuous feedback during a training program, perhaps reflecting the fact that for most agencies the training programs used are not of the agency's own making and thus no alternative is readily available.

Relationship to Salary, Promotion

Several agencies raised a note of concern over the need for relevance of training and job performance with salary increases and promotion. One respondent suggested a direct relationship between the lack of management training in his agency and present promotional practices.

The Department . . . actually has not yet become involved in designing or developing management training or development programs. Our promotional system does not usually involve pre-appointment training of persons eligible for management positions.

Another department, in an over-all effort to appraise its past manpower management practices, concluded that performance on the job had not really been a factor in granting salary increases and promotions.

The Department had never really considered differences between individuals in their cost-result performance when granting salary increases and promotions. Operating managers really had very little control over salary increases in any case. . . . Promotions presumably were based on merit, but persons with extended service in the next lower classifications usually were advanced. "Seniority" and "merit" apparently were nearly synonymous terms.

In an effort to better use existing personnel and make training relevant, this department concluded: "Only one reason exists for spending money on training—to increase the performance capabilities and productivity rates of the employees. From the employee point of view, training should provide opportunities for salary increases and promotions." In this department recognition is now given to the importance of a total approach to job performance, using training as but one influence. Salary and promotion are related to performance on the job, and the results have

been, in the words of the highway department chief executive, "highly favorable."

To accomplish this change in the management of its manpower resource, "The entire personnel management function has been redirected to place in the operating officials responsibility for much of the employment, classification, pay, training and advancement work, within the framework of policies and guidelines . . ."

Their conclusion: "The State Highway Department . . . has taken a new approach to manpower management, *and it works.*" (Emphasis added.)

SUMMARY

A majority of state highway agencies responding to the training practices survey do have some program of manager training, although individual practices varied widely. Many departments did not respond to the survey, however,

possibly indicating that they had nothing to report. When these are included with agencies that reported no management training, the conclusion is that less than half of all state highway agencies have planned manager development programs.

Among the agencies providing planned manager training, only a few reported it to be part of a larger management effort toward the upgrading of the human organization. Paradoxically, although many state highway agencies found it difficult to evaluate their training efforts, those agencies in which training was the means to accomplishing over-all manager development objectives were able to report specific, measurable achievements.

The comment of one highway official sums it all up: "This subject area is one that all of us associated with highway programs would agree is extremely important but, unfortunately, somewhat neglected."

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

Management in the Engineering Organization

Engineers and others helped establish, in the late 19th century, that management is a discipline separate from engineering or other substantive fields of endeavor.

Management can be defined as a *science*, meaning it consists of a body of knowledge that can be studied. The practice of management is an *art*, combining what managers know and their personal qualities into what they do. Management is also a *process* by which resources are utilized to produce results. The most important and challenging resources to manage are the people in an organization; i.e., human resources.

Management is an acquired skill. Managers are made, not born.

Personal success in the engineering (and other) organization and organizational success in achieving goals both relate to management of the organization rather than to technical superiority. Because organizations are made up of people, managerial success is related to success in working with people—the human organization.

Management Development in Engineering Organizations

Those who want to succeed in the management of an organization need to learn more about management, because what one knows—or thinks he knows—affects his behavior as a manager.

The best way to learn about management is in a planned

development program that features both theory and practice.

Manager development has been defined as an individual process of self-development involving the interaction of a man, his job, his manager, and the total work environment.

A key to the self-development of a manager is self-recognition as a manager, in addition to other technical or specialized competencies.

Manager development can be distinguished from management development. The latter tends to be a vague, impersonal, organizational term, whereas manager development relates to improved personal manager performance and effectiveness on the job.

The purpose of manager development in state highway agencies is to (1) "grow" managers from among entry-level engineers and technically oriented personnel who will acquire managerial positions through natural accession; and (2) prevent managerial obsolescence among those already in management positions. This is not only to serve the internal organizational needs for managerial competence, but also to ensure that such agencies fulfill their ultimate function of public service.

The Manager Development System

Manager development can be viewed as a systematic, cyclical process that is part of a larger system of management. Management authorities conclude that manager development is an inextricable function of management.

For any management development program to be a

success, it must be made a responsibility of every manager in the organization. Manager development must be adopted as a part of management practice in which each manager undertakes a coaching responsibility with his subordinates, and also responds to the coaching assistance of his superiors. Manager development becomes a part and supporter of management.

The key elements of a manager development system can be identified as:

1. Identification of development needs.
2. Establishment of development objectives.
3. Planning and programming development activities.
4. Implementation.
5. Evaluation.

The process of identifying manager development needs includes both an appraisal of each individual manager's development needs and an assessment of the organization's management personnel requirements. Individual need appraisal is best done by the interaction of a man with his immediate superior as part of a "linking pin" relationship; organizational manpower requirements are best assessed by a centralized process.

Manager development objectives describe what results are expected on the job in the form of action by means of training and other activities. They describe the ultimate purpose, the "Why" answers, and as such provide direction for other elements in the development cycle.

The process of planning and programming manager development involves the identification of root causes of the problem; a consideration of various design factors, including the nature of the group involved, available resources, the consideration of location and physical setting, the potential methods and modes of training, the timing, and the content of such training; the formulation of various alternatives; the use of a systematic method of decision-making for the selection of an action alternative; and the conscious programming of the action desired so as to answer the questions of Who? When? Where? Why? and How?

Implementing training activities is a process of translating the planned program into action.

Evaluation involves two concepts: (1) feedback, in which actual events are compared with the predetermined expectation or standard; and (2) control, the ability to influence actual events so as to react to feedback. Evaluation of training activities consists of continuous feedback during the activity, as well as periodic review to determine whether final objectives have been met.

The process of self-development is inevitable and continuing. Management cannot decide whether it should happen but only how.

Manager Development in State Highway Agencies

Manager development is a recent and intensifying interest of a majority of state highway agencies. For many, it is a relatively new activity.

Few highway agencies have developed written statements of policy and philosophy regarding manager development.

In the few agencies with written policies, the role of

individual managers throughout the organization is identified as a key element in the manager development process.

Most highway agencies do not report any effort under way to systematically identify any training needs of managers or other personnel. The problem of developing engineers into managers has not been addressed generally, except by a few agencies on an individual needs assessment basis.

Few agencies report establishing personalized development objectives for individual managers. Organizational training objectives reported were of the intermediate end-of-course nature rather than related to on-the-job practices.

The process of planning and programming training activities as practiced by highway agencies is not systematically accomplished, except by a very few.

The criteria for selection of trainees are not identified by most agencies reporting. In practice, selection is often arbitrary.

Although a great variety of training resources are in use, few state highway agencies use more than a few of the many possible.

A variety of methods and modes of training are in use, without any consistency or systematic appraisal of possible advantages and disadvantages. Most training practices in individual agencies are traditional within that agency.

Program content is related to the generalized, perceived needs of trainees, depending on their hierarchical position. Virtually all training offered is for the development of individual proficiencies, with no apparent consistency of course content. The use of in-house personnel as leaders or course planners is confined mainly to first-level supervisory methods courses; much middle and almost all top management training is conducted away from the organization, usually as developed and arranged by outside sponsors. Selection of such training programs apparently is based on opportunity. Few agencies have a professional training officer or use systematic planning and programming techniques.

Most state highway agencies do not conduct any evaluation of their training programs. Of those that do attempt evaluation, most use end-of-course feedback that was reported to be of limited value.

Those few agencies in which manager training is part of a total approach to management development were able to report specific, measurable, tangible, beneficial effects on the practice of management in their organizations and, ultimately, on the results their organizations were able to achieve.

The relevance of training and development activities to actual management practices, especially to the system of rewards and promotion, was identified by some agencies as a strong influence on the likely success of manager development programs.

Comment

The practice of manager development in most of the state highway agencies seriously lags behind the current state of knowledge of the process and its practice elsewhere. This neglect is equalled only by that in other units of state and local government, and will be a serious deterrent to the

effective management of such organizations in the years to come unless the progressive practices of a few state highway agencies become more generally implemented.

RECOMMENDATIONS

1. Highway agencies should recognize that their success as organizations depends on the quality of their management practices, which should be distinguished from other substantive professional competencies.

2. Highway agencies should initiate programs to develop and enhance managerial competence among those

personnel who aspire to managerial careers, as well as those already in managerial positions. Such a program should be based on an over-all philosophy of management of the human organization that is reduced to writing and made a part of operating policy.

3. An organizational competence should be available to assist and facilitate the attainment of development objectives.

4. Manager development should be based on a commitment by top management to make it a responsibility of every manager within the organization.

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APPENDIX A

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APPENDIX B

COACHING TECHNIQUES IN TRAINING AND DEVELOPMENT

Many of the techniques used by the good football coach are adaptable to the supervisor's task of coaching his employees. There are certain practices—one might call them rules—which guide the good football coach in training and developing his team.

1. *Start where the man is, not where you want him to be.* The coach doesn't start with the most complicated plays in the first week, unless those being coached have had prior experience. In coaching your employee, take into consideration his experience and background. This means you must find out what he knows, what he can do, and what his attitudes are, before you can begin to point him toward the goals you have in mind for him.
2. *Remember that a man can absorb only so much at a time, and don't overload him with new information, new demands on his skills, etc.* The coach usually works on one play at a time. Some men can catch on faster than others, and may remember many plays and may practice them all in one session. You should tailor the pace of your coaching on the job to the abilities of individuals to absorb it.
3. *In most activities, there is no substitute for doing as a learning device.* The coach has the team practice a play many times with intermittent coaching because they learn it best by doing it. Practice and repetition aid in developing skill and proficiency. You can apply this rule to on-the-job coaching, just as the athletic coach does.
4. *Use demonstrations and illustrations.* The football coach makes chalkboard diagrams, paints word pictures of plays, and often himself runs a play to illustrate his point. He makes liberal use of visual aids. You can and should do the same in training; your trainees will learn more readily than if you simply talk about the job you want them to do.
5. *You must allow for individual differences.* The coach knows that each of his players has his particular strengths and weaknesses, and he capitalizes on the individual's strengths while trying to build him up in the weak areas. Understanding your people as individuals will help you to train and to manage them with common sense and judgment. This also will show them that you are fair and considerate.
6. *Create a climate of confidence.* The coach gains the confidence of his team by day-to-day association with the team members. They come to respect him and to work together as a team because he listens to their suggestions on improving the play of the team, he helps them to correct their errors, and he understands their problems. You can win the trust and confidence of your employees by your interest in them and by your displayed sincerity and integrity.
7. *Stay on the sidelines.* The coach doesn't go on the field during the game; he may take a man out for special instructions or re-coaching, but he lets that man carry the ball. The supervisor must delegate duties to his subordinates, then stand back and let them perform. They must even be allowed the opportunity of making mistakes if need be. With proper correction and re-coaching they will profit from mistakes.
8. *Set goals and explain standards of performance.* The good coach lets each man on the team know where he stands, and what is expected of him. Both the goals and the standards by which performance is judged must be fair; they are most likely to be fair if the team member has had a voice in setting them up. Your trainees will make great efforts to meet the standards and to reach established goals if you follow this precept, and if you stick to the standards you and they have established.
9. *Follow up with repeat coaching when observation of the individual's progress shows it to be necessary.* The coach knows that star players don't develop in a week, but only over a period of years. You may have to correct and re-coach many times before the employee's performance is satisfactory. To achieve outstanding performance, constant coaching may be necessary.

These nine guidelines for coaching are not the only ones; they may suggest other ideas which will be useful to you in working with individual employees to change behavior on the job. However, these guides should be useful to you in planning and conducting orientation training, basic job instruction, follow-up training and spot training to meet specific needs.

EMPLOYEE DEVELOPMENT METHODS (IN GROUPS)

METHOD	WHAT IT IS	HOW TO USE IT	WHEN TO USE IT
Lecture	Speaking to training group usually from prepared notes	Stand or sit in front of group and give information or specific topic	Large number of trainees; all require same information; no time for more participative methods.
Conference	Meeting to solve problem through group discussion	Trainer or chairman conducts discussion; involves trainees in attempting to solve problem, reach decision	To gather or pass on information, communicate policies, get participation in problem solving; to stimulate group effort.
Workshop	Conference divides into several small groups for discussion, reports back to big group	Have small groups discuss a problem or issue; leaders or reporters tell big group what they decided	When a problem should be attacked from different angles; when group is faced with several different problems or issues; when participation by many members is desired; when group is too large to carry on effective discussion.
Laboratory Training	Group human relations training using principles of group dynamics	Have managers participate in T-group with people other than own superiors or subordinates (unless for "team training" or "organization development")	When managers are not aware of the effect of their attitudes and behavior on others, or of others' reactions to them, or as part of an "organization development" program.
Role Playing	A simulated situation in which trainees act out the thoughts and behavior of persons in particular roles in the organization	Trainees act out situation; afterward discuss what happened and why	When trainees need to look at human relations problems from a different viewpoint.
Case Method	Study of a situation which involves a specific incident or organization problem	Present case orally, in writing, by film; have conferees analyze and discuss it, determine issues, possible solutions	When trainees need practice in applying management concepts to their own problems.
Incident Process	A case study with little information available to trainees at beginning	Provide trainees with minimal information; have them ask questions, analyze facts, draw conclusions	When group needs to learn to gather and analyze facts before solving a problem.
Brainstorming	Method of getting group to come up with original, creative ideas	List all ideas; suspend judgment; encourage freewheeling thinking, hitchhiking on others' ideas	When new or unusual idea is needed, or a knotty problem defies analysis.
Management Games	A simulation of real-life situation	Present trainees with realistic situation containing problems they must solve through team effort	When you want trainees to get practical experience using management tools without real-life risks.
In-Basket	A simulation of a series of decisions a trainee might have to make in real life	Present trainee with pack of papers containing administrative problems; require him in limited time, to make decision on each	To teach decision-making under time pressure and assigning of priorities.

Source: *Employee Training and Development in the Public Service* (1970) pp. 177-178.

INDIVIDUAL MANAGEMENT DEVELOPMENT METHODS

METHOD	WHAT IT IS	HOW TO USE IT	WHEN TO USE IT
Correspondence and Individual Study	Individual home study	Trainee enrolls in home-study course or reads independently	Other sources of training not available or trainee is isolated.
Job Instruction Training (JIT)	Individual instruction by supervisor	Supervisor follows 4-step method with employee on the job	Employee on new job; lacks job experience; specific skills required; one-position jobs, group training not feasible.
Coaching	Individual on-the-job training	Supervisor works closely with trainee on specific job tasks	Orientation; new employee; disadvantaged employees; regressing employees.
Programmed Learning	Individual study	Buy or build programmed instruction course; trainer monitors trainee's independent progress through program	Trainee isolated; specific non-motor skills or knowledge to be learned; content not subject to frequent changes; large numbers to be trained.
Rotation	Individual on-the-job experience in various job types, locations, departments, etc.	Periodically move trainee from job to job; have him learn through performance in each position	Employee being groomed for promotion; needs to know, be able to function in many different capacities; to sharpen insights, broaden skills.
Planned Experience	Individual experience of various kinds without rotation to different positions	Give opportunities to perform tasks not associated with job assignment	Job rotation not feasible; employee has potential for advancement; broader experience desirable.
Professional Associations	Individual experience	Gives opportunity to develop personal traits, characteristics, expand contacts, awareness	To promote awareness of current professional developments, interdisciplinary contacts.

Source: *After Employee Training and Development in the Public Service* (1970) p. 176.

APPENDIX C

MANAGEMENT TRAINING COURSES

HIGHWAY MANAGEMENT COURSE

First Three-Week Session

January 9-28, 1972

FUNDAMENTALS, PRINCIPLES, SKILLS AND APPLICATIONS OF MANAGEMENT

Management is an activity—a practice—for which there has been developed fundamental principles and concepts requiring certain skills. These principles revolve about basic functions of managers—planning, organizing, staffing, directing and controlling. The skills required are in technical, human and conceptual areas.

The first three-week session of the Course is directed to study of these fundamental principles and skills as they apply to typical highway department operations. The Course is designed in recognition that highway departments are large engineering-oriented organizations staffed by personnel with little behavioral science or management training.

Management fundamentals, principles and practices will be examined in the light of all these considerations and a pattern of management action will be suggested.

CURRICULUM OUTLINE

Definition and Scope of Management

- Managerial Skills and Functions
- The Nature of Management
- The Management Process in Highway Departments
- Management by Objectives
- The Decision Making Process

Fundamentals of Organization

- Factors Affecting Organization Structure
- Kinds and Types of Organization
- Line and Staff Relationships
- Delegating Authority
- Centralization - Decentralization

Top Management Responsibilities, Functions and Operations

Planning and Controlling Highway Operations

- Relationship of Managerial Planning and Controlling
- Financial and Budgetary Planning and Controlling
- Long and Short-Range Planning
- Program Planning and Scheduling
- Manpower Planning and Controlling
- Planning and Controlling in relation to other public agencies and levels of government
- PERT, CPM and other Planning and Control Techniques
- Operations Research

Legal Factors and Environment Affecting Highway Organizations

- The Legal Process
- Federal and State Constitutional Provisions
- Federal and State Statutory Provisions
- Federal-Aid Provisions and Requirements
- Highway Department Relationships With Attorneys
- General and Other State Officials
- Legal Responsibilities of Highway Department Managers

The Legislative Process and Its Interaction With Highway Organizations

- Basic Legislation and Its Effects on Highway Department Organization and Operations
- Review of Existing Legislation and Proposed Revisions
- Importance of Legislative History
- Rules and Regulations Pursuant to Legislative Action

Human Relations and Personnel Administration in Highway Management

- The Informal Organization
- Motivation of Professional and Technical Personnel
- Utilization of Professional and Technical Personnel
- Communications in Management
- Analysis and Definition of Training Needs
- Training Procedures and Techniques
- Performance Appraisal
- Analysis of Manpower Needs
- Wage and Salary Administration
- Leadership Styles
- Labor Relations

The Changing Environment of Highway Management

- Administrative Practices
- Problems of Environmental Quality, Sociology and Ecology
- Highway Safety

Administrative Practices in Highway Departments

- Management Reports
- Information Filing, Storage and Retrieval
- Written Communications and Practices
- Conduct of Staff Meetings and Conferences
- Management of Time
- Practical Politics in State Highway Programs
- Managerial Economics and Public Policy

Public Relations and Information

- Working with the press, radio and TV
- Handling public hearings
- The annual departmental report
- Improving the department image

NOTE: Special highway department problems will be integrated in the above curriculum. For example, right-of-way, planning, design, construction, traffic engineering, etc.

HIGHWAY MANAGEMENT COURSE (CONT.)**INTERIM PERIOD**

January 29—March 5, 1972

Reading Program—Project Assignments—Consolidation and
Application of Materials

(Conferees return to their departments during this period.)

Second Two-Week Session

March 6-17, 1972

**ADVANCED CONCEPTS AND TECHNIQUES OF
HIGHWAY DEPARTMENT MANAGEMENT**

Whereas the first three-week session and the interim period assignments are designed to treat fundamental concepts, principles and practices of highway management, the second two-week session is designed to build on that base and to bring to the participants more advanced and complex concepts and techniques of managing highway departments.

This second period is at the graduate level.

CURRICULUM OUTLINE***Managing Highway Operations By Objectives and Results***

Establishing the Framework
Basic Administrative and Operating Policies
Determination of Key Objectives and Results Areas
Consideration of Organization vs. Individual Objectives
Long-Range Objectives—The Highway Plan
Short-Range Objectives—Programs

Developing Systematic Approaches to Accomplishing Objectives and Results

The Total Systems Concept and Prerequisites
The Highway Organization as a System
Functional Sub-Systems

Planning
Rights-of-Way
Pre-Construction Engineering
Construction
Maintenance and Operations
Highway Safety
Environmental Control

Supporting Sub-Systems

Financial Planning, Budgeting and Controlling
Manpower Planning and Allocation
Procurement

Integrated Highway Management Information Systems

Developing Basic Data Inputs
Information Flow—Downward, Upward, Horizontally
Scheduling and Controlling—

Pre-Construction
Construction
Maintenance and Operations
Coordination with Finance, Manpower, Equipment,
Materials

Allocation of Resources

Financial
Manpower
Equipment
Materials

Advanced Organizational Concepts in Highway Management

Assignment of Responsibilities and Authority in Relation to Levels
Functional Authority and Responsibility
Flow of Work Concept
Delegation For Accomplishing Objectives and Results
The Role of Departments of Transportation

Controlling Highway Operations

Basic Issues in Controlling
Quantitative Objectives
Measurable Results
Appropriate Action
Continuous Review and Evaluation of Actual vs. Planned Performance
Tools for Control
Studies and Problems in Control

Top Management Procedures and Practices

Policy Formulation
Program Formulation
Direction—Execution
Control

Public Information

What to Report
To Whom to Report
When and How to Report

NATIONAL HIGHWAY MANAGEMENT CONFERENCE

NATIONAL HIGHWAY MANAGEMENT CONFERENCE
June 7-12, 1970

SUNDAY

- .. Orientation
- .. The Department Manager
 - . Film and Case Study

MONDAY

- .. The Role of the Manager
 - . Functions of Management
 - . Management Theory
 - . Decision Making
 - . Characteristics of Effective Managers
- .. The Changing Environment of Highway Managers
- .. What About New Concepts of Management?
- .. Department Management Case

TUESDAY

- .. Human Relations
 - . Meaning of "Human Relations" in Management
 - . Characteristics of People Which Affect Their Behavior
- .. Planning and Control
- .. Communication
- .. Organization

WEDNESDAY

- .. Environment
- .. Motivation
 - . Emerging Concepts in Motivation
 - . Achieving Organizational Results Through People

THURSDAY

- .. Highway Planning and Programming
- .. Highway Safety
- .. Manpower Management
 - . Cutting Back to Essential Work Loads
 - . Improving Work Systems
 - . Establishing Staffing Standards
 - . Classifying Personnel -- not Positions
 - . Basing Salary Increases and Promotions on Performance
 - . Determining Manpower Needs
 - . Pay Prevailing Salaries
- .. Leadership Role of Managers
 - . Leadership Patterns
 - . Delegation

FRIDAY

- .. Manpower Management and Training
 - . Determining Training Needs
 - . Planning and Implementing Training Programs
- .. Implementing Change
- .. Synthesis
 - . Problems Affecting Highway Department Management
- .. Closing Ceremonies

APPENDIX D

PLANNING A MEETING

One of the most difficult tasks of planning a service award banquet or meeting is making certain that all details are considered. Generally, most meetings go fairly well but it is those few notable exceptions that prompted the development of the check list shown below. It is admittedly a long list as it was designed to help plan several different types of meetings. Wherever dates are called for in the list, the user is admonished to record those dates on a desk calendar.

The lead time required varies with the particular kind of function dealt with. For instance, you may be hard pressed to prepare a final agenda in less than one or two months, while printed programs may require only two or three weeks.

There are at least three rules that may

be helpful in planning a program:

1. Plan ahead.
2. Put it in writing.
3. Follow up, follow up, follow up.

Perhaps the most devastating thing that can happen to you as a program planner is a change of management at a motel which occurs after you make your initial reservations and arrangements. We have recently had two such experiences, both requiring a complete review of all details with the new management.

In one case last year we nearly ended up without a place to have the program at all. The motel had been purchased by another firm and all records were in complete disarray.

One final thought seems appropriate in closing: "When all else fails, pray!"

ROBERT W. COWAN
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Colorado Interstate Gas Co.,
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LEF TROVAS
*Training Supervisor,
Colorado Interstate Gas Co.,
Colorado Springs, Colorado.*

CHECKLIST FOR MEETINGS, LUNCHEONS, ETC.

GENERAL

- For whom is the program being conducted? _____
- Who from our company is in charge? _____
- When will it be held? _____
 - Has date been confirmed in writing by ALL necessary parties? _____
 - Have you cancelled ALL other tentative arrangements with other places?
- Where will it be held? _____
 - Is a map required? _____
 - Who is the person to contact there? _____
- What is the purpose of the program?
 - Lecture
 - Discussion
 - Award Presentation
 - Who will make the presentations? _____
 - Other

SPEAKERS

- Have (has) speaker (s) been contacted? _____
- Is their attendance confirmed in writing? _____
 - If fee involved, is it stated FOR EACH DAY? _____

- Do you have a general outline from them? _____
- Has the amount of time to be allowed for each speaker been allocated? _____
- Do you have a picture of the speaker (5 x 7 glossy) for the program? _____
- Do speakers know where the presentation is to be made (name of room)? _____
- If slides or visual aids are needed, have they made arrangements to prepare them? _____

INVITATIONS

- Who will send them? _____
 - Have they been sent? _____
 - Follow-up date? _____
- How many are to attend:
 - Meeting _____ Dinner _____
 - Luncheon _____ Social Hour _____
- Attach invitation list
- Special guests to invite (especially program participants or officers):
 - How will they be invited: telephone, memo, etc? _____

MEETING ROOM

- Will the room accommodate if tables are set in a special way? _____
- Do tables and chairs have to be moved for a dance or demonstration? _____
 - Who will move them? _____
 - When will they be moved and how long will it take? _____
- What time to start? _____ Set up no later than _____
- How will the information be presented:
 - Projectors and the film or slides
 - Film Slide Overhead
 - Lectern
 - Watches, boxes, special awards
 - Easels
 - Microphone - Check operation before!
 - Pads & pencils
 - Pointer
 - Blackboard, chalk and eraser - grease pencil or marking pen
 - Special handout material (include several extras)
 - Extension Cord
 - Masking Tape
- Adequate lighting
 - Can it be dimmed for films?
- Ash trays at all tables
- Water for speaker and/or attendees

SPECIAL CONSIDERATIONS

- Coat rack facilities
- What happens when the music or program starts in the next room?
- Adequate restroom facilities
- Parking facilities - Adequacy and arrow pointing proper direction
- Prepare name tags and set up table for them
- Air conditioning or heating controls in all rooms
- Printed programs, how many, when needed, proof them
- Sleeping Accommodations (If so, see attached.)
- Transportation arrangements (including to and from airport, etc.)

MEALS

- Extra Waitresses
- Table decorations
- Head table (yes or no)
- Place cards
- How many at each table? _____

- Menu (See attached)
- Has it been confirmed? _____
- Extra cut of meat, etc.? _____
- Consider special diet requests on Fridays or High Holidays
- Price -- Include tax and tip
- Is a guarantee necessary? _____
- What deviation are we allowed? _____
- What time to serve _____ Set up by _____

SOCIAL HOUR

- Adequate Service
- Special brand name requirements
- Cost
- Hors de Ouvres
- Lots of quantity and quality - specify - keep well stocked
- Price
- What time start _____ Stop _____

COFFEE OR COKE BREAK

- What time? AM _____ PM _____
- Where? _____
- What selection of beverages - i.e. Coffee, tea AM
Cokes, 7 up PM
- What selection of donuts, rolls, cookies? _____
- Is coffee desirable from the very start? _____

PUBLICITY

- News release
- House Organ
- Photographer

AFTER THOUGHTS

- Thank you letters
- Evaluation letters
- Things which went wrong:
- Things especially well received:

APPENDIX E

SELECTED CURRICULA OF HIGHWAY AGENCIES FOR MANAGEMENT TRAINING

MANAGEMENT CONFERENCES

Illinois

"A" Course - 2-1/2 days

The intent of the "A" Course is to present to engineering and other professional personnel (CE III and higher classifications), who are now or will become managers, a short course in basic principles of management which experience has indicated have universal applicability in all fields of human activity. The objectives of the "A" Course are to provide a modicum of management training towards the goal of improving the quality of management in the Division of Highways.

"B" Course - 2-1/2 days

"B" Course is offered to graduates of the "A" Course after an interval of two or three years as a review of and to build upon the "A" Course in presenting additional management information and concepts. This goal will only be accomplished to the extent that the training is competent, the students are interested in learning, and the environment (to which the students will return) is conducive to application of improved management concepts.

"C" Course - 2 days

The "C" Course curriculum changes annually, with the specific session subjects determined by an annual planning conference with the Division of Highways and the University's Bureau of Business Management Personnel. The purpose of the two day sessions is to provide information about the general management, business, economic, and political environment in which the Division of Highways operates and of which it is an integral part. This course has been developed for presentation to Bureau Chiefs, District Engineers, and their Assistants only.

"D" Course - 2 days

The "D" Course curriculum is devoted to "Decision Making" and is offered to graduates of the "A" and "B" Courses. In this course the processes involved in problem solving and decision-making techniques are studied. Decisions on the basis of quantitative data and qualitative elements are considered.

"M" Course - 2-1/2 days

The "M" Course contains material similar to that of the "A" Course but is geared for offering to maintenance supervisory personnel who have the responsibility of managing and training maintenance field employees. The personnel attending this class would be considered middle management.

"T" Course - 2-1/2 days

The "T" Course (Teaching Methods Seminar) is designed to give insight in proper instructional procedures to those persons who are now or will soon be involved in training. A feature of the "T" Course is the development and delivery by each participant of a short training presentation using the information and techniques learned at the Seminar.

MANAGEMENT CONFERENCES
(3 days)

	"A" COURSE	"B" COURSE	"C" COURSE
<u>SUNDAY</u> (1/2)	Registration Welcome and Introductions Selection of a President - A Case Study	Registration Welcome, Introductions, Orientation Management Today	
<u>MONDAY</u> (Full)	The Job of Management Planning - Objectives Planning - Policies and Procedures Organization - Basic Types and Uses	Creativity in Management The Nature of Control and Coordination Written Communications	Registration Introductions and Orienta- tion The Nature of Demographics from an Urban Planning Perspective Automobile Insurance Claims Concepts
<u>TUESDAY</u> (Full)	Personnel Selection Personnel Evaluation Motivation	The Application of Control The Application of Co- ordination - A Case Study Fiscal Management Professionalism in Engi- neering	Report on the National Economy Affirmative Action for Equal Employment Opportunities Water Pollution - A National Problem Recent Developments in Managerial Training
<u>WEDNESDAY</u> (1/2)	Oral Communication Control Conference Evaluation	Motivation Conference Evaluation	Improve Your Creative Skills Evaluation
	"D" COURSE	"M" COURSE	"T" COURSE
<u>SUNDAY</u> (1/2)		Registration Welcome, Introductions, Orientation Wheelspinning	Registration Introduction and Orienta- tion Objectives and Lesson Planning
<u>MONDAY</u> (Full)	Introductory Remarks Information - Requisite for Decision-Making The Decision-Making Process - I Case Study	Oral Communications Organization Principles Informal Organization Creation of Visual Aids	Principles of Learning Training People Communications for Trainers Creation and Use of Visual Aids
<u>TUESDAY</u> (Full)	The Decision-Making Process - II The Qualitative Approach to Decision-Making The Quantitative Approach to Decision-Making Case Study	Written Communications Leadership Motivation Preparation of Visual Aids	Employee Motivation Teaching Techniques Preparation of Individual Presentations Presentations by Students, and Critique
<u>WEDNESDAY</u> (1/2)	Case Report and Discussion Program Review	Student Presentations and Evaluation Course Evaluation	Presentations (cont'd) Seminar Critique and Evaluation

BASIC HIGHWAY MANAGEMENT COURSE
(3-1/2 days)

Iowa

MONDAY

Welcome	Assoc. Dean, College of Engineering
Introduction	Dir. of Highways, State Hwy. Comm.
Understanding Your Management Responsibilities	University Staff
. What is a supervisor or manager	
. The management process	
. Relationship between elements of management	
Delegation	University Staff
. Responsibility	
. Authority	
. Accountability	
Motivation and Management	University Staff
. Human needs	
. Theory X and Theory Y	
. Overcoming barriers	
Are Your People Turned Off	University Staff
. Performance evaluation	
. Gripes and grievances	
. Employee counseling	
. Discipline	

TUESDAY

Highway Finance	Agency Staff
. Budgeting	
. Costs	
. Planning	
Leadership	University Staff
. Leadership styles	
. Leadership and motivation	
. What is an effective leader	
. Role playing	
Planning, Organizing, and Controlling	Industry
. Planning	
. Organizing	
. Coordinating	
. Directing	
. Controlling	

WEDNESDAY

Creativity	Consultant
. Why necessary	
. Can it be learned	
. Techniques for development	
. Motivating others	
Communication and Management	University Staff
. Fundamentals of communication	
. Active listening	
. Management game	
. Supervisor as a counselor	
Introduction to Case Studies	University Staff
. Case study method	
. Management techniques	
. Value of case study approach	
Evening Work on Case Studies	

THURSDAY (morning)

Highway Commission Case Studies	University Staff
. Presentation of cases	
. Analysis	
. Critique	
Certificates	University Staff
New Trends in Management	University Staff

SUPERVISORY DEVELOPMENT COURSES
Kansas

I - Principles of Supervision

An all-levels approach to the fundamentals of Management. Provides beginning supervisors with an understanding of the basic knowledge and skills needed for successful performance. Good review for the more experienced supervisor. Gives everyone an overview of Management as a whole of which the Supervisor is a part.

II - Communication in Supervision

All management people, including supervisors, have to work with and through others, individually and in groups. This course gives each member opportunities to share and lead in planned and impromptu communications situations. Special attention is given to "problem solving", the means of reaching decisions on problems, new and old.

III - Human Relations in Supervision

Information on sound management principles which actively promote (cause) harmonious relations with others throughout an organization. Cases and incidents are used to clarify selected points. Psychological factors are explained which help individuals understand their own motives and those of the men and women with whom they work.

IV - Job Training for Supervisors

This course describes ways to teach people how to do things and provides practice in the use of "teaching tools". It helps you know what you can do to upgrade people -- make good employees better, inadequate workers satisfactory -- and eliminate or reduce errors through "coaching". Useful insights into developing procedures and methods, training, motivating, indoctrinating.

V - Case Studies in Supervision

Case studies are used as an approach to investigating sound management practices. Class members are given the facts, circumstances and conditions surrounding an action, experience or event affecting a supervisor. The stage is thus set for making a decision on what to do. Everyone has the opportunity for full participation and practice in solving classic management problems.

VI - Work Simplification and Methods Improvement

Learn to "work smarter - not harder" through discussion of the factors which should influence decisions about changing methods or procedures: analyzing alternatives, prompting acceptance, justifying, etc. Attention is given to writing job descriptions and operation and task lists, to setting task standards, to work distribution, etc., with emphasis on ways to create better methods and to simplify work.

Each course requires eight hours. Individuals usually complete all courses within two-year period.

MIDDLE MANAGEMENT SEMINAR

(5 days)

Virginia

MONDAY

Future of Highway Management
 Responsibilities of Managers
 Budgeting
 Changing Concepts in Management

Top Agency Executive
 Consultant
 Staff
 Consultant

TUESDAY

Planning and Control
 Scheduling Projects and Job Planning
 Human Relations
 Motivation

Consultant
 Staff
 Consultant
 Consultant

WEDNESDAY

Manpower Management (Engineering Costs)
 Manpower Management (Use of Inspectors)
 Manpower Management (Utilization)
 Environment and Highway Management

Consultant
 Consultant
 Consultant
 Consultant

THURSDAY

Communications (2 sessions)
 Direction of People
 Case Study

Consultant
 Consultant
 Staff

FRIDAY

Delegation
 Agency Right-of-Way Problems
 Public Relations (Dealing with People)
 Synthesis of Seminar

Consultant
 Staff
 Staff
 Consultant

MANAGEMENT DEVELOPMENT SEMINAR
(3 days)

W. Va.

MONDAY (evening)

Introduction	Agency Staff
The Nature of Leadership	Agency Staff
... Discussion and Filmed Case Study	

TUESDAY

Managing in the Bureaucracy	University Staff
... Kind of Organization	
... Kind of Personal Philosophy	
... Style of Management	
... Kind of Delegation	
... Kind of Communication	
Management Work Problem	Agency Staff
... The New Truck Incident	
Understanding Personality and Behavior	Agency Staff
... Film Presentation with Discussion	
The Cruel Sea - An Excerpt Case Study on Theory X Management with Discussion	Agency Staff
Assigned Group Case Studies	

(evening)

Case Study Report and Group Discussion	Agency Staff
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WEDNESDAY

The Budget Comes of Age	University Staff
... Fundamentals of Budgets and Budgeting	
... Budgets as an Aid to Effective Planning	
... Budgets as a Guide to Developing an Organization Structure	
... Budgets and Their Use in Motivating Subordinates	
... The Traditional and Most Important Use of Budgets - Control	
Planning and Coordination Exercise	Agency Staff
... (Rig-a-Jig)	
Building Job Satisfaction and Moral	Agency Staff
... Film and Discussion	
Management Action Maze (Hank Snow)	Agency Staff

(evening)

Management Action Maze - cont'd	Agency Staff
Performance Appraisal - Role Play	Agency Staff

THURSDAY

Performance Evaluation	University Staff
... Introduction to Different Types of Appraisals	
... Performance Evaluation as a Management Development Tool	
... Video-taped Role Play Situations Demonstrating Different Techniques of Performance Evaluation	
Summary and Evaluation	Agency Staff

TYPICAL MANAGEMENT TRAINING COURSES - FHWA *

Management of Computer Systems and Information Processing.	Psychology & Management of Human Resources.
Public Administration.	Management of Scientific & Engineering Organizations.
Transportation Engineering Administration and Management.	Administrative Manager Training.
Management and Administration.	ADP in Financial Management Advanced Seminar.
Financial Management.	Finance in Agency Management.
Engineering Management.	Management of Government Finances.
Management Institute for Supervisory Scientists and Engineers.	Fundamentals of Management.
Middle Management Institute.	Personnel Management for Executives.
Introduction to Public Administration.	Project Administration II Course.
Basic Management Techniques I.	Senior Management Institute.
Basic Management Techniques II.	Engineering Management and Economics.
Middle Management Course.	Executive Seminar in Management Information Theory.
Engineering Administration - Operations Research II.	S.I.M.M. - Seminar in Middle Management.
Systems Analysis and Management I.	Introduction to Supervision.
Systems Analysis and Management III.	Behavioral Factors in Large Organizations.
Management Development Program	National Public Policy.
Management Development Workshop.	Seminar in Public Administration.
Operations Research in Management.	Contract Formation.
Financial Management for Managers.	Contract Administration.
Scientific and Technical Manpower.	Supervision and Group Performance.
Management Introduction to ADP.	Introduction to Supervision for Scientists and Engineers.
Management Course.	Writing Effective Letters.
Supervisor's Development.	Supervision and Group Performance for the Scientist and Engineer.
Management and Scientific Organizations.	Behavioral Foundations of Management.
Management and Organization Theory	Research and Development Management: Planning and Control of Research Operations.
Personnel Management II.	Effective Dictation for Executives and Supervisors.
Engineering Administration I - II.	Quantitative Approaches to Management Problems.
Engineering Analysis III.	Public Speaking for Beginners.
Managing Management Time.	Management Program for Executives Course.
The Executive Seminar.	Executive Development Conference.
Financial Management Training.	Workshop for Middle Managers.
Advance Management Seminar.	Management Briefings.
Computer Concepts for Executives.	Supervisory Skills and Techniques.
Reliability Management.	
Graduate Courses, School of Management.	
Highway Management Seminar.	
Management and Group Performance.	
Effective Letter Writing for Management.	
Personnel Management for Supervisors.	
Workshop for Managers of Federal Aid Programs.	

* NOTE:

The Federal Highway Administration publishes an "Annual Training Program" that lists the courses scheduled for the year. The above list of management type courses was made up from this program. Many of these courses are offered by the U.S. Civil Service Commission and may be conducted at a local or regional level for highway agencies and other branches of state and local government. For further information see the "Interagency Training Program" bulletin published by the U.S. Civil Service Commission.

Published reports of the
NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM

are available from:

Highway Research Board
 National Academy of Sciences
 2101 Constitution Avenue
 Washington, D.C. 20418

Rep.

No. Title

- * A Critical Review of Literature Treating Methods of Identifying Aggregates Subject to Destructive Volume Change When Frozen in Concrete and a Proposed Program of Research—Intermediate Report (Proj. 4-3(2)), 81 p., \$1.80
- 1 Evaluation of Methods of Replacement of Deteriorated Concrete in Structures (Proj. 6-8), 56 p., \$2.80
- 2 An Introduction to Guidelines for Satellite Studies of Pavement Performance (Proj. 1-1), 19 p., \$1.80
- 2A Guidelines for Satellite Studies of Pavement Performance, 85 p.+9 figs., 26 tables, 4 app., \$3.00
- 3 Improved Criteria for Traffic Signals at Individual Intersections—Interim Report (Proj. 3-5), 36 p., \$1.60
- 4 Non-Chemical Methods of Snow and Ice Control on Highway Structures (Proj. 6-2), 74 p., \$3.20
- 5 Effects of Different Methods of Stockpiling Aggregates—Interim Report (Proj. 10-3), 48 p., \$2.00
- 6 Means of Locating and Communicating with Disabled Vehicles—Interim Report (Proj. 3-4), 56 p., \$3.20
- 7 Comparison of Different Methods of Measuring Pavement Condition—Interim Report (Proj. 1-2), 29 p., \$1.80
- 8 Synthetic Aggregates for Highway Construction (Proj. 4-4), 13 p., \$1.00
- 9 Traffic Surveillance and Means of Communicating with Drivers—Interim Report (Proj. 3-2), 28 p., \$1.60
- 10 Theoretical Analysis of Structural Behavior of Road Test Flexible Pavements (Proj. 1-4), 31 p., \$2.80
- 11 Effect of Control Devices on Traffic Operations—Interim Report (Proj. 3-6), 107 p., \$5.80
- 12 Identification of Aggregates Causing Poor Concrete Performance When Frozen—Interim Report (Proj. 4-3(1)), 47 p., \$3.00
- 13 Running Cost of Motor Vehicles as Affected by Highway Design—Interim Report (Proj. 2-5), 43 p., \$2.80
- 14 Density and Moisture Content Measurements by Nuclear Methods—Interim Report (Proj. 10-5), 32 p., \$3.00
- 15 Identification of Concrete Aggregates Exhibiting Frost Susceptibility—Interim Report (Proj. 4-3(2)), 66 p., \$4.00
- 16 Protective Coatings to Prevent Deterioration of Concrete by Deicing Chemicals (Proj. 6-3), 21 p., \$1.60
- 17 Development of Guidelines for Practical and Realistic Construction Specifications (Proj. 10-1), 109 p., \$6.00
- 18 Community Consequences of Highway Improvement (Proj. 2-2), 37 p., \$2.80
- 19 Economical and Effective Deicing Agents for Use on Highway Structures (Proj. 6-1), 19 p., \$1.20

Rep.

No. Title

- 20 Economic Study of Roadway Lighting (Proj. 5-4), 77 p., \$3.20
- 21 Detecting Variations in Load-Carrying Capacity of Flexible Pavements (Proj. 1-5), 30 p., \$1.40
- 22 Factors Influencing Flexible Pavement Performance (Proj. 1-3(2)), 69 p., \$2.60
- 23 Methods for Reducing Corrosion of Reinforcing Steel (Proj. 6-4), 22 p., \$1.40
- 24 Urban Travel Patterns for Airports, Shopping Centers, and Industrial Plants (Proj. 7-1), 116 p., \$5.20
- 25 Potential Uses of Sonic and Ultrasonic Devices in Highway Construction (Proj. 10-7), 48 p., \$2.00
- 26 Development of Uniform Procedures for Establishing Construction Equipment Rental Rates (Proj. 13-1), 33 p., \$1.60
- 27 Physical Factors Influencing Resistance of Concrete to Deicing Agents (Proj. 6-5), 41 p., \$2.00
- 28 Surveillance Methods and Ways and Means of Communicating with Drivers (Proj. 3-2), 66 p., \$2.60
- 29 Digital-Computer-Controlled Traffic Signal System for a Small City (Proj. 3-2), 82 p., \$4.00
- 30 Extension of AASHO Road Test Performance Concepts (Proj. 1-4(2)), 33 p., \$1.60
- 31 A Review of Transportation Aspects of Land-Use Control (Proj. 8-5), 41 p., \$2.00
- 32 Improved Criteria for Traffic Signals at Individual Intersections (Proj. 3-5), 134 p., \$5.00
- 33 Values of Time Savings of Commercial Vehicles (Proj. 2-4), 74 p., \$3.60
- 34 Evaluation of Construction Control Procedures—Interim Report (Proj. 10-2), 117 p., \$5.00
- 35 Prediction of Flexible Pavement Deflections from Laboratory Repeated-Load Tests (Proj. 1-3(3)), 117 p., \$5.00
- 36 Highway Guardrails—A Review of Current Practice (Proj. 15-1), 33 p., \$1.60
- 37 Tentative Skid-Resistance Requirements for Main Rural Highways (Proj. 1-7), 80 p., \$3.60
- 38 Evaluation of Pavement Joint and Crack Sealing Materials and Practices (Proj. 9-3), 40 p., \$2.00
- 39 Factors Involved in the Design of Asphaltic Pavement Surfaces (Proj. 1-8), 112 p., \$5.00
- 40 Means of Locating Disabled or Stopped Vehicles (Proj. 3-4(1)), 40 p., \$2.00
- 41 Effect of Control Devices on Traffic Operations (Proj. 3-6), 83 p., \$3.60
- 42 Interstate Highway Maintenance Requirements and Unit Maintenance Expenditure Index (Proj. 14-1), 144 p., \$5.60
- 43 Density and Moisture Content Measurements by Nuclear Methods (Proj. 10-5), 38 p., \$2.00
- 44 Traffic Attraction of Rural Outdoor Recreational Areas (Proj. 7-2), 28 p., \$1.40
- 45 Development of Improved Pavement Marking Materials—Laboratory Phase (Proj. 5-5), 24 p., \$1.40
- 46 Effects of Different Methods of Stockpiling and Handling Aggregates (Proj. 10-3), 102 p., \$4.60
- 47 Accident Rates as Related to Design Elements of Rural Highways (Proj. 2-3), 173 p., \$6.40
- 48 Factors and Trends in Trip Lengths (Proj. 7-4), 70 p., \$3.20
- 49 National Survey of Transportation Attitudes and Behavior—Phase I Summary Report (Proj. 20-4), 71 p., \$3.20

* Highway Research Board Special Report 80.

- | <i>Rep. No.</i> | <i>Title</i> | <i>Rep. No.</i> | <i>Title</i> |
|-----------------|-------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------|
| 50 | Factors Influencing Safety at Highway-Rail Grade Crossings (Proj. 3-8), 113 p., \$5.20 | 76 | Detecting Seasonal Changes in Load-Carrying Capabilities of Flexible Pavements (Proj. 1-5(2)), 37 p., \$2.00 |
| 51 | Sensing and Communication Between Vehicles (Proj. 3-3), 105 p., \$5.00 | 77 | Development of Design Criteria for Safer Luminaire Supports (Proj. 15-6), 82 p., \$3.80 |
| 52 | Measurement of Pavement Thickness by Rapid and Nondestructive Methods (Proj. 10-6), 82 p., \$3.80 | 78 | Highway Noise—Measurement, Simulation, and Mixed Reactions (Proj. 3-7), 78 p., \$3.20 |
| 53 | Multiple Use of Lands Within Highway Rights-of-Way (Proj. 7-6), 68 p., \$3.20 | 79 | Development of Improved Methods for Reduction of Traffic Accidents (Proj. 17-1), 163 p., \$6.40 |
| 54 | Location, Selection, and Maintenance of Highway Guardrails and Median Barriers (Proj. 15-1(2)), 63 p., \$2.60 | 80 | Oversize-Overweight Permit Operation on State Highways (Proj. 2-10), 120 p., \$5.20 |
| 55 | Research Needs in Highway Transportation (Proj. 20-2), 66 p., \$2.80 | 81 | Moving Behavior and Residential Choice—A National Survey (Proj. 8-6), 129 p., \$5.60 |
| 56 | Scenic Easements—Legal, Administrative, and Valuation Problems and Procedures (Proj. 11-3), 174 p., \$6.40 | 82 | National Survey of Transportation Attitudes and Behavior—Phase II Analysis Report (Proj. 20-4), 89 p., \$4.00 |
| 57 | Factors Influencing Modal Trip Assignment (Proj. 8-2), 78 p., \$3.20 | 83 | Distribution of Wheel Loads on Highway Bridges (Proj. 12-2), 56 p., \$2.80 |
| 58 | Comparative Analysis of Traffic Assignment Techniques with Actual Highway Use (Proj. 7-5), 85 p., \$3.60 | 84 | Analysis and Projection of Research on Traffic Surveillance, Communication, and Control (Proj. 3-9), 48 p., \$2.40 |
| 59 | Standard Measurements for Satellite Road Test Program (Proj. 1-6), 78 p., \$3.20 | 85 | Development of Formed-in-Place Wet Reflective Markers (Proj. 5-5), 28 p., \$1.80 |
| 60 | Effects of Illumination on Operating Characteristics of Freeways (Proj. 5-2) 148 p., \$6.00 | 86 | Tentative Service Requirements for Bridge Rail Systems (Proj. 12-8), 62 p., \$3.20 |
| 61 | Evaluation of Studded Tires—Performance Data and Pavement Wear Measurement (Proj. 1-9), 66 p., \$3.00 | 87 | Rules of Discovery and Disclosure in Highway Condemnation Proceedings (Proj. 11-1(5)), 28 p., \$2.00 |
| 62 | Urban Travel Patterns for Hospitals, Universities, Office Buildings, and Capitols (Proj. 7-1), 144 p., \$5.60 | 88 | Recognition of Benefits to Remainder Property in Highway Valuation Cases (Proj. 11-1(2)), 24 p., \$2.00 |
| 63 | Economics of Design Standards for Low-Volume Rural Roads (Proj. 2-6), 93 p., \$4.00 | 89 | Factors, Trends, and Guidelines Related to Trip Length (Proj. 7-4), 59 p., \$3.20 |
| 64 | Motorists' Needs and Services on Interstate Highways (Proj. 7-7), 88 p., \$3.60 | 90 | Protection of Steel in Prestressed Concrete Bridges (Proj. 12-5), 86 p., \$4.00 |
| 65 | One-Cycle Slow-Freeze Test for Evaluating Aggregate Performance in Frozen Concrete (Proj. 4-3(1)), 21 p., \$1.40 | 91 | Effects of Deicing Salts on Water Quality and Biota—Literature Review and Recommended Research (Proj. 16-1), 70 p., \$3.20 |
| 66 | Identification of Frost-Susceptible Particles in Concrete Aggregates (Proj. 4-3(2)), 62 p., \$2.80 | 92 | Valuation and Condemnation of Special Purpose Properties (Proj. 11-1(6)), 47 p., \$2.60 |
| 67 | Relation of Asphalt Rheological Properties to Pavement Durability (Proj. 9-1), 45 p., \$2.20 | 93 | Guidelines for Medial and Marginal Access Control on Major Roadways (Proj. 3-13), 147 p., \$6.20 |
| 68 | Application of Vehicle Operating Characteristics to Geometric Design and Traffic Operations (Proj. 3-10), 38 p., \$2.00 | 94 | Valuation and Condemnation Problems Involving Trade Fixtures (Proj. 11-1(9)), 22 p., \$1.80 |
| 69 | Evaluation of Construction Control Procedures—Aggregate Gradation Variations and Effects (Proj. 10-2A), 58 p., \$2.80 | 95 | Highway Fog (Proj. 5-6), 48 p., \$2.40 |
| 70 | Social and Economic Factors Affecting Intercity Travel (Proj. 8-1), 68 p., \$3.00 | 96 | Strategies for the Evaluation of Alternative Transportation Plans (Proj. 8-4), 111 p., \$5.40 |
| 71 | Analytical Study of Weighing Methods for Highway Vehicles in Motion (Proj. 7-3), 63 p., \$2.80 | 97 | Analysis of Structural Behavior of AASHTO Road Test Rigid Pavements (Proj. 1-4(1)A), 35 p., \$2.60 |
| 72 | Theory and Practice in Inverse Condemnation for Five Representative States (Proj. 11-2), 44 p., \$2.20 | 98 | Tests for Evaluating Degradation of Base Course Aggregates (Proj. 4-2), 98 p., \$5.00 |
| 73 | Improved Criteria for Traffic Signal Systems on Urban Arterials (Proj. 3-5/1), 55 p., \$2.80 | 99 | Visual Requirements in Night Driving (Proj. 5-3), 38 p., \$2.60 |
| 74 | Protective Coatings for Highway Structural Steel (Proj. 4-6), 64 p., \$2.80 | 100 | Research Needs Relating to Performance of Aggregates in Highway Construction (Proj. 4-8), 68 p., \$3.40 |
| 74A | Protective Coatings for Highway Structural Steel—Literature Survey (Proj. 4-6), 275 p., \$8.00 | 101 | Effect of Stress on Freeze-Thaw Durability of Concrete Bridge Decks (Proj. 6-9), 70 p., \$3.60 |
| 74B | Protective Coatings for Highway Structural Steel—Current Highway Practices (Proj. 4-6), 102 p., \$4.00 | 102 | Effect of Weldments on the Fatigue Strength of Steel Beams (Proj. 12-7), 114 p., \$5.40 |
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