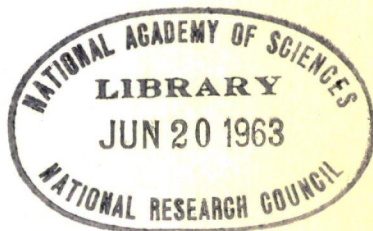


HIGHWAY RESEARCH BOARD
Special Report 72S

GUIDE

for

Planning in Highway
Administration



TE7
N3
no 72-s

National Academy of Sciences—

National Research Council

HIGHWAY RESEARCH BOARD

Officers and Members of the Executive Committee

1963

OFFICERS

C. D. CURTISS, *Chairman* WILBUR S. SMITH, *First Vice Chairman*
DONALD S. BERRY, *Second Vice Chairman*
FRED BURGGRAF, *Director* W. N. CAREY, JR., *Assistant Director*

Executive Committee

REX M. WHITTON, *Federal Highway Administrator, Bureau of Public Roads (ex officio)*
A. E. JOHNSON, *Executive Secretary, American Association of State Highway Officials (ex officio)*
LOUIS JORDAN, *Executive Secretary, Division of Engineering and Industrial Research, National Research Council (ex officio)*
W. A. BUGGE, *Director of Highways, Washington Department of Highways (ex officio, Past Chairman 1961)*
R. R. BARTELSMEYER, *Nashville, Illinois (ex officio, Past Chairman 1962)*
E. W. BAUMAN, *Managing Director, National Slag Association, Washington, D. C.*
DONALD S. BERRY, *Chairman, Department of Civil Engineering, Northwestern University*
MASON A. BUTCHER, *County Manager, Montgomery County, Md.*
J. DOUGLAS CARROLL, JR., *Deputy Director, Tri-State Transportation Committee, New York City*
C. D. CURTISS, *Special Assistant to the Executive Vice President, American Road Builders' Association*
HARMER E. DAVIS, *Director, Institute of Transportation and Traffic Engineering, University of California*
DUKE W. DUNBAR, *Attorney General of Colorado*
MICHAEL FERENCE, JR., *Vice President, Scientific Research, Ford Motor Company*
JOHN T. HOWARD, *Head, Department of City and Regional Planning, Massachusetts Institute of Technology*
PYKE JOHNSON, *Retired*
BURTON W. MARSH, *Director, Traffic Engineering and Safety Department, American Automobile Association*
OSCAR T. MARZKE, *Vice President, Fundamental Research, U. S. Steel Corporation*
J. B. MCMORRAN, *Superintendent of Public Works, New York State Department of Public Works*
CLIFFORD F. RASSWEILER, *Vice President for Research, Development and Engineering, Johns-Manville Corporation*
C. H. SCHOLER, *Applied Mechanics Department, Kansas State University*
M. L. SHADBURN, *State Highway Engineer, Georgia State Highway Department*
WILBUR S. SMITH, *Wilbur Smith and Associates, New Haven, Conn.*
JOHN H. SWANBERG, *Chief Engineer, Minnesota Department of Highways*
EDWARD G. WETZEL, *Tri-State Transportation Committee, New York City*
K. B. WOODS, *Head, School of Civil Engineering, and Director, Joint Highway Research Project, Purdue University*

Editorial Staff

FRED BURGGRAF HERBERT P. ORLAND EARLE W. JACKSON
2101 Constitution Avenue Washington 25, D. C.

NRC
"

HIGHWAY RESEARCH BOARD

Special Report 72S

GUIDE

for

Planning in Highway

Administration

HIGHWAY RESEARCH BOARD

of the

Division of Engineering and Industrial Research

NATIONAL ACADEMY OF SCIENCES—

NATIONAL RESEARCH COUNCIL

Washington, D. C.

1963

E7

3

725

Department of Economics, Finance and Administration

Guilford P. St. Clair, Chairman
Chief, National Highway Planning Division
U. S. Bureau of Public Roads, Washington, D. C.

DIVISION OF ADMINISTRATIVE AND MANAGEMENT STUDIES

W. L. Haas, Chairman
Highway Management Associates
Madison, Wisconsin

David R. Levin, Vice Chairman
Deputy Director, Office of Right-of-Way and Location
U. S. Bureau of Public Roads, Washington, D. C.

COMMITTEE ON HIGHWAY ORGANIZATION AND ADMINISTRATION

W. F. Babcock, Chairman
Director, North Carolina State Highway Commission, Raleigh
James M. Montgomery, Secretary
U. S. Bureau of Public Roads, Washington, D. C.

- D. H. Bray, State Highway Engineer, Kentucky Department of Highways, Frankfort
- W. A. Bugge, Director, Washington Department of Highways, Olympia
- Clinton H. Burnes, Chief, Highway Needs Branch, U. S. Bureau of Public Roads, Washington, D. C.
- Howard Bussard, Automotive Safety Foundation, Washington, D. C.
- Ellis Danner, Professor of Highway Engineering, University of Illinois, Urbana
- Harmer E. Davis, Director, Institute of Transportation and Traffic Engineering, University of California, Richmond
- Carl E. Fritts, Vice President in Charge of Engineering, Automotive Safety Foundation, Washington, D. C.
- G. O. Grant, Commissioner of Roads, Metropolitan Toronto Roads Department, Toronto, Ont.
- W. L. Haas, Highway Management Associates, Madison, Wis.
- Norman Hebden, Chief, Capital Improvement Program, Maryland State Planning Department, Baltimore
- Roy E. Jorgensen, Roy Jorgensen & Associates, Washington, D. C.
- Theodore F. Morf, Engineer of Research and Planning, Illinois Division of Highways, Springfield
- Ben F. Ostergren, Manager, County and Municipal Division, American Road Builders' Association, Washington, D. C.
- E. S. Preston, Director, Ohio Department of Highways, Columbus
- David W. Schoppert, Highway Transportation Engineer, Automotive Safety Foundation, Washington, D. C.
- L. R. Schureman, U. S. Bureau of Public Roads, Washington, D. C.
- Robert S. Scott, President, R. S. Scott Engineering Company, Alpena, Mich.
- E. S. Ward, Daviess County Highway Engineer, Washington, Ind.
- William E. Willey, State Highway Engineer, Arizona State Highway Department, Phoenix
- J. C. Womack, State Highway Engineer, California Division of Highways, Sacramento

Foreword

A Conference on Planning in Highway Administration, attended by participants from all parts of the country, was held in Washington, D. C., March 26-27, 1962. This conference was initially proposed in 1961 by the Committee on Highway Organization and Administration of the Highway Research Board. Acting upon this proposal and subsequent recommendations by the Division of Administrative and Management Studies, and the Department of Economics, Finance and Administration, approval to hold the conference was granted by the Executive Committee of the Highway Research Board. As finally arranged, it was jointly sponsored by the Highway Research Board and the Bureau of Public Roads, which agency agreed to underwrite the cost and to assist in arranging the conference. The proceedings of this conference were published as Highway Research Board Special Report 72.

It was further suggested that regional conferences be held to spread the conference benefits among as many interested people as possible. The staging of regional conferences, however, has not been possible because of time conflicts with other scheduled regional meetings; therefore, no regional conferences on planning in highway administration have been scheduled. Nonetheless, this guide is distributed as a supplement to Special Report 72 with the idea that it might be useful to regional groups wishing, at some future time, to stage either formal or informal conferences such as this guide envisions. Such conferences, of course, would provide a forum for discussing, (a) highway planning concepts, (b) planning needs for effective highway administration, (c) utilization of planning information, and (d) the future of highway planning.

The committee which arranged for the conduct of the 1962 Conference on Planning in Highway Administration, and which prepared this Guide, was composed of C. H. Burnes, E. L. Paige, W. F. Babcock, H. S. Wiley, J. O. Granum, and M. Earl Campbell. The manuscript was reviewed by the Division Chairman, W. L. Haas, and the Department Chairman, G. P. St. Clair.

Reference Material

The following reference material has been taken from Highway Research Board Special Report 72, "Planning in Highway Administration," which contains the proceedings of a conference held in Washington, D. C., March 26-27, 1962.

SESSION ONE—A—Introductory Remarks

Welcoming Remarks—Fred Burggraf

Remarks of Department Chairman—G. P. St. Clair

Purpose of the Conference—W. L. Haas

SESSION ONE—B—Highway Planning Concepts

Development of Highway Planning—S. T. Hitchcock

New Concepts and Goals in Highway Planning—David Carley

New Concepts and Goals in Highway Planning—John A. Shaneman

SESSION TWO—Planning Needs for Effective Highway Administration

Specialized Highway Planning Information: Social, Economic, and
Financial Aspects—Clarence A. Steele

Critical Administrative Problem Areas—Howard E. Hill

SESSION THREE—Utilization of Planning Information

The Planning Organization—Its Dual Role—H. S. Wiley

Role of Top Management in Developing and Using Planning Information—William R. B. Froehlich

SESSION FOUR—The Future of Highway Planning

A Look to the Future—E. H. Holmes

Planning in Highway Administration—Important Considerations and
Summary—Robert W. Paterson

Contents

<i>Topic</i>	<i>Title</i>	<i>Page</i>
	INTRODUCTION	1
	HIGHWAY PLANNING CONCEPTS	
1	Development of Highway Planning	1
2	New Concepts and Goals	3
	PLANNING NEEDS FOR EFFECTIVE HIGHWAY ADMINISTRATION	
3	Specialized Planning Information	6
4	Critical Administrative Problem Areas	9
	UTILIZATION OF PLANNING INFORMATION	
5	The Planning Organization—Its Dual Role	11
6	The Role of Top Management	13
	A LOOK TO THE FUTURE	
7	The Future of Highway Planning	14
	CONFERENCE SUMMARY	
8	Summary of the Conference	18

GUIDE

for

Planning in Highway Administration

INTRODUCTION

Highway administration, in common with management generally, is caught in a ground swell of innovation, fast-moving changes in the traditional ways of doing things, and technological breakthroughs. These accelerated changes have stepped up the tempo of decision making, have introduced the need for decision lead times that would have been thought visionary but a few years ago, and have put the pressure of time-accomplishment relationships on all individuals in responsible positions of highway management.

Recognizing these problems, this guide discusses eight topics so developed

that one builds on another in a progression of ideas. These may be dealt with in a number of ways. Although the main session heads and subjects of the original conference were necessarily used as a point of departure, regional arrangement committees should not feel the necessity of covering the content of each topic word by word. The plan suggested for each session is conceived as a guide and presumes that a committee not only will develop its own session plan but also will determine what topics are desired in relation to the primary objective of the conference.

Topic No. 1

DEVELOPMENT OF HIGHWAY PLANNING

AIM: To trace the origin of highway planning (briefly covered); to describe its gradual acceptance and growth as an administrative function; to evaluate its broad accomplishments.

PRESENTATION

This being essentially an introduction to the general subject of planning in highway administration, it is desirable to give it a fairly "broad-brush" treatment.

The origin of highway planning surveys will be generally known, as will be

the background need for the surveys. Also, the audience or participants will know the major administrative problems of their own States and in many cases will be familiar with regional or national problems. Consequently, discussion can be brief; merely show recent

developments and growth of the highway planning survey function.

Evidence of its rising importance to top highway management is generally manifested by the planning division's organizational position in today's highway departments. In some places great strides have been made in the use of its information. The planning division has been referred to as the "G-2" of the highway department operation and this could be elaborated upon.

Undoubtedly there is room for im-

provement. Any evaluation should be from the viewpoint not only of the collection, analyses, and dissemination of information, but also of the development of new kinds of data required and means of making such information available to highway administrators. Planning proper, as distinguished from data gathering and analysis, should be stressed as the basis for executive decisions in highway location, programing, and financing, as well as in day-to-day administration.

QUESTIONS

What have been the more significant accomplishments of highway planning?

What can be said of its acceptance and growth?

What are the implications of highway planning in determining (a) Federal, State, and local objectives; (b) policies, procedures, and programs to meet long- and short-range needs?

SELECTED BIBLIOGRAPHY

Davis, Harmer E.

Comments on Highway Planning and Research

California Street and Highway Conference, University of California, Proceedings, pp. 49-55 (1960)

Ultimate objective in highway engineering effort, response of planning and research to new problems, the limited-improvement period, rural-road-network period, highway system period, the transportation systems period and research, a part of the creative process, transition from research information in design procedures, changing conditions require continuing effort.

Holmes, Edward H., and Lynch, John T.

Highway Planning, Present and Future

American Society of Civil Engineers Transactions, Volume 124, pp. 149-163, New York (1959)

Highway planning on a comprehensive scale has been conducted jointly by the Bureau of Public Roads, U. S. Department of Commerce (BPR) and the State highway departments since 1935. Facts have been assembled and highway needs determined that have greatly affected State and Federal legislation. Methods must be perfected in order to keep the studies of the needs up-to-date and to project them into the future.

Livingston, Robert E.

The Use of Factual Data in Long-Range Planning

Western Association of State Highway Officials, Proceedings, pp. 60-65 (1958)

Emphasizes importance of applying industry's selling techniques to highway public relations.

McBrien, J. P.

The Second Order of Advance Planning for Local Areas
California Street and Highway Conference, University of California,
Proceedings, pp. 25-29 (1959)

Discusses growing need for new kind of road system classification raising the question of methods and priorities of finance.

Marye, Burton

Over-All Administration of a Planning Survey
Southeastern Association of State Highway Officials, Proceedings, pp. 88-91 (1947)

Discusses the over-all manner in which the highway planning organization operates by citing five cases of requests for information. Planning surveys should perform services of sufficient importance to justify equal ranking with other divisions.

North Carolina Highway Commission

North Carolina Highways, An Analysis of Long-Range Highway Needs
Prepared by Advance Planning Department, Secondary Roads Department, Raleigh, various paging (1960)

In cooperation with U. S. Bureau of Public Roads. Value of long-range planning; philosophy of long-range highway plan. Funds necessary to finance highway operations are estimated for the period 1960 to 1975. Revenue and expenditure trends in the 1950 to 1960 period are used as a basis for the future projections. The estimates for highway needs are broken into types of construction and maintenance expenditures and into various classes of highways.

Topic No. 2

NEW CONCEPTS AND GOALS

AIM: To consider the broader implications and significance of highway planning in determining Federal, State, and local objectives; policies, procedures, and programs to meet long-range ends; and planning information as one guide to sound economic, social and resource development decisions.

PRESENTATION

There has been growth in ideas for carrying out both old and some new responsibilities within the framework of highway planning. These ideas generally follow administrative and technological innovations and changes in conditions and situations. Seldom, however, do they lead to a full use of the potential of the art at any given time. Hence, in discussing new concepts and

goals of the planning role in highway administration it is well to stress that the well-known time lag between the development of at least some innovations and their general acceptance in practice can ill be afforded. Some of these innovations have led to work simplification and a greater utilization of available manpower. New concepts and goals also suggest that new roles of planning in highway administration are necessary. It should be stressed that in today's highway administration this much and more is needed—flexibility in administrative planning equal to the accelerated pace of technological change is needed. There is a need to be imaginative and inventive in planning. There is a need to mobilize and motivate the available planning manpower. For making sound decisions there is a need to develop timely and accurate information, which can come only from much broader planning than heretofore has been possible.

The question might reasonably be raised as to what, specifically, is meant

by "new" concepts and/or "new" goals? Perhaps, speaking in broad terms, the present goals are the same as those of a decade or two ago; namely, to furnish safe, expeditious and economical highway transportation. It should be emphasized, however, that to accomplish these goals in today's setting becomes increasingly difficult. On the one hand we are confronted with huge backlogs of urgently needed construction; on the other, by the more pressing and stubborn problem of fitting urban road and street requirements to the steadily growing rural-to-urban population shift. The growing need for recruitment of individuals with mathematics, economics, sociology and demographic majors to augment the staff of many highway planning divisions in coping with the complex econ-socio area of highway planning should be emphasized. Also, the fact that electronic and other modern techniques make it possible to meet, swiftly and accurately, the challenge of these mounting problems should be underlined.

QUESTIONS

- What are the functions of highway planning?
- What is the purpose of highway planning?
- What sociological values should be considered in highway development?
- How does one choose between economic and social values?
- How can economic and social values be equated?

SELECTED BIBLIOGRAPHY

Black, Therel and Black, Jerrilyn

Some Sociological Considerations in Highway Development
Highway Research Board, Bulletin 169, pp. 51-59 (1957)

The authors propose "that consideration be given to the idea of planning highways in a close functional relation to all other aspects of social life; and that in such planning the personnel from various walks of life be included, in an advisory way at least, on the planning team." The various aspects of intangible nonmonetary values related to highways are discussed.

Division of Highway and Land Administration, Office of Research, U. S. Bureau of Public Roads

Guide for Highway Impact Studies (December 1959)

A guide for the use of Bureau of Public Roads and State highway department personnel and other researchers interested in conducting studies of the economic impact of highway improvements. Subjects included in this guide are (1) indicators of highway effects, (2) sources of data for economic impact studies, (3) statistical considerations, and (4) methods of reporting results. This guide has extensive coverage of the domain of economic impact studies.

Drucker, Peter F.

Long-Range Planning

Management Science, Vol. 5, No. 3 (April 1959)

Attempts to define long-range planning as the organized process of making entrepreneurial decisions. It tries to answer three questions asked by managers and management scientists when they hear the phrase "long-range planning." What long-range planning is and what it is not; why it is needed; and what is needed to do long-range planning. Concludes with a brief statement why long-range planning can be considered a major opportunity for, and challenge to, management science.

Landmarks of Tomorrow

Harper and Brothers (1957)

Discusses living in an age of transition in which yesterday's expressions and standards must serve until the "post-modern" definitions can control thoughts and actions. Covers the new concepts and human capacities which must be developed for tomorrow.

Goldstein, Sidney

New Direction in Economic Impact Research

Paper presented at Highway Research Workshop, North Central Land Tenure Research Committee, University of Minnesota, Minneapolis, Minnesota (October 1959)

Description of the types of economic research projects undertaken to determine the economic and social effects of highway improvements and an evaluation of the present methods of analysis used in these studies. Also discussed are the prospective methods which are desired in order to provide a consistent series of measurements of basic economic variables on which the effects of highway improvements can be based.

Highway Research Board

Economic Impact of Highway Improvement

Conference Proceedings, Special Report 28 (March 1957)

The purpose of this conference was to discuss research findings, review the techniques used, and stimulate more research on economic changes brought about by highway improvements on non-vehicular users, bringing together urban planners, engineers, economists, sociologists, lawyers, geographers, and others who study the effect of improved highways on land values, patterns of land use, and economic activity.

Kanwit, E. L., and Todd, T. R.

Recent Population Trends and Their Highway Implications

Highway Research Board Proceedings, Vol. 40, pp. 1-33 (1961)

An evaluation of recent trends in population growth and their effect on highway transportation.

Nelson, Charles M.

Planning and Controls in the World of 1960

California Institute on Street and Highway Problems, University of California, Berkeley, Proceedings, pp. 37-42 (1954)

Reviews some specific situations in four areas: County highway planning, control of roadside encroachment and access, regulation of subdivision development, and the reorganization of large urban areas.

Newcomb, Robinson

Highway Planning for a Growing Economy

Highway Research Board Proceedings, pp. 16-23 (1961)

To carry out an over-all highway construction program required for a healthy growing economy, one should (1) know what it costs to serve each class of direct beneficiary; (2) be able to charge each direct beneficiary in accordance with the costs he imposes; and (3) have assurance that each direct beneficiary can and will pay before building. None of these three objectives can be satisfactorily met.

Plummer, Harold L.

Advance Planning: The Big Payoff

American Road Builder, pp. 10-11, 26 (December 1959)

Reflects efficiency in highway departments.

Shiely, Vincent R.

Planning

Highway Management Seminars, University of Minnesota, Minneapolis, Minnesota, Center for Continuation Study (1958 Unpublished)

Discussion of the recognition of the value of long-range planning in the operation of a business.

Topic No. 3

SPECIALIZED PLANNING INFORMATION

AIM: To describe the kinds of specialized highway planning information essential to the highway administrator including such related fields as economics, sociology, and finance; and to discuss how highway administrators can utilize such information in coping with highway problems.

PRESENTATIONS

Emphasize that administrators must first know their objectives before it can be determined what kinds of information are required. Point out that not only must the objectives of the activity be determined, but also those for the planning task itself. For example, planning task objectives are those which

when attained will accomplish the activity objective.

As to examples of specialized planning information, cite that obtained from studies of highway needs, finance and allocation, economic impact, area transportation, and the like. A great deal of the information required can be and is being provided by highway planning surveys. More and more, however, information comes from the related fields of economics, sociology, and finance; for example, demographic trends and their forecasting, socio-economic data, including the implication of Fed-

eral housing legislation, land use development, and the broader questions of general community planning (when involving justification of highway systems themselves). Involved here, too, is the relationship between highway and other transportation media.

Add that administrators need to and do make decisions with or without supporting facts, but that planning information of the nature mentioned becomes increasingly indispensable if we are to cope successfully with today's highway problems.

QUESTIONS

What happens when planning information is overlooked or disregarded?

Who originates ideas for planning studies? Who makes decisions as to direction?

What methods or procedures are there for planning division contributions?

SELECTED BIBLIOGRAPHY

Automotive Safety Foundation

State Highway Policies and Practices in Pennsylvania,
Washington, D. C., pp. 37-39 (August 1958)

In the areas of advance planning for highways three related and dependent studies need to be undertaken: classification, needs, and finance. The results of these studies are needed to furnish the factual control over the continuing operations of the department and other agencies with highway responsibilities. They are in addition to routine data collection and special traffic studies now part of the Highway Planning Statistics Section's day-to-day operations.

Buckley, J. P., and Fritts, Carl E.

Objectives and Findings of Highway Needs Studies

Highway Research Board, Proceedings, Vol. 28, p. 1 (1948)

Covers highway needs studies with which the Automotive Safety Foundation has been associated. Describes past practices and those to be applied in future studies. Outlines scope and objectives and principal elements included in such a study.

Campbell, M. Earl

Administrative Planning—What Is It?

Highway Research Board, Mimeo. 9 pp. (1961)

Administrative planning is treated as it is concerned with objectives, the

ways to the objectives, the consequences of choice of ways, and the means of implementing the choice.

Committee on Ways and Means, U. S. House of Representatives

Final Report of the Highway Cost Allocation Study

House Document No. 54, 87th Congress, 1st Session (1961)

Forecasts of population, traffic, economic indicators, and freight and passenger data are given for the period 1960 through 1980. These estimates are based on a "knowledge of past performance together with an awareness of the present situation and anticipated developments." Estimates also are made of payments to the Federal highway trust fund and of the cost of the Interstate System to 1972.

Jorgensen, Roy, and Associates

Montana Highway Management

Washington, D. C., Ch. 4, Planning and Control, pp. 31-38 (1962)

Stresses the need for a greater emphasis on planning and administrative research independent of the functional units themselves. Among others is a recommendation to establish a bureau of planning and administrative research to meet the need for development of long-range programs, priority schedules, performance standards, control measures, and other administrative research.

Kanwit, E. L., Steele, C. A., and Todd, T. R.

Need We Fail in Forecasting?

Highway Research Board Bulletin 257, pp. 1-35 (1960)

An evaluation and comparison of forecasts of population, motor vehicle registration, motor vehicle travel, and motor fuel consumption made in other studies. The purpose is to show why forecasts have failed and to consider means by which such forecasts could be improved in the future.

Massachusetts Department of Public Works

Social and Economic Impact of Highways: Suggested Areas of Research for Study of Highway Impact

Office of the Staff Economist (August 1960)

Each area is divided into four phases of analysis: theoretical, long range, short range, and methodological. Suggested research consists of the impact of highway improvements on business, land value, traffic, socio-economic characteristics of resident population, industrial and residential land use, cost-benefit analysis, and general economic and social conditions.

Perloff, Harvey S.

Regional Research and Highway Planning

Highway Research Board Bulletin 190, pp. 14-19 (1958)

Highway planning should logically be grounded on the most advanced knowledge concerning the developmental forces which influence and are influenced by highways as well as other forms of transportation. Research utilizing techniques of regional analysis can be helpful in the following

areas: (1) location and design of highways, (2) pinpointing the economic impact of various types of highway improvements, and (3) other problem areas that are encountered in highway planning and research.

Shattuck, I. S., and Rykken, K. B.

Highway and Thorofare Planning and Programming in Relation to Urban Planning and Development

Highway Research Board Bulletin 31 (1949)

Importance of urban areas in highway planning according to various reports; scope of major thorofare planning in urban areas; the land use plan and its bases; example of Albert Lea, Minnesota; design of primary thorofare facilities; planning regulations for controlling highway access and roadside development and for protecting planned highways; adequacy of basic traffic surveys for planning purposes.

Topic No. 4

CRITICAL ADMINISTRATIVE PROBLEM AREAS

AIM: To determine effective ways of gaining necessary coordination and cooperation between planning agencies; to discuss the organizational position of the planning group and relations with top management; to devise ways of overcoming the impact of accelerated change and providing for longer administrative lead times.

PRESENTATION

Point out that the pressures which have brought about our critical administrative problem areas are well known. Cite one or two of these examples in some detail; for instance, the need to devise ways and means of overcoming the impact of accelerated change on administrative decisions; decisions which largely deal with lead times (particularly in the urban problem) and with the process of authorizing substantial capital investments. Also touch upon research needed now as well as that under way. Involved here are questions of administrative objectives, policies, and procedures and the need to design them to cope with long-range plans, and programs (and the coordination of these with those of other jurisdictions). The operational problems of carrying out

these plans involve day-to-day planning cooperation; for instance, the development of common goals and mutual understanding between the highway department and local governmental jurisdictions.

Discuss the work of regional committees, highway authorities, regional planning agencies, transportation study committees, and similar organizations and activities. Talk about examples of good planning, of satisfactory organization, and of a comprehensive use of planning information found in highway department operation at the present time. Show that the planning organization is an important staff arm of highway administration and, to be effective, it must have access to top management thinking as a matter of course.

QUESTIONS

- What are some of the external factors which tend to make coordination and co-operation between planning agencies more difficult? Internal factors (such as resources, techniques, organization procedures, and schedules)?
- How is highway administration overcoming the impact of accelerated change (for example, changing population)? Of providing for longer administrative lead times?

SELECTED BIBLIOGRAPHY

Association of Highway Officials of the North Atlantic States

The Highway Administrator and His Problems—Panel Discussion
Proceedings, pp. 80-97 (1955)

Program planning, legislative relationships, minority pressure groups, and stability of tenure.

Better Roads

Better Roads Forum: Advance Programming and Planning
Better Roads, pp. 31-32, 34 (July 1954)

Many contributors believe that highway departments are handicapped in looking very far ahead. Rapidly changing conditions, lack of funds, and shortage of engineering personnel make it difficult to plan definitely for very far into the future. Long-range programs of 10-, 15-, or 20-year duration are in force in some States but they must be revised periodically to keep pace with changes in priorities and funds. Improvements in order of priority may be scheduled from one to five years in advance of preparation of detailed plans.

Bugge, W. A.

The Role of Public Relations in the Over-All Planning of the Highway System

Highway Research Abstracts, pp. 34-40 (February 1958)

To obtain public support for the highway program requires an understanding by people of highway program within various States.

Burch, James S.

Experiences in Advance Planning

Regional Planning and Research Conference, Nashville, Tennessee
(March 28, 1962)

Discussion of the organization and work of North Carolina's advance planning unit. Points out planning information to carry out its mission, such as detailed population projections, traffic generation factors, speeds, volumes, lanes, signals, capacities, medians, and cost-benefit ratios.

Burnes, Clinton H.

Highway Planning—Concepts and Goals

Presented at the U. S. Bureau of Public Roads Region 3 Highway Plan-

ning and Research Conference, Chapel Hill, North Carolina, March 25-27, 1963

Definition of planning; emphasis on advance planning in view of today's needs; principal elements involved.

Person, H. S.

Research and Planning as Functions of Administration and Management
Public Administration Review, p. 65 (Autumn 1940)

Planning, a necessity in public affairs, is dynamic; a continuing process involving endless adjustment. Research as used here in connection with planning refers to the purposeful research necessary for the problem at hand as distinguished from fundamental research. The differences in meaning of the terms direction, administration, and management are discussed.

University of Wisconsin, Bureau of Government, Extension Division
State Administrative Practice

A Course in Administrative Management for Wisconsin Departmental Executives (1950)

Lectures, readings, discussions, and questions concerning the job of the administrator, the problem of organization, techniques of direction and delegation, public relations, and public reporting.

Topic No. 5

THE PLANNING ORGANIZATION—ITS DUAL ROLE

AIM: To describe methods of organizing for planning, and the need for a continuing operation; to point out the advisory function and its relationship to top management, and to discuss the assembly and integration of planning information.

PRESENTATION

Point out that the administrative need for planning generally determines what organizational pattern finally will be chosen and most always dictates which of these types of organization will best serve the purpose: (1) utilize the existing organization (staff assignments); (2) create a permanent planning division or section; (3) utilize planning committees; or (4) combine two or more of these methods. Emphasize the staff nature of headquarters planning: (1) that planning tasks lead to planning programs anticipating probable courses of future action; (2) that it is a continuing process in which the tasks when achieved will accomplish the objective; (3) that it affords a means to an end by providing a detailed investigation of all matters essential to the success of the operation.

Develop the dual role or function of planning in highway administration: (1) an informational function, and (2) an advisory function. Illustrations and case studies will help to make points clear and concise. For example, Wisconsin's Director of Planning and Research (and there are other equally good examples) does more than fact gathering.

As a member of the top level administrative team he initiates, develops, recommends, and administers research and planning programs; but he also interprets and advises the Commission as to the consequence of specific plans.

QUESTIONS

- A carefully planned activity developed well in advance of its use is essential to effective administration. How can a planning division assist in studying and determining future action programs?
- What kind of organization is best to assure that planners have a complete and thorough understanding of administrative objectives?
- What sort of staff and line arrangements best provide supervision of planning tasks and/or programs to assure accuracy and timely completion of programs?
- How should responsible supervision be assigned to one individual when the separate planning tasks are spread among several staff persons?
- Is the assignment of coordinated plans to a committee the best way of maintaining a definite planning schedule?
- What should be the staff-line relationship of a planning division?
- In utilizing a combination of a planning committee, staff people in the existing organization, and/or a planning division, how can fixed relationships and responsibility be established?

SELECTED BIBLIOGRAPHY

Barker, F. N.

Highway Planning as an Aid to Administrative Officials in Revising or Extending the Highway Systems

American Association of State Highway Officials Proceedings, pp. 38-42 (1948)

Important facts and relationships established by highway planning survey data for use in the reorganization and extension of highway systems. Six specific uses are discussed.

Holmes, Edward H.

The Place of Planning in Highway Administration

Southeastern Association of State Highway Officials Proceedings, pp. 99-105 (1947)

The only way in which to foresee the future and its demands is by a study of the past and a continuous, accurate, and complete recording of the present.

Quigg, J. W.

Line-Staff Functional Relationships

Office Economist, pp. 6-7, 14 (March-April 1953)

Staff activity and assistance are discussed in detail. Contains charts defining staff functions, service functions, line functions, and control functions.

Willey, W. F.

Use of Highway Needs Studies for Legislative Purposes

Western Association of State Highway Officials Proceedings, pp. 154-158
(1953)

Legislatures or their committees concerned with highways are dependent on highway statistics. Such statistics must be complete but simplified, not too far-reaching or technical, and in a condition to be understood by those in a position to provide funds.

Topic No. 6

THE ROLE OF TOP MANAGEMENT

AIM: To emphasize the responsibility of top management for the development of administrative goals and guides and for the utilization of planning information in the formulation of both short- and long-range policies, plans and procedures to achieve its objectives.

PRESENTATION

Point out that planning is the basis from which management actions stem. Develop the role of top management in utilizing planning information for determining departmental objectives, policies, and procedures, strategies and options consistent with the broad range of problems facing today's highway management. Cite a few examples (*e.g.*, highway system classification, financial needs, expressway system studies, co-

operative city and State urban transportation studies) and any specialized planning information which might be brought to bear on the major highway department problems. Stress the importance of this role, because without top management's endorsement good planning is hard to come by. To get the job done, necessary policies, adequate organization, staff, and procedures are needed.

QUESTIONS

How can you get "planning" used by top management?

What is top management's role in this situation: "Sometimes we have not had the plans where we have had planning?"

Why is "management attitude" a major element of planning in administration?

Why has planning increasingly become an important consideration of top management in the operation of a highway department?

Why should the planning function be raised to the very top level in the organization? Why should it be staffed with a ranking officer or official?

SELECTED BIBLIOGRAPHY

Babcock, W. F.

Advance Planning Operations in the North Carolina State Highway Commission

Highway Research Board Proceedings, Vol. 40, pp. 71-78 (1961)

Stresses the importance of the planning function within the framework of the highway department. Sets forth in some detail how the North Carolina State Highway Department handles its advance planning functions.

Drucker, Peter F.

The Practice of Management

Harper and Brothers (1954)

A comprehensive presentation of the underlying philosophy of effective management with detailed development of its application. See pp. 284-285; 351-369.

International City Managers Association

Municipal Public Works Administration

Chicago. Third Edition (1946)

An approach to municipal problems from the point of view of top level administrators. Intended to help the administrator analyze his duties and responsibilities. Suggests approaches and methods that other administrators have proved by actual experience.

Koontz and O'Donnell

Principles of Management

New York. McGraw-Hill (1955)

Deals with the basic managerial functions of planning, organizing, staffing, directing, and controlling. See the Nature and Purpose of Planning, pp. 429-482.

Oklahoma State Highway Commission

Biennial Report (1961)

A report of the Oklahoma State Highway Commission covering the activities of the Oklahoma Department of Highways for the period January 1, 1959, through June 30, 1960. Functions and responsibilities of the planning division are outlined on pages 13 to 16.

Topic No. 7

THE FUTURE OF HIGHWAY PLANNING

AIM: A Look to the Future. To discuss the need for continuing and accelerated research; to consider the impact of new concepts and goals on research planning, to cite areas of emphasis; to suggest ways to improve planning functions and their application to emerging problems of transportation.

PRESENTATION

Emphasize that highways today involve a far greater capital cost, a far longer life, and greater social and economic impact than ever before. The work we do today will be judged by another generation in the light of different standards of living than heretofore.

The discussion should stress that now is the time we must develop comprehensive and over-all plans for the future. We must estimate transportation needs comprehensively. We must of necessity project our plans far into the future. Stress that the highway administrator today must relate transportation needs to population, production and consumption of goods and services, and probable land uses. He must determine the proportion of transportation needs which

must be fulfilled by using highways. He will need to evaluate the effect technological developments may have on transportation needs. Furthermore, he is finding more and more essential the need to develop and coordinate his highway plans with comprehensive general and over-all plans, particularly with those of municipalities.

To make sound judgments (to take actions that create new communities and a whole new way of life) requires, at the least, planning and research programs stressing road and street systems classification, physical and fiscal needs and related studies, augmented by a systems analysis process, which draws from the fields of geography, economics, sociology, mathematics, and city planning.

QUESTIONS

- What are the effects of technological developments influencing the choice between highway transportation and other modes?
- What shall be the division between public and private transportation and types of facilities?
- What design standards will be appropriate for each road system next year; in five years; ten years?
- What are the effects of economies of scale, the multiplier, and government economic policy?
- What are the effects of highways on the quality of life of people?
- To what extent should future needs be built into today's construction?
- To what extent do better roads affect the economies of small towns and cities (distressed area problem)?
- How can we rationalize rural-urban needs?
- How deeply involved and how rapidly should we move into the comprehensive planning field?
- How hard should the highway administrator push to obtain greater coordination between planning and research groups in State government, education, business, and foundation fields?
- How much obsolescence is there in plant and equipment which offsets the extent of commitment to the future?
- What will the economic, cultural, and social environment be in 1965, 1970, 1980, 2000, and what are the implications for our national transportation system *and* for our State systems?
- What can a graduate program offer in education of planning division employees?

SELECTED BIBLIOGRAPHY

Armstrong, Ellis L.

Government Controls on Federal-Aid Highway Projects

California Street and Highway Conference, University of California, Proceedings, pp. 25-29 (1962)

Controls to insure that contract provisions are met and that fair, equitable and competent contract administration is provided.

Carroll, Jr., J. Douglas

The Future of Metropolitan Transportation Planning and Research (Some characteristics of change in research and in planning)

World Traffic Engineering Conference, Proceedings, pp. 1-3 (Theme II) (1961)

Complex metropolitan communities cause changes in land development which in turn cause changes in transport requirements; and changes in the character and supply of transportation facilities bring about changes in patterns of land development.

Farrell, Fred B.

Joint City-County-State Planning on Highway Projects

Road School, Purdue University, Lafayette, Indiana, Proceedings, pp. 18-28 (1959)

This type of planning will serve the best interests of the public, use highway funds efficiently, and get the job done promptly.

Federal Reserve Bank of Cleveland

Changing Economic Profiles of Selected U. S. Cities
(1962)

Comparison of certain indicators of Cleveland's and Pittsburgh's development of the past decade with cities of comparable population in the East or Midwest on the basis of population, income, and relative impact of unemployment problems.

Fritts, Carl E.

Management and Long-Range Planning in Highway Affairs

California Street and Highway Conference, University of California, Proceedings, pp. 20-24 (1962)

Discusses need to re-evaluate legislative policies and rules and to evaluate continually the impact of administrative performance and engineering product on the effort to enhance American way of life.

Haas, W. L.

The Role of Planning in Highway Administration

Highway Research Board, Proceedings, Vol. 40, pp. 79-94 (1961)

Definition of the planning function and its proper place in administration, and an indication of the requisites of an organizational, conceptual, and operational nature for more effective highway planning.

Harrington, W. G.

Administrative Planning

County Engineers' Conference, Iowa State College of Agriculture and
Mechanic Arts, Ames, Iowa, Proceedings, 6 p. (1959)

A process of converting long-range calculated future conditions into a general plan that is further adjusted and developed to more precise administration as time begins to consume the plan.

Johnson, Pyke

Highway Research and the Market Place

Western Association of State Highway Officials, Proceedings, pp. 51-57 (1960)

Includes discussion of motor vehicle use and economic value of highways.

Schaub, James H.

The Need For a Graduate Program in Highway Planning

Highway Research Board Annual Meeting, January 1963
Highway Research News, 1963

A 1962 canvass of planning engineers regarding educational requirements of highway planners is analyzed, and the program of studies formulated at West Virginia University is discussed.

Smith, Wilbur and Associates

Future Highways and Urban Growth

New Haven (1961)

Study of Interstate highways and their impact on urban transportation and on general benefits to the National economy, land values, and public services.

**The Impact of Highways on Selected Public Services
(1960)**

Impact of roads on education; on public health, postal, library, police, and fire protection services; on location and planning of public service facilities.

Whitton, Rex M.

Highway Transportation Planning

California Street and Highway Conference, University of California, Proceedings, pp. 1-4 (1962)

Combination of transportation and land-use planning will to a large extent determine the future character of the city as well as small towns and rural areas.

Zettel, Richard M.

Ten Notes on Transportation and Economic Development

Paper presented at the Phoenix Convention of the American Society of Civil Engineers, Phoenix, Arizona (April 13, 1961)

Discussion of kinds of transportation, benefits, economic development, re-

relationships of transportation with land use, land values, efficiency, and full employment, transportation financing, and transportation planning.

Topic No. 8

SUMMARY OF THE CONFERENCE

AIM: Planning in Highway Administration—Important Considerations and Summary

PRESENTATION

Summary of Conference on Planning in Highway Administration.

THE NATIONAL ACADEMY OF SCIENCES—NATIONAL RESEARCH COUNCIL is a private, nonprofit organization of scientists, dedicated to the furtherance of science and to its use for the general welfare. The ACADEMY itself was established in 1863 under a congressional charter signed by President Lincoln. Empowered to provide for all activities appropriate to academies of science, it was also required by its charter to act as an adviser to the federal government in scientific matters. This provision accounts for the close ties that have always existed between the ACADEMY and the government, although the ACADEMY is not a governmental agency.

The NATIONAL RESEARCH COUNCIL was established by the ACADEMY in 1916, at the request of President Wilson, to enable scientists generally to associate their efforts with those of the limited membership of the ACADEMY in service to the nation, to society, and to science at home and abroad. Members of the NATIONAL RESEARCH COUNCIL receive their appointments from the president of the ACADEMY. They include representatives nominated by the major scientific and technical societies, representatives of the federal government, and a number of members at large. In addition, several thousand scientists and engineers take part in the activities of the research council through membership on its various boards and committees.

Receiving funds from both public and private sources, by contribution, grant, or contract, the ACADEMY and its RESEARCH COUNCIL thus work to stimulate research and its applications, to survey the broad possibilities of science, to promote effective utilization of the scientific and technical resources of the country, to serve the government, and to further the general interests of science.

The HIGHWAY RESEARCH BOARD was organized November 11, 1920, as an agency of the Division of Engineering and Industrial Research, one of the eight functional divisions of the NATIONAL RESEARCH COUNCIL. The BOARD is a cooperative organization of the highway technologists of America operating under the auspices of the ACADEMY-COUNCIL and with the support of the several highway departments, the Bureau of Public Roads, and many other organizations interested in the development of highway transportation. The purposes of the BOARD are to encourage research and to provide a national clearinghouse and correlation service for research activities and information on highway administration and technology.

HIGHWAY
RESEARCH
BOARD

SPECIAL
REPORTS
66-70,72

TE 7
N 3

