R. L. CARSTENS
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FEBRUARY 1971

Final Report
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ORGANIZATION AND COORDINATION OF THE HIGHWAY PLANNING FUNCTION IN IOWA

IOWA HIGHWAY RESEARCH BOARD PROJECT HR-150
CONDUCTED BY THE
ENGINEERING RESEARCH INSTITUTE
IOWA STATE UNIVERSITY
FOR THE
IOWA STATE HIGHWAY COMMISSION

Project 848-S

ENGINEERING RESEARCH INSTITUTE
IOWA STATE UNIVERSITY
AMES, IOWA 50010 USA

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16. Abstract

The Engineering Research Institute at Iowa State University studied the organization and procedures for highway planning by all levels of government and the coordination among various state agencies and local governments in Iowa. Study information was derived from interviews, questionnaires, and a review of the literature. Representatives from state transportation or highway organizations in all states responded to questionnaires. Additionally, selected upper and intermediate level personnel from highway organizations in seven other states were interviewed and a visit was made to one state transportation department. Within Iowa, employees were interviewed in the Highway Commission, Office for Planning and Programming, Development Commission, Commerce Commission, Conservation Commission, and Highway Patrol. Nearly 600 officials of local governments in Iowa contributed factual data and opinions through questionnaires and interviews. Private citizens and consultants also provided input to the investigation through their responses to questionnaires. Twelve recommendations to improve highway planning in Iowa were formulated as a result of this study.

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ABSTRACT

The Engineering Research Institute at Iowa State University studied the organization and procedures for highway planning by all levels of government and the coordination among various state agencies and local governments in Iowa. Study information was derived from interviews, questionnaires, and a review of the literature. Representatives from state transportation or highway organizations in all states responded to questionnaires. Additionally, selected upper and intermediate level personnel from highway organizations in seven other states were interviewed and a visit was made to one state transportation department. Within Iowa, employees were interviewed in the Highway Commission, Office for Planning and Programming, Development Commission, Commerce Commission, Conservation Commission, and Highway Patrol. Nearly 600 officials of local governments in Iowa contributed factual data and opinions through questionnaires and interviews. Private citizens and consultants also provided input to the investigation through their responses to questionnaires. Twelve recommendations to improve highway planning in Iowa were formulated as a result of this study. These are as follows:

Recommendations requiring attention from the Iowa General Assembly.

1. Formulate statewide transportation goals.
2. Program highway expenditures by counties for a five-year period.

Recommendation requiring attention from all state and local governmental agencies.

3. Broaden participation in highway planning by interested public groups.

Recommendation requiring attention by the Iowa State Highway Commission and affected municipalities.

4. Initiate urban transportation planning processes in all cities in Iowa having 10,000 population or more.

Recommendations requiring attention by the Iowa State Highway Commission.

5. Increase the traffic engineering capability of the Highway Commission.
6. Transfer location and pre-design to planning.
7. Transfer secondary roads plan review to secondary roads.
8. Upgrade the pay level of positions in the Division of Planning.
9. Upgrade the pay level of positions in the Secondary Roads Department.
10. Increase decision-making authority in district offices.
11. Provide suitable training for district secondary roads and urban engineers.
12. Improve the public image of the Highway Commission.

INTRODUCTION

The Research Problem

Highway planning in Iowa is in a state of transition. Concepts that are firmly entrenched and that are steeped in tradition are grudgingly giving way to emerging concepts that typify contemporary highway planning. Traditionally, the success of highway planning has been measured in terms such as miles of new construction, square yards of new pavement, or tons of steel. The sentiment is often expressed that the function of a highway organization is the construction and maintenance of safe, efficient, and economical highways.

There can be little argument with this sentiment. Yet, it is evident by attention to the daily news that the public and their elected representatives attach meanings to highway planning that cannot be measured in miles or square yards or tons. Our traditional viewpoint is now tempered with attention to social impact, environmental aspects, indirect economic effects, aesthetics, and other concerns of a complex modern society.

Public bodies are not usually able to react quickly to changes from established traditions. Hence, current concerns are still seeking their place in the sun in many highway organizations. On the one hand, requirements set forth by legislative bodies in recognition of social concerns are dictating a change in the long-established manner of planning highways. On the other hand, the traditional manner of doing business is firmly entrenched in most highway organizations. Hence, the basis for conflict is set.

This conflict has been manifested in several ways. One is the slowness with which highway organizations at all levels generally have responded to new federal programs. A case in point is the program for metropolitan area transportation planning initiated by the Federal-Aid Highway Act of 1962. The initial phases of these studies were to have been completed by July 1, 1965, according to the Act. Progress in Iowa, discussed more fully subsequently in this report, was very slow and none of the cities in Iowa achieved the continuing stage in their planning efforts until well after 1965. No new sources of funding for the community's participation were made available for this program. As a result, many of the financial resources committed by the communities to comprehensive transportation planning in Iowa's seven urbanized areas had to be made available from programs administered by the United States Department of Housing and Urban Development. Also, much of a new technology had to be developed and relatively unproven techniques had to be refined in order to carry out these planning efforts. Nor were these existing organizational structures at any level of government — federal, state, or local — capable of administering this program. Interest in this program was generally less than enthusiastic when it was still new, perhaps because expenditures for planning would detract from next year's results in new construction. Although these problems largely have been overcome, the difficulties in doing so constitute a strong case for carefully reviewing the framework within which subsequent new highway planning programs would be administered.

Another manifestation of the conflict between traditional and contemporary attitudes toward highway development is evidenced by the

relative pay rating of comparable professional positions within the Highway Commission. Positions associated with the design, construction, and maintenance of highways consistently enjoy higher status than those that bear the stigma of being planning related.

Objective of the Study

Simply stated, this study set out to investigate thoroughly the status of highway planning as it currently is carried out in Iowa. Of concern were the organizations involved, their procedures for highway planning, and the manner in which efforts were coordinated between levels of government. Work was based on the hypothesis that these organizations, procedures, and the extent of coordination could be improved.

The objective of the study was to identify areas within the framework of highway planning that appeared to be subject to improvement, to seek out means by which improvement could be effected, and to recommend such improvements.

Scope of the Study

The focus of this study included highway planning by all levels of government. Included are the functions of the several agencies of the state, as well as those of counties, cities and towns, and metropolitan and regional planning agencies.

However, in order to provide boundary conditions upon which to base conclusions, it was necessary to assume a governmental structure

within which recommendations could be implemented. Researchers have assumed the existing structure of government. For example the advantages or disadvantages that would accrue if the administrative form of Iowa's state highway organization were changed or if cities and counties were governed in some different manner were not investigated. Nor was the issue addressed about whether Iowa should or should not establish a Department of Transportation, a recommendation included in an earlier report[1,2]. Recommendations, however, could be implemented just as readily if there were reasonable modifications in governmental structure.

It should be noted that the study by its nature was oriented toward seeking out and investigating problems and inadequacies related to highway planning. Thus, this report tends to dwell upon the negative aspects of these activities and to direct scant attention toward the majority of highway-related functions that are being competently performed by dedicated people at all levels of government in Iowa. The reader is cautioned against formulating conclusions based upon reading only a part, but not all, of this report.

Research Approach

Factual input and pertinent opinions concerning highway planning were provided to this study from several sources. Included were a number of articles in the technical literature. Additional charts, reports, manuals and descriptive materials were furnished by many of the state highway organizations that were contacted. Literature cited in this report is listed in the last section and additional references used are listed in Appendix I.

Questionnaires were sent to all state highway organizations. These provided a great deal of useful factual information as well as some opinions. Additional questionnaires were sent to local government officials, private citizens and consulting engineers in Iowa. Although these requested answers that were primarily expressions of opinion, these responses afforded valuable insight in the identification of certain problem areas and contributed useful suggestions for solutions to these problems. Responses to all questionnaires are summarized in a subsequent section of this report and reported in detail in Appendices B through F.

Additionally, personal interviews were conducted with a number of people in Iowa in several state agencies, including the Iowa State Highway Commission, and in local agencies of government. In order to investigate more fully the operations related to highway planning in other states and to expand upon their questionnaire responses, visits were made to seven state highway organizations and to the Division of Planning of one State Department of Transportation. These visits afforded a basis for comparing highway planning activities in Iowa with those in other states. The list of persons interviewed is included as Appendix A.

A summary of the results of interviews with Iowa State Highway Commission personnel is included as Appendix G. Results of interviews with other persons are not separately summarized. The purpose of these other interviews was to broaden the researcher's understanding of highway planning organizations and procedures and to solicit the interviewee's opinions. These purposes were accomplished very satisfactorily.

Although many of the generalized results of these other interviews are alluded to elsewhere in this report, a compilation or summary has not been deemed appropriate.

SUMMARY OF QUESTIONNAIRE RESULTS

Much valuable and helpful information for this study was gathered through questionnaires. Two different questionnaires were directed to state highway organizations in each state plus those in the District of Columbia and Puerto Rico. Additional questionnaires were sent to 1280 local government officials, 858 private citizens, and 31 consulting engineering firms in Iowa. Details of the responses to these questionnaires are reported in Appendices B through F.

Questionnaires were disseminated by mail. About 40% of those directed to public officials and private citizens were completed in such form as to be usable for analysis and were returned. This limited return introduces the possibility of bias in the responses. A random process was used for selection of private citizen addressees, thus assuring some likelihood that those receiving questionnaires would be representative of the population sampled. There is less likelihood, however, that a lesser number of respondents will be truly representative of the population. For example, responses may have been more common from certain socio-economic groups than from others. It is also possible that responses to each questionnaire may have been more frequent from persons dissatisfied with highway planning than from those content with things the way they are. Such bias, if any exists, does not detract from the primary purpose of these questionnaires, namely to gain insight into the feelings and opinions regarding highway programs by officials and citizens of Iowa.

Questionnaires to State Highway Organizations

A question in each of these two questionnaires was directed toward a determination of the relative status of the planning and design functions in a state highway organization. Until fairly recently, most state highway organizations tended to interpret quite narrowly their responsibilities for the construction and maintenance of safe, efficient, and economical highways. Little attention, if any, was directed toward the planning effort associated with this endeavor. Responses to these questionnaires indicate that organizational structures currently in effect tend to place the planning function at the same level as the more traditional design function.

Several questions were directed toward a determination of the location within a state highway organization of primary responsibility for certain functions that might be in Planning. The responses, summarized in Appendices B and C, must be interpreted in light of the fact that participation in these functions often is not the sole responsibility of one subdivision but frequently presents a cooperative effort of two or more subdivisions.

Most states have a centralized state planning organization. However, its function in a majority of states is limited to a clearinghouse role which typically does not include significant coordination of planning among agencies.

Only one state reported that the transportation rate-making function was performed in the same state administrative agency that included the highway organization. Advantages of a state Department of Transportation would seem largely to be obviated unless it incorporated

transportation rate-making functions as well as divisions having responsibilities for the various transport modes.

State highway organizations commonly reported a rather indistinct relationship to transportation planning done by local units of government. Only a few states require periodic submission of capital improvements programs, as does Iowa. The terms, "cooperation, coordination, or consultation" typify this relationship in most states. Fewer than one fifth of the states have authority to alter local planning in regard to timing or concept of a project if it conflicts with statewide transportation planning.

Over one third of the states do not have a statewide transportation or highway plan. Half of the states reported having a plan only for highways. However, this includes several states, Iowa among them, having only a plan for a system of major freeways and expressways. Statewide transportation or highway plans infrequently are adopted by legislative action. Over 40% of the state highway organizations are not required to prepare and publish a capital improvements program covering state highways.

Although the extent of involvement in urban transportation planning for urbanized areas varies widely among the states, about 40% of state highway organizations are not performing this work with their own forces. Nearly 80% of the respondents felt that the extent of their organization's involvement was about right. Progress in this program was such that about three fourths of the planning processes in urbanized areas had reached the continuing phase as of the date of completing their questionnaire. As the term is used in this program, an urbanized

area has been defined as including at least one city of 50,000 inhabitants or more and includes the surrounding closely settled incorporated places and certain more densely populated contiguous unincorporated areas.

Progress in implementing the Traffic Operations Program to Improve Capacity and Safety (TOPICS) varies quite widely from state to state. The role of a majority of states in TOPICS is described as "active participation" although over one third limit their role to project approval and liaison. Most states permit participation in TOPICS by all cities with 5000 or more population, but a few limit this program to larger cities with over 50,000 population. The source of nonfederal funds for participation in this program differs among the states from 100% local funding to 100% state funds, as well as many variations for cost sharing. Virtually all states permit the use of TOPICS funds for design and for inspection of construction. Iowa is one of only a few states that do not allow these funds to be used for planning purposes.

Most responses stated that coordination of highway planning between the state highway organization and outside groups was largely effective. They also expressed opinions that the extent to which planning contributes to the basis for decision making was largely adequate in respect to the following:

- Establishment of project design criteria and level of service
- Route corridor location
- Route alignment selection
- Analyses of travel inventory data and traffic assignment.

Least satisfactory was the planning role in route alignment selection as one fourth of the highway planners indicated dissatisfaction with their input to this task.

Most state highway organizations indicated that they provided traffic engineering service to local government units. Most also indicated that they expected to expand their traffic engineering capabilities in the future. Nearly two thirds of the states carry out field accident surveillance under the supervision of traffic engineers. A majority of these states are using diagnostic teams for this purpose, generally at the state level. Three of the 16 national highway safety standards are administered by a majority of state highway organizations.

A number of professional disciplines other than engineers are commonly employed in the state highway planning function, statisticians, planners, economists, and sociologists being most numerous. Two thirds of the respondents felt that their organization was adequately structured to discharge the highway planning function properly. A majority felt that they were authorized a sufficient number of staff positions, but nearly 90% reported an insufficiency of adequately trained personnel. Comments indicated that personnel shortages were much more troublesome to planning than to most other subdivisions of a state highway organization.

Local Government Officials, Private Citizens, and Consultants

Responses from local government officials were stratified for analysis by the position, age, and sex of the respondent. Additionally, responses from county engineers were stratified by the respondent's

location in the state, about one third of the counties categorized as northern, another third as southern, and the remainder as central.

Private citizen responses were stratified by location, whether urban or rural, and by age and sex.

Significant differences according to these stratifications, where noted, are reported along with a detailed breakdown of responses in Appendices D and E.

One significant impression gained from these questionnaires is that a majority of all respondents feel that highway planning needs to give more consideration to local plans and goals and that it should be more responsive to the local viewpoint. Answers to several questions and many of the comments expressed this sentiment. Local officials generally felt that transportation planning in urbanized areas should be undertaken jointly by the Iowa State Highway Commission and local representatives.

Officials of local governments tended to favor highway planning by multidisciplinary teams whereas private citizens tended to feel that this function properly was performed by engineers.

A majority of official respondents stated that they were kept sufficiently informed of highway projects in their locality but believed that coordination between levels of government was inadequate or could be improved. Their comments indicated that more information from highway planners was especially desirable early in the planning process before decisions are made.

Local government officials were asked to express an opinion about the manner in which certain functions were carried out by the Iowa State Highway Commission. Most functions were considered to be adequately

performed, but a majority of the officials who expressed an opinion believed that the evaluation of local impact and meetings with local officials needed to be improved.

Highway Commission representatives were characterized as usually being available for consultation on local transportation problems when requested. However, public officials also expressed the viewpoint that these representatives do not usually have authority to make decisions themselves on matters of ordinary complexity. By about a two-to-one margin officials having an opinion expressed a desire for the Highway Commission to decentralize further by providing more staff and greater authority to district offices.

Somewhat more public officials opposed creation of a State Department of Transportation than favored this proposal. However, nearly one third expressed no opinion.

Although a majority of public officials expressing an opinion felt that various federal programs were adequately administered in Iowa, a substantial number expressed no opinion. Over half said that they were not kept sufficiently informed about federal programs affecting local highways, roads, and streets. Furthermore, nearly 40% of official respondents indicated dissatisfaction with the role of the Federal Highway Administration in Federal-aid highway programs. These responses all tend to indicate that the various federal highway programs are not generally understood and the objectives of these programs need to be more fully explained.

Only about 13% of the private citizens responding had attended a public hearing or open meeting to discuss a highway improvement.

However, over half had been directly affected by or involved with an improvement project, mostly by experiencing inconvenience from construction activities.

Citizens of Iowa tended generally to feel that the rate of spending for highway purposes was about right. However, substantially more believed that spending for highways should be increased than believed that too much was being spent, especially for urban streets. Considerable sentiment was expressed for expediting the construction of four-lane highways.

Private citizens evidenced concern for each of several aspects of highway impact and environmental effects of highways. Highway accident rates evinced the most intense concern among the items listed.

Replies from consulting engineering firms in Iowa indicated that most were comparatively small in size, that a number are qualified to carry out highway planning, and that they have been engaged in this type of work. They suggest that consultants from Iowa should be engaged more frequently for highway planning.

IOWA STATE HIGHWAY COMMISSION DIVISION OF PLANNING

The term planning connotes different things to different people. To some it implies a "pie-in-the-sky" type of activity from which meaningful results do not normally materialize. Others, of course, hold the opposite viewpoint.

In the context of this report, planning means the formulation of a course of action in somewhat generalized form. On the other hand, design, as distinct from planning, means the development of a detailed concept with precise locations and exact dimensions from the general course of action outlined by a plan.

Today's society is extremely complex. There are many conceivable uses and demands for the human and material resources that are available. Hence, it is essential before proceeding with any significant endeavor to consider alternative courses of action for employing these resources and to select from among them a preferred alternative. To do otherwise would almost surely lead to an unwarranted wasting of resources.

The task of providing highway services is not exceptional in this regard. Any enterprise that directly consumes resources measured at about $20 billion annually (nationally) demands careful planning of expenditures if taxpayers are to receive reasonable assurance that these expenditures are made in such a way as to best serve the public.

Goals and Objectives

Highway Commission

Governmental agencies are not in business to make "money" in the same sense that a private business's success is measured by the profit yardstick. Thus, managers in government must measure success in terms of the benefits gained from their program, in return for the public funds which have been entrusted to their use. Achievements must be evaluated in terms of established objectives.

The proponents of modern management techniques emphasize the importance of a clearly defined statement setting forth the organization's goals[3-7]. A recent publication by a management consultant[7] states in part: "The concept of the PPB System is that expenditures will (a) be directed toward defined objectives, and (b) be allocated to programs in relation to the effectiveness of the program in attainment of its objectives." The same article notes that even though planning-programming-budgeting systems (PPBS) are widely touted, they were in actuality not functioning in the highway field at that time. Perhaps part of the problem lies in the identification of goals and objectives and the inability to quantify them. The oversimplified statements of goals that appear in most annual reports (e.g., "The major responsibility of the Highway Commission is to plan, design, build, and maintain Iowa's primary road system.")[8] are not satisfactory for effective management analysis.

Iowa's Highway legislation provides little direction for modern day goals and objectives. Typical excerpts from Chapter 13, Code of Iowa, are as follows:

> "The state highway commission shall proceed to the improvement of the primary road system as rapidly as funds become available therefore, until the entire mileage of the primary road system is built to established grade, bridged, and surfaced with pavement or other surface suited to the traffic on such road. Improvements shall be made and carried out in such manner as to equalize the condition of the primary roads, as nearly as possible, in all sections of the state.... Before proceeding with the improvement of any primary road, the commission shall cause suitable surveys, plans, and specifications for said proposed work to be prepared and filed in its office, and the work shall be done in accordance therewith, except insofar as the same may be modified to meet unforeseen or better understood conditions, and no such modification shall be deemed an invalidating matter.... The state highway commission is hereby given authority, subject to the approval of the council, to construct, reconstruct, improve and maintain extensions of the primary road system within any city or town including the construction, reconstruction, and improvement of storm sewers and electrical traffic control devices reasonably incident and necessary thereto, provided that such improvement, exclusive of storm sewers, shall not exceed in width that of the primary road system and the amount of funds expended in any one year shall not exceed 35% of the primary road construction fund.... The phrase 'subject to approval of the council,' as it appears in this section, shall be construed as authorizing the council to consider said proposed improvements (such as sewers, water lines, sidewalks and other public improvements, and the establishment or re-establishment of street grades). The location of said primary road extensions shall be determined by the state highway commission."

In addition to lack of positive direction, a number of obsolete and confusing items have been retained in the Iowa Code. Under Section 307.5 Duties (of the State Highway Commission):

> "7. To incur no expense to the state by sending out road lecturers."

and Chapter 313.21 Improvements in Cities and Towns:

> "...such improvements exclusive of storm sewers, shall not exceed in width that of the primary road system..."

An indication of the changing emphasis given to the highway planning function, in relation to statewide goals, is immediately apparent on reading a portion of the introduction in recent legislation enacted by another state's General Assembly[9].

"It is hereby declared to be the policy of the Commonwealth of Pennsylvania that the general welfare, the economic growth, job mobility, convenience and the enjoyment of recreational, health and educational facilities, stability and well-being of the citizens of the Commonwealth of Pennsylvania can be better served by the creation of a State Department of Transportation to develop programs to assure adequate, safe and efficient transportation facilities and services at reasonable cost to the citizens of the Commonwealth of Pennsylvania and that the planning and development of such facilities and services shall be coordinated by the creation of such department with overall responsibility for balanced transportation policy, research, planning and development. The establishment of said department is necessary in the public interest to assure the coordinated effective administration of the transportation programs of the State Government, to facilitate the development and improvement of coordinated transportation service by local government and private enterprise to the maximum extent feasible; to encourage cooperation of Federal, State, and local governments, carriers, labor and other interested parties toward the achievement of providing needed facilities for movement of people and goods; to stimulate technological advances in transportation; to provide general leadership in the identification and solution of transportation problems; and to develop inter-modal transportation policies and programs to accomplish these objectives with full and appropriate consideration of the needs of the public, users, carriers, industry and labor."

A clearly defined statement of goals has recently been set forth by California's Division of Highways and is noted here as exemplifying the contemporary broad context of a highway organization's goals[6].

DIVISION OF HIGHWAYS GOALS (MISSION)

1. To plan the State Highway System as an integral part of a comprehensive State Transportation System such that it best serves the needs of all people and communities of the State of California.

2. TO HAVE

constructed, rebuilt, improved, maintained, and operated

A

safe, usable, efficient, comfortable, accessible, aesthetically pleasing, and compatible

STATE HIGHWAY SYSTEM FOR USE BY

commuter, shipper, tourist, shopper, vacationer, and other users

BASED ON

the public demand for moving people and goods by this mode of transportation.

(We do this with full consideration of enhancing the social, economic, and environmental welfare of all California citizens.)

3. To carry out in a cooperative and efficient manner highway related local assistance programs (Federal and State) for which we are the appropriate State unit to conduct such efforts. (In general we provide professional assistance and administer funds.)

4. To administer and provide general support for the programs required to work towards the above goals in such a manner that the greatest benefits are provided for the people of California with our limited resources.

Division of Planning

It is appropriate within the framework of this investigation to consider rather generally the organization and the appropriateness of staffing of the Division of Planning. However, in order to do so, it is first necessary to define the objectives of this Division. Without a clear understanding of its objectives, it would be inappropriate to formulate conclusions concerning organization and staffing. Each of the following sources contributed to the determination of objectives:

1. Organization of the Iowa State Highway Commission.
2. Statements of authority and responsibilities in the Management Manual of the Commission[10].
3. Various policies and procedures promulgated in the Policies and Procedures Manual of the Commission[11].

4. Observation of functions performed by the Commission.

5. Information from personal interviews of Commission personnel.

The principal objectives of the Division of Planning are summarized as follows:

1. To determine the amount and characteristics of travel taking place on all segments of the highway network in the State.
2. To maintain a comprehensive record of highway facilities, including all pertinent information on the physical and operational characteristics of each highway segment in the State.
3. To forecast highway travel volumes and patterns of distribution using historical data and forecasts of future land use, population distribution, and economic factors.
4. To allocate forecasted traffic volumes to existing and proposed highway systems.
5. To propose various alternative highway system plans and to estimate use and economic and other effects resulting from their adoption.
6. To recommend future highway plans and policies to include priority scheduling, classification of routes, financing, and legislation needed to best satisfy travel demands as well as the economic and social needs of the State.
7. To carry out designated operational functions to support the overall mission of the Highway Commission and to administer certain programs prescribed by the Governor, the State Legislature, or by federal requirements of which the following are typical:

a. Highway safety program.

b. Traffic engineering.

c. TOPICS program.

d. Public hearings.

e. Highway research.

f. Maps, charts, and graphic arts.

g. Urban area transportation plans.

h. Project scheduling.

i. Liaison and coordination with other components of the Highway Commission, other state agencies, and local agencies.

It should be pointed out that statewide transportation goals have not been formulated. Lacking these, the planning objectives of the Highway Commission in 6 above have tended to emphasize the satisfaction of travel demand. Travel demand can be quantified, forecast with some certainty, and affords a convenient handle to which highway planning may be attached, possibly at the expense of economic and social needs. It is apparent that statewide goals for economic development and social accomplishment can be furthered by a particular highway program. However, it does not necessarily follow that satisfaction of travel demand will yield the same program.

As an example of this problem, early development of a high-type highway in a Southern Iowa corridor as a stimulus for economic development has been recommended. Travel demand in this corridor is markedly less than in other corridors where development has been more rapid and where improvements are programmed. Programming has largely reflected demand, a logical consequence of the absence of officially

adopted goals that relate to social and economic factors. To overcome a possible inconsistency between desired goals and developed programs, it is essential that an agency having statewide responsibility formulate goals and state the extent to which highway programming ought to be directed toward their accomplishment. Without this guidance, the Highway Commission cannot effectively relate highway planning to the objective of best serving the State of Iowa. Goals should also be so formulated as to provide guidance in resolving potential conflicts between statewide highway travel needs and the perceived needs of local communities for their own development.

Organization

Organization Structure

The success of a business or institution is directly related to the effectiveness of its performance in efforts to accomplish its mission. A properly designed organization is a fundamental necessity in order to optimize its efforts toward achieving its goals. This thought is aptly stated by a highway management consultant[12],

> "Organization planning is perhaps the most important tool for the direction, control, and management of a highway department, or, for that matter, any other enterprise. Simply stated, it is the process of arranging in a formal manner the personnel of an organization into logical, related, and manageable units or groups of people or skills in a way that these groups can work together effectively in accomplishing the purposes of the organization."

The division of highway labor into departments according to function and the specialization of these groups with like interests has evolved into the present form as the state has matured and as its goals and objectives have changed. The original impetus when Iowa

had few surfaced roads was for an organization that could build roads and get Iowa "out of the mud." A strong construction department developed to meet this basic objective.

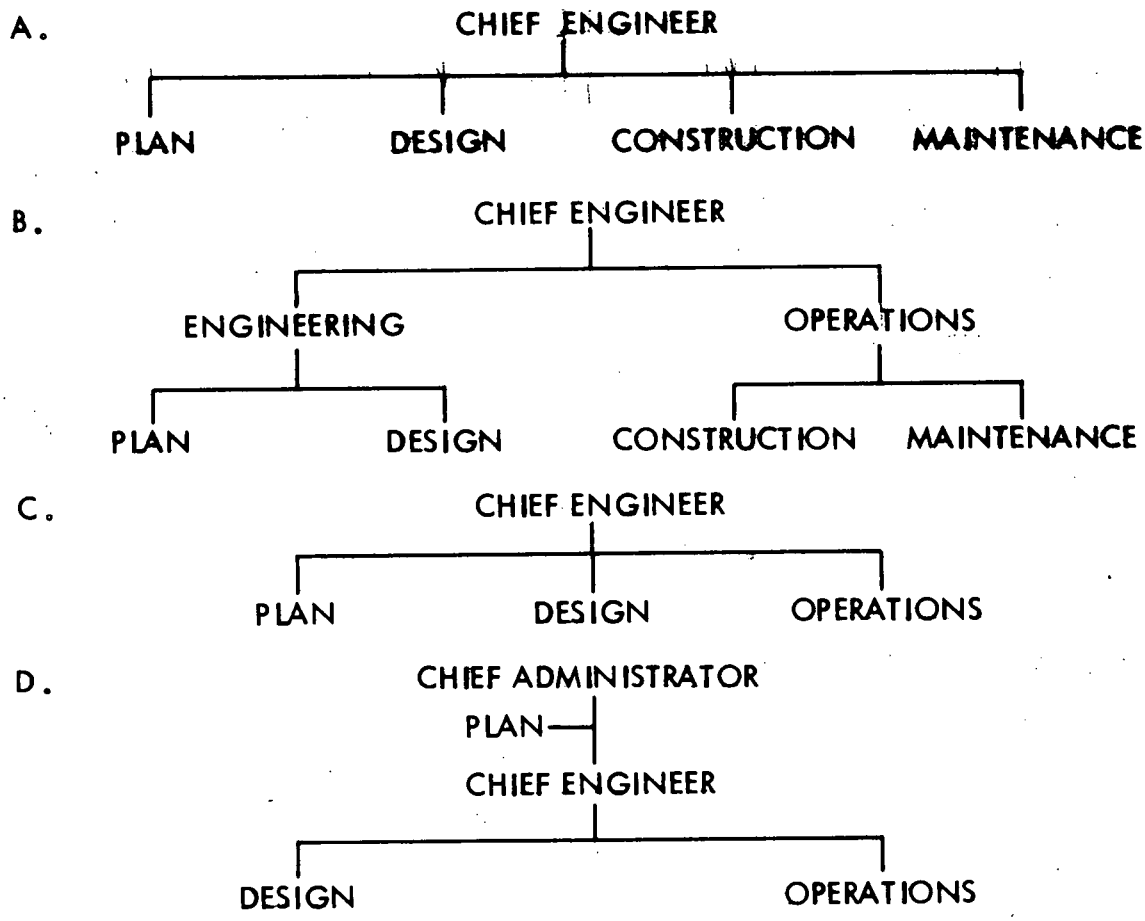
Federal aid requirements and increased administrative and legal responsibilities led to increasing staff functions in the way of support services. The rapid development of the motor vehicle and its technological improvements caused an increased concern for design aspects, and consequently the organizational emphasis has shifted to design. The mandate to provide facilities for extensive and efficient motor vehicle mobility, and later to incorporate safety goals, has continued this trend toward a dominant design group.

As our society becomes more affluent and looks anew at its inherited network of roads and streets, concern grows for amenities and for better interaction with the environment. Recognition of streets and highways as the principal means of surface transportation and as important factors in determining the style and quality of our life is influencing organizational emphasis throughout the United States. It is becoming more apparent that planning is a key activity from which all subsequent activities flow. In order to be effective, a highway organization must be dynamic and adjust to carry out its mission with the appropriate emphasis on planning in the organizational structure, rather than with undue preoccupation on details of design and construction. Note that the question, "What is the mission?" needs to be answered, both at the macro and micro stages of the organization.

In a study of the organizational charts of all state highway departments, it is apparent that each is uniquely different. Although

there is little difference in basic highway activities, the grouping together of activities, and their location within the organizational structure are different. State size, population, degree of urbanization, topography, degree of land development, personnel, political emphasis, goals, and many other factors have a bearing on the evolutionary process of organizational structure change. In order to obtain an overview of various organizational structures, the following basic highway functions were isolated within each state's organization chart: planning, design, construction, maintenance.

By observation, the following general type of organizational structures were predominate in the several state highway departments:



A number of variations can be noted to this over-simplified classification.

The reason for concern with any organizational structure is to evaluate its effectiveness in achieving goals and objectives that are dynamically changing. The ability of administrators to control and direct the efforts in the most efficient and effective manner has a relationship to the organizational structure available.

Figure 1 is the organization chart for Iowa as of December 1970. It is consistent with the nationwide trend to group into divisions the

IOWA STATE HIGHWAY COMMISSION
ORGANIZATION STRUCTURE

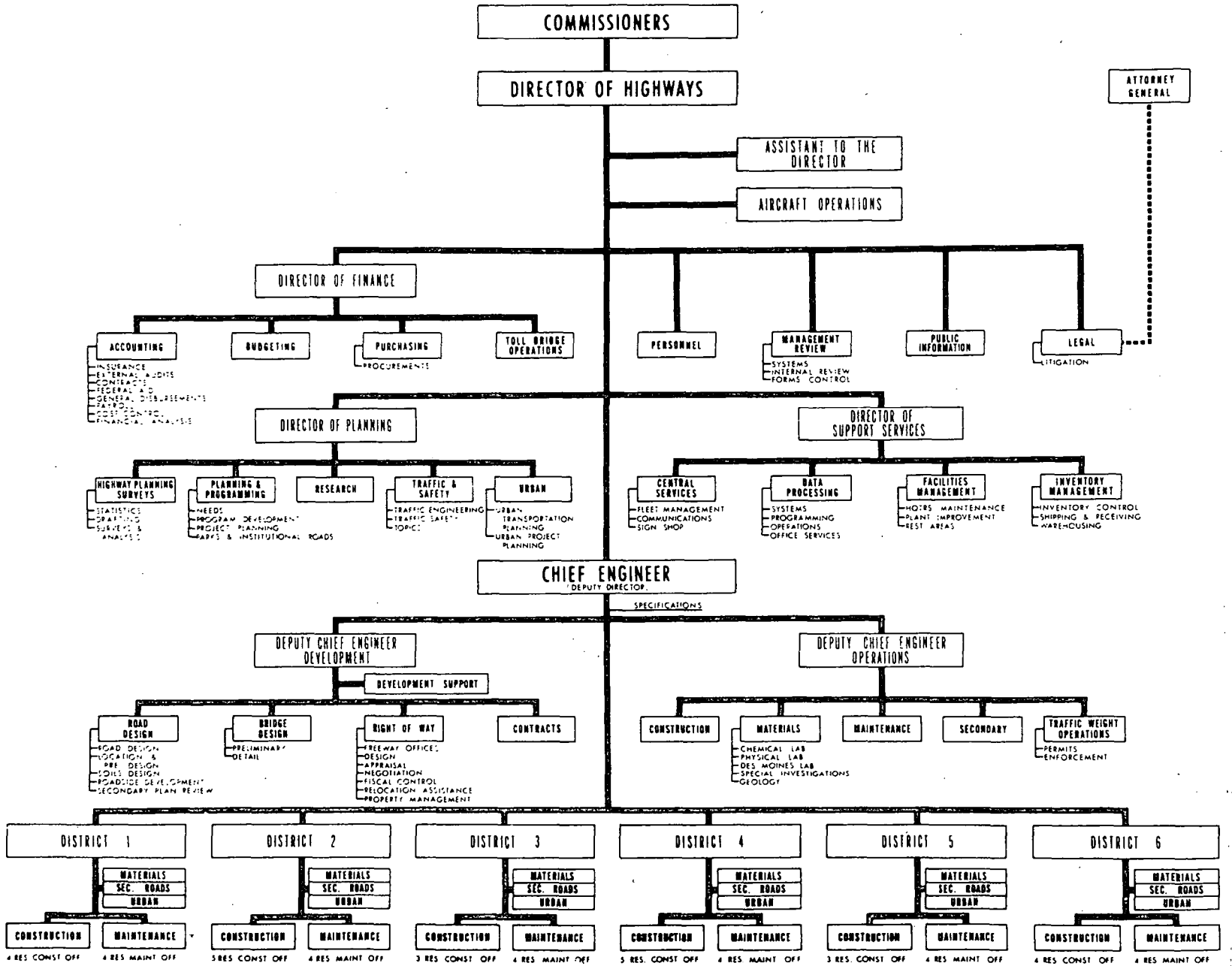


Fig. 1.

major functions of planning, development, and operations (with administrative and staff functions grouped separately). Also, the location of the Planning Division under the administrator rather than the Chief Engineer is consistent with a current trend where changes in organization are occurring[13-15].

Scope of Planning Activities

The scope of the functional responsibilities of the Division of Planning in Iowa is broader than that found in most other state highway organizations. Planning functions in only four other state highway organizations and the District of Columbia perform more of the tasks covered by question 4 in the questionnaire for Chief Highway Administrators and questions 9 and 10 in the questionnaire for Highway Planning Engineers than are the responsibility of the Division of Planning of the Iowa State Highway Commission. In the average state, 14.5 of the 28 functions listed in these questions are performed by Planning, 7.0 by Design, and 6.5 in other subdivisions of a state highway organization. The breakdown in Iowa is 19 in Planning, seven plus some responsibility for access control in Design, and one plus in other Departments.

Functions carried out by the Division of Planning in Iowa that are least likely to be planning functions in other states are listed below with the least likely listed first:

- Conducting design hearing
- Traffic engineering
- Project scheduling
- Conducting location hearing

- Safety and accident record analysis
- Research

Activities found in Planning in some other state highway organizations (fewer than half in all cases) that are not the responsibility of the Division of Planning in Iowa are listed below, with the most likely to occur in Planning listed first:

- Interchange type and location
- Route alignment selection
- Access control
- Detailed cost study
- Selection of project design standards

A summary of the responses to these questionnaires is included as Appendices B and C.

Staffing

Information derived from interviews and questionnaires as part of this study indicates that there is little argument with the essentiality of highway planning. There is disagreement, however, on the matter of scale. Many of the respondents to questionnaires and several of those interviewed feel that the magnitude and importance of highway planning is being overemphasized. They speak of the danger of the tail (planning and other staff functions) wagging the dog (construction and maintenance of highway facilities and the essential developmental function associated therewith). To justify such fear, several persons cited the number of personnel assigned to the Division of Planning and the rate of growth of this number.

General Level of Staffing

The number of employees assigned to the Division of Planning has increased gradually during the past few years. Virtually all of this growth has resulted directly from requirements imposed by federal legislation. Highway planning in itself was largely initiated by a federal requirement in 1934 for highway planning surveys. Congress at that time authorized use of 1.5% of the annual federal-aid funds apportioned to the states for this purpose (pp. 12-13 of Ref. 16). Essentially, highway planning surveys plus a modicum of engineering and economic investigation (research) was the work done by the planning divisions of state highway departments until the 1950's. This required a small permanent staff plus a variable but sometimes quite large number of temporary employees to carry out field work.

Other changes occurred slowly primarily as a result of additional requirements imposed upon the states by new federal legislation. A Secondary Roads Department (not currently a part of the Division of Planning) was established in 1953 (p. 100 of Ref. 17) and an Urban Department in 1959 (p. 22 of Ref. 18, 1960). An extremely significant additional responsibility resulted from a law passed by the 58th General Assembly of Iowa in 1959 that required the Iowa State Highway Commission to establish and administer a long-range road construction program (p. 11 of Ref. 18, 1960). Other responsibilities were assigned to the Division of Planning as a result of federal requirements for urbanized area transportation studies, expanded programs in project planning and public hearings, highway safety programs, TOPICS, and increased attention to environmental concerns. The Highway Commission reacted

to these programs by adding the required personnel to the staff of the Division of Planning. Iowa anticipated at least one federal requirement by initiating a series of needs studies commencing in 1960 and by the formation in 1966 of a Needs Study Section within the Division of Planning.

It can be seen that most of the expansion of Planning staff has been in direct response to stimuli afforded by federal requirements. Frequently, this response has been tardy. This was the case, for example, with urbanized area transportation planning, a requirement contained in the Federal Aid Highway Act of 1962. The seven urbanized areas in Iowa were permitted to make their way largely on their own as the Highway Commission lacked sufficient personnel to be of meaningful assistance to them during the first several years after 1962. As a result, Iowa will be among the last states to complete the initial phase of this program. The TOPICS program was also somewhat slow in getting underway in Iowa due to a shortage of staff. This staff shortage was occasioned largely by the inability of the Highway Commission to secure timely approval for new staff positions required to administer this program.

Table 1 summarizes the changes that have taken place in the numbers of permanent employees in the principal subdivisions of the Iowa State Highway Commission during the period Sept. 30, 1966 to Sept. 30, 1970. The form in which personnel totals are reported was changed between 1965 and 1966 so that the figures reported before 1965 cannot meaningfully be compared with those after that date. However, on the basis of reported figures, the permanent staff of the Division of Planning

Table 1. Permanent employees reported as of Sept. 30.

	1966	1967	Change from 1966	1968	Change from 1966	1969	Change from 1966	1970	Change from 1966
Development	434	450	+ 16	454	+ 20	434	0	447	+ 13
Operations	2731	2794	+ 63	2791	+ 60	2836	+ 105	2994	+ 263
Planning	114	104	- 10	114	0	109	- 5	142	+ 28
Administration, finance, and support services	334	350	+ 16	411	+ 77	385	+ 51	374	+ 40
Total	3613	3698	+ 85	3770	+ 157	3764	+ 151	3957	+ 344

varied in the range of 80 to 90 persons in the period 1958 through 1965[18]. Temporary employees are not included in Table 1 since these fluctuate widely. Typically, the number of temporary employees on the Planning staff will vary from over 200 in midsummer to 10 or fewer in the winter.

Some rather substantial changes in the Highway Commission organization occurred in 1966 and 1967. For example, the Secondary Roads Department and Traffic Weight Officers were transferred from the Division of Planning to the Operations Division and the Needs Study Section was established in the Division of Planning. Although the effect of these changes is difficult to identify in summary totals such as those in Table 1, they reflect the necessity for modifications in any organization's structure when faced with changes in its role and mission.

As indicated in Table 1, permanent employees of the Highway Commission increased by 344 from Sept. 30, 1966 to Sept. 30, 1970. Employees in the Division of Planning increased by 28 in this period, 8.1% of

the total increase[19,20]. This increase in planning staff seems quite nominal in view of the vast expansion in responsibility.

Effects of the State Merit Employment System

Requirements imposed by the State Merit Employment System are a major consideration relating to Highway Commission staffing, according to the viewpoint of the administrators and supervisors contacted. The ability of the Highway Commission to react quickly to a need is strongly affected by restrictions inherent in the Merit System. Of principal concern to management is the inability to communicate their needs and requirements effectively to the decision makers in the Merit Employment Department. A secondary concern is for the extreme amount of time required to accomplish an action through the Merit System. Creating positions, monitoring and changing the relative status of positions, and filling positions currently is handicapped by these problems.

Traffic Engineering

Much the most striking difference between the organization of the Iowa State Highway Commission and that of other state highway organizations is the emphasis directed toward traffic engineering. Averages are not particularly meaningful in this regard since some of the more populous states may have several hundred traffic engineers and traffic technicians. However, the following generalizations may be made from the survey data for 15 states most nearly comparable to Iowa in population and area:

- Other states average roughly five times as many traffic engineers and traffic technicians as Iowa.

- Over half of these states apparently have traffic engineers assigned to the district level.

The Iowa State Highway Commission is seriously deficient in the authorized numbers of traffic engineers and traffic technicians. Traffic engineering should provide fundamental input into intersection and interchange location, type, and configuration as well as many other decisions of project concept. The Traffic and Safety Department should analyze all designs from a traffic engineering standpoint in the interest of highway safety and operational efficiency. It should play an active role in the analysis of high-accident locations with a view toward formulating and promulgating spot improvements. The number of traffic engineers authorized in this Department is inadequate to accomplish these functions in an acceptable manner.

Most importantly, the authors strongly recommend that a traffic engineer and a technician be assigned to each District. Six of the eight states visited have District Traffic Engineers. The extent of traffic accident reduction in these states, and others, that can be attributed to an aggressive traffic engineering function has been particularly impressive.

Typically, the duties and responsibilities of a District Traffic Engineer included the following:

- Inspection of traffic signs and markings on the state primary system
- Design of signal timing at signalized primary intersections
- Diagnosis of serious highway accidents
- Recommendations for spot improvements for accident prevention

- Studies and recommendations for changes in speed zoning
- Field inspection of construction signing
- Field inspection of completed primary construction projects
- Advising, upon request, municipal and county officials on traffic engineering matters.

Although all of the above functions are currently being performed to some extent by the Traffic and Safety Department of the Division of Planning, some are also being done in part by design or maintenance forces. A substantially enlarged staff of traffic engineers with clearly defined responsibilities for these functions is essential if they are to be carried out effectively. Since no counties and only three cities in Iowa currently (December 1970) have traffic engineer positions filled, there is an especially acute need for traffic engineering at the local level in the state.

TOPICS

On the other hand, the number of persons authorized within the Traffic and Safety Department for the Traffic Operations Program to Increase Capacity and Safety (TOPICS) is substantially larger than that found in the other state highway organizations visited. TOPICS typically is being handled in these states by two men, frequently on a less than full-time basis. We believe that after this program has been fully implemented, and Iowa has now moved further in this direction than most states, it may be possible to shift some of the seven persons assigned to this work in Iowa to other essential traffic engineering responsibilities.

Other Programs

Authorized manpower levels of other components of the Division of Planning appear to be adequate to carry out the responsibilities currently assigned.

However, it must be noted in this regard that the number of personnel authorized for the Urban Department[23] and the number assigned (10 as of Dec. 31, 1970) are so disparate as to disadvantage seriously the performance of this Department. The deficiency of staff in this area of effort may be attributed in part to a nationwide shortage of transportation planners. This shortage was noted by most state highway organizations in their responses to our questionnaires.

The shortage in Iowa has been compounded further, however, by inexplicable differences that have existed in the past between the pay grades of Transportation Planners and comparable engineering positions with the Highway Commission. An engineer who might have been well qualified to perform transportation planning duties in the Urban Department obviously preferred to remain in another position that might involve less challenge and less responsibility if the other position were at a higher rating and pay grade. Of course, persons with backgrounds in professions other than engineering who have unique capabilities and experience can also perform satisfactorily as transportation planners, but most of those being educated to do so in universities today are enrolled in engineering curricula.

Therefore, it is recommended that the pay grades of positions in the Urban Department be maintained at such levels as are appropriate to make them competitive with positions elsewhere in the organization

that require comparable levels of aptitude, experience, and educational attainment.

In fact, the same problem of inconsistencies in the relative status for various positions arose frequently in interviews with Highway Commission personnel. A recent "downgrading" of various Division of Planning departments, the Secondary Roads Department, and the District Engineers was mentioned quite often. It was indicated that the ability to participate effectively in routine actions within the informal organization of the Commission was impaired for this reason. Perhaps of more concern was the inability to obtain and retain qualified staff for specialized positions because of the inconsistency in relative classification.

Figure 2 was developed to evaluate the relative status of a position. The figure portrays this situation as of June 30, 1970. The situation is, of course, constantly changing as inconsistencies become apparent. Pay classification was selected as a yardstick measuring the status, power, authority, and competitiveness of various positions. In spite of its crudeness, Fig. 2 is useful in evaluating any inconsistencies in status as they might affect the bargaining table of daily activities.

An examination of department head positions indicates the "old-line" functions of design, construction, materials, maintenance, and right-of-way enjoy a 35 pay rating. Remaining functions, which could be considered all planning, except the Traffic Weight Officer, are all 33 pay ratings. The District Engineer position holds a 34 pay rating. Note that a special 35 position, Deputy Director of Planning, exists with no counterpart in Development or Operations Divisions.

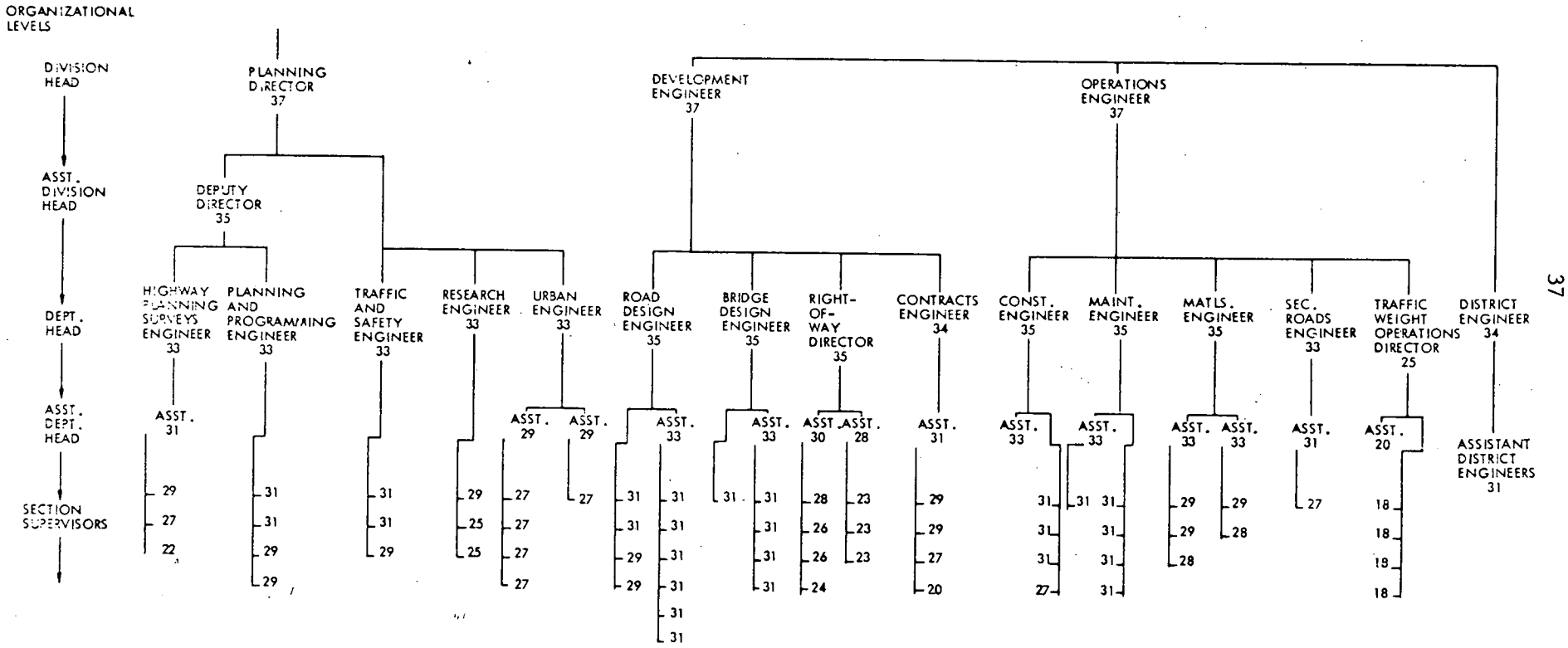


Fig. 2. Organizational chart with hierarchical ranking by position and pay range classification (June 30, 1970).

Assistant department head positions exist with a 33 pay rating classification in Design, Construction, Maintenance, and Materials (this is the same status as planning department heads), and as a 29 position in Urban and a 31 position in Highway Planning Surveys.

The Section Supervisor positions range generally from 27 to 31 pay ratings in each division. However, a preponderance of the positions in Design, Construction, and Maintenance are 31 pay rating whereas this is the exception in the other divisions.

Obviously this approach to evaluation leaves much to be desired, with little insight into the relative importance of the positions, little insight into the degree of effectiveness in attaining organizational objectives, little insight into responsibility, nor number of employees, nor budgeted operating funds, nor experience. But it does lend credence to the allegations of impotency from a competitive standpoint and consequently contributes to a feeling of ineffectiveness which pervades the planning function in the Highway Commission.

Functioning

One of the most profound deficiencies associated with highway planning in Iowa is the absence of statewide transportation goals and objectives. Many states have formulated these to provide direction for the planning of highways and other modes of transportation. Without such guidelines, highway planning by all levels of government is forced needlessly to invite criticism. Vocal complaints by various public officials and critical comments by the news media generally are directed at the objectives of highway planning, not to its methodology. Obviously,

there would not be unanimous agreement with any set of goals or objectives. But their formulation and adoption by the Legislature, for example, could properly be interpreted as a manifestation of a majority viewpoint of the citizenry and should lay to rest the type of criticism that has been most prevalent. It is apparent that such goals and objectives would need to be consistent with current federal policies. They would therefore tend strongly to be consistent with the direction of recent changes in highway planning practice.

Comparison in manner of performance among state highway organizations is difficult at best. Nevertheless, researchers have attempted to determine in general how the functions of the Division of Planning of the Iowa State Highway Commission are being carried out in comparison with other states. Bases for doing this were obtained in part from responses to questionnaires, in part from impressions gathered during visits to other states, and in part through reading of the literature in this field.

With a few notable exceptions, state legislatures have not pioneered in enacting changes in past practices that characterize highway planning today. The United States Congress and the Federal Highway Administration have largely assumed this role. Thus, as could be anticipated, there are striking similarities in the scope and nature of highway planning activities from state to state and in the detailed methodology for discharging these responsibilities. This reflects the unifying influence of federal requirements imposed equally upon all states.

Although organizational patterns for discharging the planning function vary, the specific tasks and requirements almost without exception are set forth to the states, usually in meticulous detail. Thus, the effectiveness of highway planning generally cannot be measured by what a state is doing. Each state is required by federal law and regulations to do very much the same thing in very much the same manner as every other state. A better measure is how readily a state is able to meet, or preferably to anticipate, the next set of federal requirements. Highway planning in a few states has often operated during the past several years at a level of near panic as one crash program follows another crash program in reaction to the most recent Federal-Aid Highway Act. In most respects, Iowa does not suffer by comparison with other states.

Project Development and Planning

The manner in which project development and planning is carried out tends to be quite uniform from state to state. This, of course, reflects federal concern for environmental and social considerations in highway planning. Adherence to federally imposed standards and methodology is mandatory on the part of the states for federal-aid projects. However, the authors believe that project planning and development in Iowa is done more effectively and with more attention to and concern with the indirect effects of highways than is the case in most other states with comparable financial capabilities.

Needs Studies

The availability of needs study data and the continual monitoring of this input for programming is substantially more advanced in Iowa than in most other states. For this reason, Iowa is in a significantly better position to satisfy recent federal directives to estimate future highway needs than is typically the case. In some other states visited, this requirement had necessitated a crash program of considerable impact on day-to-day operations.

Programming

Iowa has developed a substantially more elaborate and detailed program of primary highway construction than is generally the case in other states. Many states do not prepare and publish a program of this type. Such programs as they have are circulated only in-house or are disseminated quite narrowly. Programs in most other states that do prepare and publish a formal construction program are not likely to be as widely disseminated or publicized as in Iowa.

TOPICS

In terms of the commitment of funds, the numbers of areawide plans approved, and the numbers of Type II systems approved, Iowa had advanced its TOPICS program further than the average state.

Urban Transportation Planning

Urban transportation planning in Iowa is somewhat less advanced than in most other states. Nationwide, about 75% of all urbanized areas with populations of 50,000 or more have completed the initial phases of their transportation planning processes and are now in the

continuing phase. This stage of planning was supposed to have been reached by July 1, 1965, according to requirements of the Federal-Aid Highway Act of 1962. Four of the seven urbanized areas in Iowa had not yet commenced their continuing phase five years after this deadline.

Most state highway organizations have been in a position to provide significantly more guidance and leadership to local planning agencies than has been the case in Iowa. Largely upon the initiative of the state highway organization, many states have also extended participation in comprehensive transportation planning quite extensively among cities with populations of less than 50,000. One state, for example, has completed a transportation plan for all cities with populations above 3500.

Iowa's current efforts are directed toward initiation of a transportation planning process in cities with populations of over 25,000. This effort has been well done but results have been achieved very slowly as a result of manpower shortages in the Urban Development. Consequently, most highway construction projects in urban areas with populations under 50,000 are not in conformity with a comprehensive transportation plan because there is no such plan. The potential for wasteful and shortsighted expenditures of urban highway funds is substantial.

Traffic Engineering and Accident Record Analysis

Iowa's program is decidedly deficient in the areas of traffic engineering and accident record analysis. This situation is enigmatic in view of the current concern with highway accident causation and prevention. As discussed more fully above, the provision of additional

traffic engineering capability within the Highway Commission organization is believed essential if Iowa is to effect significant improvement in the incidence and seriousness of traffic accidents.

The Office for Planning and Programming has delegated to the Highway Commission primary responsibility for two highway safety standards, as follows:

12. Highway design, construction, and maintenance

13. Traffic control devices

Additionally, the Highway Commission shares a secondary responsibility with the Department of Public Safety (the primary agency) in the case of the following standards:

9. Identification and surveillance of accident locations

10. Traffic records

14. Pedestrian control devices

15. Police traffic services

16. Debris hazard control and clean-up

A new position of Safety Project Coordinator has been placed in the Department of Traffic and Safety of the Highway Commission to coordinate certain state safety projects, principally those promulgated under standards 12 and 13. Since initial coding of accident records is done by the Department of Public Safety and because of limitations in the availability of qualified traffic engineers, the Highway Commission's role in identification and surveillance of accident locations is not as effective as that found in the state highway organization in many other states.

OTHER STATE AGENCIES

Introduction

A number of state agencies are concerned with highway planning in Iowa. Some on a day-to-day routine basis, and others only infrequently and indirectly. Although the basic activity of highway planning, and the impetus, is an intrinsic Highway Commission function, an extrinsic function must be to recognize and to utilize the resources of other state agencies. The need for coordination exists, not just in the disseminating of information and reporting of decisions made, but in achieving cooperative participative creative input from all concerned.

Recognition of the need for intergovernmental coordination is exemplified in Federal Law (90-577) which states in part:

> "All view points — national, regional, state, and local — shall, to the extent possible, be fully considered and taken into account in planning Federal or federal assisted development programs and projects...
> ...Insofar as possible, systematic planning required by individual Federal programs (such as highway construction, urban renewal, and open space) shall be coordinated with and, to the extent authorized by law, made part of comprehensive local and areawide development planning."

As a result of this law, the Bureau of the Budget prescribed rules and regulations for administration. The Department of Transportation's Instructional Memorandum 50-1-70 establishes the guidelines for federal aid to highways projects to insure "sufficient time for meaningful notification and coordination among affected agencies." Compliance with IM 50-1-70 requires the notification of a state clearinghouse of intent to apply for federal aid, and other pertinent information at various stages of development.

However, it is important to note that the requirement for the flow of information to the clearinghouse does not insure participation by all agencies concerned. In fact, it does not even insure notification from the clearinghouse to the concerned department or individual within a particular agency.

The Iowa legislators recognized the need for coordination between governmental agencies when they caused Chapter 28E of the Iowa Code to be enacted. The purpose is "to permit state and local governments in Iowa to make efficient use of their powers by enabling them to provide joint services and facilities with other agencies and to cooperate in other ways of mutual advantage." The organizational and administrative procedures are established in this Act.

Examples of interagency achievements in the highway planning field have been noted in the Department of Transportation publication, "Highway Joint Development and Multiple Use."[21] Illustrations from each of the 50 states are noted and discussed, exemplifying the contemporary broad concept of highway interaction. Table 2 tabulates the projects reported by the State Highway Commission, and Fig. 3 illustrates the coordination aspect.

Table 2. Joint development examples in Iowa.

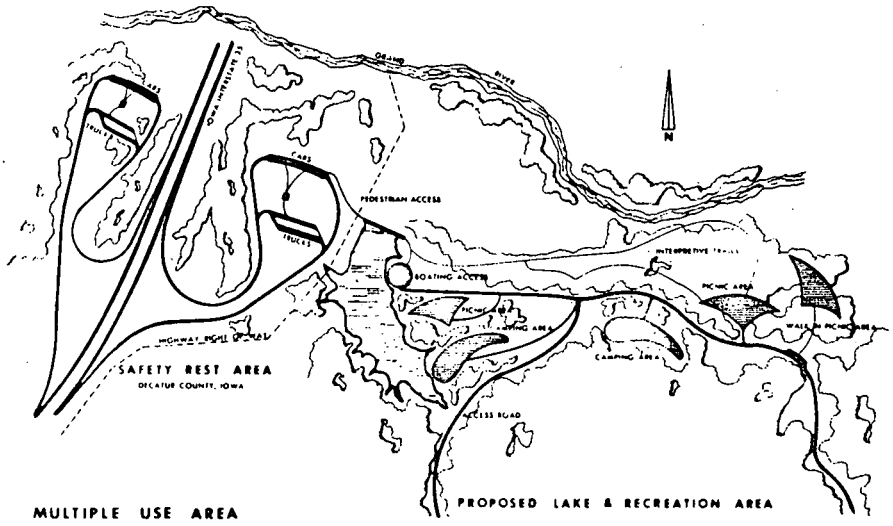
IOWA

Chairman
Iowa State Highway Commission
State Highway Commission Building
Lincoln Way, Ames, Iowa 50010

Division Engineer
Bureau of Public Roads
2nd Floor, Post Office Building
6th and Kellogg Street
Post Office Box 152
Ames, Iowa 50010

Location	Project Designation	Description	Status
1. Sioux City	I-29-8(1)151	Marina and public park adjacent to highway	Complete
2. (Various areas)		Crop production and harvesting on right-of-way adjacent to highway	In operation
3. Council Bluffs	U-192-1	Storage by light industry and access under highway	Proposed
4. Cedar Rapids	U-1150(1), U-151-1(8)	Parking under highway	Proposed
5. Davenport	I-280	Combined reservoir embankment and base for roadway	Proposed
6. Bettendorf	I-74-1(3)0	Parking and/or commercial uses	Proposed
7. Bettendorf	I-74-1(3)0	Re-establishment of park	Study underway
8. Decatur County	I-35-1(20)5	Combination rest area and County Park	Proposed
9. Monona County	I-29-6(2)114	Conservation area, outdoor classroom, outdoor recreation at Whiting Interchange	Complete (to be expanded)
10. Ankeny	I-35-4(1)94	Combination rest area and campground operation by State Conservation Commission	Rest area complete
11. Sioux City	U-20-1(1)	Stockyard operation under highway bridge	Complete
12. Sioux City	U-20-1(1)	Parking under highway	Complete

iowa



These two rest areas will complement the proposed development by the State Conservation Commission adjacent to the highway right-of-way. Facilities and activities proposed include: camping, picnicking, fishing, boating, ice skating, sledding, hiking and nature trails. The site may also be used for school classes in botany, forestry, zoology and agronomy.

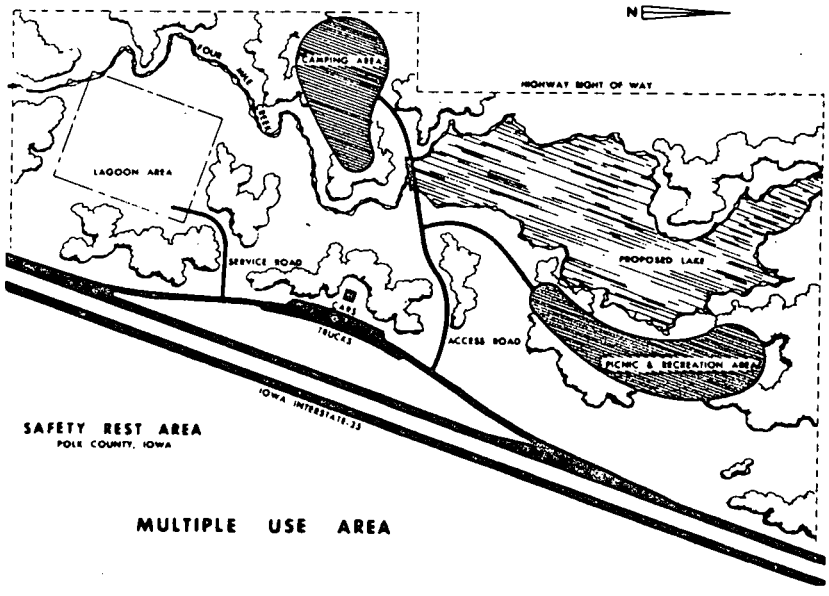


Fig. 3. Joint development examples in Iowa.

Office for Planning and Programming

The Office for Planning and Programming has three different roles relating to highway planning. First, it serves as a clearinghouse for all federal-aid projects to assure dissemination of information relative to planning efforts among the several concerned state agencies as well as any local governments that may be affected. This Office also includes the Governor's Representative responsible for administering state programs under the National Highway Safety Act. A third role involves troubleshooting or special studies at the direction of the Governor to focus on specific problems of current import. Commissioning of the Baxter-McDonald study on transportation in Iowa[1,2] is an example of this third responsibility.

The clearinghouse function offers a great deal of potential for effective coordination of highway planning. Each federal-aid highway project must receive clearance through this mechanism before it is approved for federal funding. A project received for clearance is submitted to other state agencies and to the Division of Local Affairs of the Office for Planning and Programming. The Division of Local Affairs decides which local agencies will be concerned and notifies them accordingly.

The various agencies are responsible for investigating a proposed project for conformity with their planning and to recommend its approval in the absence of conflicts. Ideally, of course, no conflicts should exist at this stage of a project if the essential coordination of efforts had been effected throughout the planning process.

A clearinghouse procedure potentially affords a tool for assuring conformity with statewide objectives for development. In the absence of formalized statewide objectives, however, it is serving principally as a device whereby a final check is made that there are no blatant conflicts between federal-aid highway projects and the programs of other agencies. It is tending to induce a greater amount of coordination between agencies, but a clearinghouse procedure does not assure such coordination.

Administration of federal highway safety programs in Iowa is a cooperative effort by the Office for Planning and Programming, the Department of Public Safety, the Highway Commission, and several other state agencies. Primary responsibility, including coordination and control of funding, rests with the Office for Planning and Programming whereas implementation is handled largely by the other state agencies. The Highway Commission has been assigned primary responsibility for implementation of two highway safety standards and secondary responsibility for five others.

Development Commission

This agency has a number of people engaged in activities that are very closely related to highway transportation. A fundamental duty of the IDC is to encourage, promote, and aid the expansion of existing industry and the establishment of new industry in Iowa. Another division is concerned with encouraging the traveling public to visit Iowa in a tourism program. The Planning Division has the responsibility of administering Federal Aid funds, and serving as a

coordinator in local community comprehensive planning programs. In order to carry out these functions, the Development Commission has been given certain powers and responsibilities by legislation. A portion of Chapter 28 of the Code of Iowa reads:

> "...the commission shall cooperate with boards, commissions, agencies and institutions of this state, and shall have access to any and all records, data, information, and statistics of such other boards, commissions, agencies and institutions of this state..."

While it is true that the Development Commission functions largely in an advisory capacity, their role is important in coordinating land use development in Iowa, and land use development can be expected to increase in intensity and extent. Manifestations of this activity are in the form of changes in travel patterns and traffic flow on Iowa streets and highways. The act of promoting and aiding in an industrial development must be integrated with highway planning. Access locations, concentrations of traffic, and highway capacity are representations of the interface between these two activities.

Evidence of the concern for coordinated planning is exemplified in a report from the Conference for Planned Economic Development entitled, "10-Year Targets to 2001" and sponsored by the Iowa Development Commission[22]. It was recommended that the Development Commission create within its staff a Division of Transportation to assist business with transportation problems.

The staff of the Development Commission planning division works closely with local communities and with consultants in the use of "701" funds. Included in the comprehensive planning activity for each community is transportation planning. Usually in other than the largest

urban areas this facet of planning has received little attention, and is given little emphasis. In part this is due to the failure of the Highway Commission district offices to participate in the "701" study, and in part to the lack of coordination between agencies.

In order to function as a coordinator of the land development and use function with the highway planning function, there must be developed a close working relationship between the Development Commission and the Highway Commission. The transmittal of semi-final actions directly or through the Office for Planning and Programming (functioning as a clearinghouse) is not satisfactory coordination. The mutual dissemination of information and an interaction in the earliest phases of planning are prerequisites for coordinated planning. The interdependency of the activities requires bilateral action in order to be meaningful.

Commerce Commission

The Iowa State Commerce Commission (ICC) is currently not active in comprehensive planning. It is concerned with the regulation of public transportation agencies and with public utilities[1,2]. Generally these activities take the form of certification, rate regulation, route designation, service offered, and safety considerations. The organization has not chosen to exert itself in the macroscopic issues concerning statewide transportation. Consequently, the role of the ICC in highway transportation planning has been minimal.

There are two operating divisions within the ICC that have actions associated with Highway Commission interests. These are the Utilities Division and the Railroad Safety and Service Division. The ICC-Highway

Commission relationship relative to utilities generally is of a secondary nature. The primary contact is directly between the utility company or railroad company and the Highway Commission, or between the private companies and the ICC.

Utility companies may petition the ICC for a permit to construct or reconstruct a line. Hearing notices are automatically sent to the Highway Commission. In addition, the ICC requires that the utility company comply with certain requirements of the ICC and the Highway Commission relative to a crossing or a joint occupancy of the public highway right of way. Quite detailed operating policies and procedures have been developed and rarely does much deviation from the routine occur. Occasionally a serious question regarding jurisdiction and policy does arise to point out the lack of coordination, legislation, and planning.

A case in point is the granting of an ICC permit to an electric distribution line company for joint occupancy of the interstate highway right of way. This decision was in direct opposition to a Highway Commission policy relative to interstate access, and to the Federal Department of Transportation policy which sets requirements for federal aid. The legal status of each agency's jurisdictional prerogatives at that time was at best unclear, and the fragmented administrative hierarchy that set about to solve this problem dramatically emphasized the lack of comprehensive coordinated planning.

The case of interagency coordination regarding railroad crossings is similar to the utilities case. Where federal aid is to be used, which is the case in many Highway Commission projects, the negotiations

are directly between the Highway Commission and the Railroad Company concerned. The ICC receives copies of pertinent information from the Highway Commission. In the case of a project not on a federal-aid system for a proposed highway-railroad grade crossing project, the local governmental agency makes direct application to the ICC for participation in the Road Use Tax Grade Crossing Fund. The ICC then holds a hearing to determine the type of protection and to allocate financial responsibility. Local agencies also deal directly with the Railroad Company where no federal or state aid is utilized. The relationship of highway-railroad crossings to the highway planning function is perhaps one-sided. The mechanics for consummating the planned highway program largely are those developed by the Highway Commission.

The role of the ICC in the highway planning function could be very significant. The Baxter-McDonald Report[1,2] identifies this potential relative to the total transportation aspect. The report states that the franchise and regulation powers of the ICC could be an important factor in the relationship of transportation to the economic and social well being of the state. Effecting this power would be in the area of requests for service routes by common carriers and for discontinuance of service or abandonment of rail lines. A major change in policy would have an effect on the modal distribution as well as motor vehicle volumes, and consequently is of concern in the highway planning function.

Perhaps the best method of summarizing the potential for impact on the highway planning function in Iowa is to quote from the Baxter and McDonald reports[1,2] concluding comments (in part):

> "The Commissioners must recognize the tremendous potential that the regulatory process has on transportation in Iowa... (the ICC) must begin to view its role as an important public

agency capable of shaping the future of transportation in Iowa to the goals and objectives sought by the people of Iowa and as articulated by their legislators and their chief executive."

Conservation Commission

Interagency cooperation between the Conservation Commission and the Highway Commission used to be a fruitful venture from the standpoint of achieving statewide goals. Many examples exist, ranging from those significantly related to the highway planning function, to items concerned with details of design and operation. Specific examples of expressed Conservation Commission concern are:

- The agreement by the Highway Commission to delay the operation of mowing road sides until after the pheasant nesting season. This action enhances the recreational aspects of certain areas.
- The acquisition and development of excess land and especially borrow pits suitable for water recreational areas may provide new travel desires. Joint development of the site and of the access roads requires close coordination and participation by both agencies.
- The construction of interstate highway rest areas has led to the undesirable multiple use of an overnight stop. Many people literally camp overnight in their car or truck. If a privately operated or state operated camp site could be planned in the near proximity with access from the rest area, the situation could be alleviated. State agencies, in order to consummate a program of this nature, are required to coordinate

with the Federal Department of Transportation because of its concern for multiple highway use.

- The improvement of a state park access road increases the use of the park, requiring a change in facilities and personnel. Currently this form of improvement is developed with the Conservation Commission through the Highway Commission Office of Park and Institutional Roads.
- Almost any relocation of a highway has an effect on the ecology of the area traversed. The Conservation Commission through the services of a Natural Resources Specialist evaluates the impact on forestry and fish and wildlife. Their contribution to the highway planning function could be very significant in terms of statewide goals.
- The scheduling of highway route improvements should be closely correlated with the development of recreational area traffic generators in the vicinity. To reduce road user inconveniences, any improvement of access roadways and the recreational area should be planned and coordinated with the major route improvement.

Many of the expressed basic Highway Commission planning activities embrace the concepts of coordinated projects as set forth in the examples. Department of Transportation PPM 20-8 reflects the current interest in insuring that highway location and designs are consistent with statewide goals by stating:

> "When a State highway department begins considering the development or improvement of a traffic corridor in a particular area, it shall solicit the views of that State's resources, recreation, and planning agencies, and of those Federal agencies and local public officials and agencies, and public advisory groups which the State highway department knows or believes might be interested in or affected by the development or improvement."

Section 138 of Title 23, United States Code states in part:

> "After the effective date of the Federal-Aid Highway Act of 1968, the Secretary shall not approve any program or project which requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance as determined by the Federal, State, or local officials having jurisdiction thereof, or any land from an historic site of national, State, or local significance as so determined by such officials unless (1) there is no feasible and prudent alternative to the use of such land, and (2) such program includes all possible planning to minimize harm to such park, recreational area, wildlife and waterfowl refuge, or historic site resulting from such use."

Department of Transportation IM 21-5-63 states in part:

> "In order that the Secretary may properly discharge his duties in this regard, he should receive proper assurances from each state highway department submitting projects for approval that it has had sufficient opportunity to study the needs of the locality in terms of the preservation or protection of fish and wildlife: that such needs have been evaluated and considered in locating and designing the particular highway project, and that all feasible measures will be taken to avoid damage to fish and wildlife and their natural habitats in the construction of the project."

A relatively close information liaison association exists between the Highway Commission and the Conservation Commission organization. The office of planning within the Conservation Commission frequently discusses the details of road design plans with Highway Commission design department personnel. Also, the Highway Commission's five-year construction program is received and utilized to a degree by the Conservation Commission planners in anticipating possible future projects. The development of primary highway projects involving State parks are closely coordinated with the Highway Commission office of State Park and Institutional Roads.

Establishing maximum planning contribution at the beginning of consideration for a highway development or improvement project in a

particular area is a fundamental concept that has been set forth in the criteria and procedures for achieving statewide goals. This in fact rarely occurs.

The area of inadequacy is in the contributions that could be made by the Conservation Commission personnel as creative input to the highway planning function. Rather than the negative approach of being informed of highway planning and design preliminary decisions, and subsequently analyzing this information, a positive program of coordinated cooperative participation development would increase the chances of achieving statewide goals.

Highway Patrol

The Highway Patrol maintains a close liaison with the State Highway Commission. Communication is largely on a face-to-face basis between the individual patrolman and the Highway Commission maintenance foreman in the same geographical location, and between upper level personnel in the two agencies concerned with accident records, highway signing, and specific problem locations.

The officers on highway patrol duty are in constant (informal) contact with the State Highway Commission maintenance foremen. This may involve repair work following an accident, or may be in regard to a deteriorating safety situation noted by the patrolman in his routine patrol. This activity is of a "maintenance of condition" type as opposed to the planning-design function. However, the frequent exposure to accident scenes, the detailed personal contact with the participants, and the demands of reporting and analysis develop a very significant reservoir of knowledge.

This accident "knowledge bank" does not remain completely untapped. Accident records and reports are transmitted to the Traffic and Safety Department in Ames on a regular and continuing basis. In addition, the patrol officers meet with the traffic and safety engineers to discuss specific problem sites. Signing or design details may be modified as a result of these contributions and the interaction of these two agencies.

The contribution of the highway patrol's expertise to the highway planning function in Iowa appears to be minimal. This is not to say that the patrol's advice falls on "deaf ears." Rather, that the function is negative in nature relative to creativeness. It is corrective, both at the patrolman-maintenance foreman stage and at the meetings of upper echelon personnel of the two agencies. The obvious inadequacy relative to further interaction is in the lack of traffic engineering personnel in the Highway Commission and the administrative framework to function properly. Field traffic engineers, desirably at the district level, could provide the organizational structure for constructive analysis of field operations with the highway patrol providing a major input.

Insofar as highway planning is concerned, safety is a major factor. General design standards and criteria, location philosophy, economics of accident costs, and the priority scheduling of high accident rate locations are examples of the highway safety aspect as an input for the planning process. The question is: How best to utilize the highway patrolman's knowledge in the highway planning function?

The highway patrolman's knowledge is in the area of understanding human behavior and operating conditions. He is not a traffic engineer,

a planner, or a highway designer. However, most patrolmen have developed an intuitive judgment relative to the physical highway system's interaction with motor vehicles and with the drivers and passengers concerned. This data bank of knowledge is utilized as feedback by the engineers and planners in the form of statistics and occasional face-to-face discussions. A method of tapping this resource, to a greater extent than simply the interchange of data, is vitally needed.

An advisory board, design team, or diagnostic team approach with a highway patrol member would provide the mechanics for a creative contribution to the highway planning function. The individual patrolman's advice as input to planning would be channeled through the board or team. Desirably, the highest degree of specialization could be achieved by referring specific plans to the patrolman most knowledgeable with that geographic area. The lack of understanding of highway plans, engineering terminology, and design criteria would require interpretation among the various disciplines represented in the group. In fact, the success of the program would depend to a large extent on the degree of interaction between the members.

The highway patrolman's contribution to the highway planning function is largely evaluative, but it is important that this evaluation be prior to construction where constructive suggestions are less costly to incorporate.

Summary

Based on the personal interviews and study conducted, the following comments and recommendations are presented as a summary:

- State agency coordination currently is comprised of the flow of data and notices of decisions made and actions taken. It can be characterized as essentially noninvolvement by all other agencies than the Highway Commission, and a lack of meaningful interchange of ideas.
- Each state agency has a unique and specialized capability for providing input to highway planning relative to statewide values and goals that result from the movement of motor vehicles.
- The reservoir of knowledge and information in other agencies relative to highway planning lies virtually untapped. The achievement of overall state goals suggests a creative input from all concerned.
- The concept of mandatory referral to a central clearinghouse does not constitute cooperative planning.
- Maximum coordination between agencies will optimize highway planning objectives, and can best be effected by an overall systems concept using an advisory board or a design team with the organizational and administrative structure capable of a partnership arrangement.

LOCAL AND REGIONAL GOVERNMENTS AND AGENCIES

All local governments are involved to some degree in highway planning. Generally, however, these efforts are neither systematic, comprehensive, nor effectively coordinated with other affected governments. Those urbanized areas with over 50,000 population that are required to undertake continuous, cooperative, comprehensive transportation planning required by the Federal-Aid Highway Act of 1962 are exceptions, of course. This same type of planning is being extended to the eight cities between 25,000 and 50,000 population cooperatively by the community and the Iowa State Highway Commission.

If the trend of recent federal highway legislation is indicative of the direction that future planning will take, then statewide transportation planning will be carried out as a matter of course within a few years. Some other states are already developing such plans. Iowa has not done so, although the formulation of a statewide freeway and expressway plan is a step in that direction. Functional classification of all roads, streets, and highways in accordance with the program now underway will provide the needed basis for subsequent steps in the highway portion of such a plan.

Long-Range Planning

Coordination of highway programs among levels of government is haphazard as these programs are now carried out. Again, the urbanized-area planning processes done under the guidance of federal directives are exceptions. Policy and technical committees for these efforts

include representation from all levels of government and assure a considerable degree of coordination within urbanized areas.

Legal requirements for highway planning by local governments are contained in the Code of Iowa as follows:

> Section 309.93 requires a County Board of Supervisors annually to adopt and to submit the county secondary road budget for the next calendar year to the State Highway Commission for approval.
>
> Section 312.12 requires cities which receive road-use tax funds and which have at least 5000 population to prepare and submit annually to the State Highway Commission for examination and review a three-year program of street construction and reconstruction in the arterial and local street systems. This section also requires cities and towns which have less than 5000 population and which receive road-use tax funds to prepare and submit annually to the State Highway Commission for examination and review a program of expenditures for the next calendar year.

The state is able to exercise a very limited role in highway planning by local governments in accordance with these provisions of the Code. However, legal requirements for the disbursement of certain road-use tax funds impose obligations upon the Iowa State Highway Commission to monitor their expenditures. The Highway Commission also must administer the expenditure of federal-aid funds in accordance with federal laws and regulations. These requirements largely affect current activities

of counties and cities and towns, however, without having any particular impact upon programming the highway activities of subsequent years.

Nor are there any other requirements that highway planning be done on other than a year-to-year basis. Cities with three-year (or longer) capital improvement programs are obviously planning their expenditures. But not all smaller cities and towns prepare capital improvements programs beyond the year-by-year basis required by law. Most counties do not have programs beyond the current year for highway expenditures.

Long-range highway planning is obviously done in most counties, but this is likely to take the form of an unwritten understanding between a Board of Supervisors and a County Engineer. Some states have recognized the possible inadequacies of planning done in such an informal manner and have imposed requirements upon the counties for a more systematic form of highway planning. Illinois, for example, has recently enacted legislation requiring counties to prepare a 20-year highway plan[23].

A 20-year period is probably longer than necessary for highway planning in Iowa. However, we believe that five-year programming of expenditures of highway related funds is reasonable and that it is necessary and desirable.

The format for such a five-year program could be developed co-operatively by representatives of the Highway Commission, the Iowa County Engineers Association, and the Iowa State Association of County Supervisors. The Office for Planning and Programming should act as a clearinghouse to assure that the program is not inconsistent with other planning activities including those of the Highway Commission, other state agencies, other counties, urbanized areas, and cities and

towns. This Office should have authority to resolve inconsistencies between programs. However, approval of the program would be the prerogative of the county's Board of Supervisors. We can see no advantage to having county highway programs subject to approval by the Highway Commission as long as inconsistencies are removed through the procedures of a clearinghouse. Disbursements for specific projects financed from the road-use tax fund would continue to be administered by the Highway Commission as the program is implemented. The existing procedure of having annual budgets or programs approved by the Commission appears to generate resentment and ill will with no apparent concomitant benefit. Examination and review would be a more appropriate role for the Commission relative to county programs, the same as it is for programs of the cities and towns.

The current program for carrying out urban transportation planning in cities of less than 50,000 population cooperatively by the Highway Commission and the community has demonstrated that this is the most effective way to do long-range highway planning. This program should be expanded and expedited as rapidly as possible to include all cities in Iowa having a population of 10,000 or more. Most smaller cities and towns, unlike the counties and larger cities, lack the type of technical competency necessary to perform meaningful long-range planning. Transportation components of "701" plans have frequently been superficial, usually are not coordinated with other planning efforts, and therefore are of limited usefulness. Transportation planning that is truly comprehensive in nature is essential even in smaller cities. Fortunately, this requires a lesser degree of sophistication and is proportionately less costly than in larger urban areas. Joint county-city efforts

are most appropriate for small cities, those under 5000 population, for example.

Transportation planning efforts in larger urban areas are essentially urban plans with attention to the contiguous rural areas. Joint county-city plans for counties including only smaller cities would be essentially rural transportation plans with significant regard to the communities included therein. It is difficult to estimate the size city that can be included effectively in such a rural transportation plan. Probably this will vary with the characteristics of a particular community. Future planning work in this area will suggest the extent to which urban transportation planning efforts of the Highway Commission should be directed toward cities with populations less than 10,000.

Role of the Highway Commission

Secondary road programs could be made more effective and the working relationship between County Engineers and the Highway Commission could be improved with certain organizational and procedural changes by the Commission. Specifically, we recommend the following to enhance secondary roads programs:

- Upgrade administrative positions in the Secondary Roads Department to levels comparable with other positions in the Highway Commission organization that require comparable levels of aptitude, experience, and educational attainment.
- Transfer the Secondary Plan Review Section from the Road Design Department to the Secondary Roads Department.

- Establish the practice of filling Secondary Roads Assistant District Engineer positions with personnel with appropriate training, experience and with demonstrated aptitude for these positions.

Adoption of the first two recommendations would permit the Secondary Roads Department to function more effectively in its liaison role with the counties. Due to a lack of "status" of this Department and the fact that the people who check the county's road designs are located elsewhere, county officials find that they must deal with a multiplicity of Assistant Chief Engineers and Department Heads to get meaningful answers to their questions or decisions for their problems. If the Secondary Roads Department is able to provide most of these answers and decisions, relations between the counties and the Highway Commission would be enhanced and the work of the counties would be expedited.

The third recommendation reflects upon the current practice of filling these positions with men, frequently for purposes of career development, who may have no particular qualifications nor aptitude for the position and may, in fact, have no interest in it. The same comment and recommendation pertains to the Urban Assistant District Engineer. Both of these assignments require training of a highly specialized nature for most new appointees if they are reasonably to be expected to discharge properly the duties of these positions. This training opportunity has not normally been available. These positions are much too sensitive to be filled through a random process of personnel selection.

Research personnel gave much consideration to the matter of further decentralization of the Highway Commission structure by increasing the staff and authority of district offices. Local public officials who expressed an opinion in their questionnaire responses favored such a move by a margin of more than two to one.

District personnel necessarily are the most frequent representatives of the Commission in its dealings with local public bodies. They literally are the Commission's front rank in establishing its public image. There unquestionably are distinct advantages in strengthening the district organization to permit it to assume greater responsibilities. However, these advantages are counterbalanced by the diseconomies inherent in further dispersing the limited resources available to the state for highway purposes. The duplication of personnel that would result if additional functions were assigned to district offices would necessarily increase personnel costs. The authors believe that a justification for augmenting district organizations with additional staff, except for a district traffic engineer, has not yet been established. All of the recommendations relating to district offices are intended to make local officials less dependent upon central office administrators of the Highway Commission for decisions involving matters of ordinary complexity. Additional recommendations are as follows:

- District administrators should be permitted greater decision-making authority within the scope of their assigned responsibilities.
- The role of district offices should be more concisely defined.

- The responsibilities and authority of district offices and the pay status of district personnel should be the subject of continuous further study and review.

SUMMARY OF RECOMMENDATIONS

Throughout this report the authors have made a number of recommendations for improvements in the organization and coordination of highway planning in Iowa. The reader is referred to the appropriate section of the text or appendices to the report for background information in support of these recommendations. Recommendations 1 and 2 require the attention of the Iowa General Assembly for implementation. Recommendation 3 is directed to the attention of all state agencies and local governmental bodies involved or concerned with highway planning. Recommendation 4 is suggested for implementation jointly by the Iowa State Highway Commission and the affected municipalities. Action to implement the remaining recommendations is suggested for the Iowa State Highway Commission. These recommendations are summarized as follows:

1. The Legislature or a designated agency of state government should formulate statewide transportation goals with applicability to highway planning by the Highway Commission and by other agencies at all governmental levels. Such goals should recognize the interrelationship of highway transportation with land use development, social values, economics, recreation, visual amenities, and other factors relating to the general welfare of the state and nation.
2. Highway expenditures by counties should be programmed for a five-year period, such program to be adopted annually by the Board of Supervisors following a clearinghouse review by the Office for Planning and Programming, and should be submitted to the Highway Commission for examination and review.

3. Participation of state agencies other than the Highway Commission and of local governments in highway planning should be broadened by wider use of advisory boards and design teams and by more extensive contacts with all interested and concerned public groups as early as practicable in the highway planning process. Planning by all levels of government should involve more fully the concept of developing plans cooperatively and should depend less on programs to inform public groups of decisions that have already been made.
4. Programs of continuing, cooperative, comprehensive urban transportation planning should be expanded to include all cities in the state having populations of 10,000 or more as rapidly as financial resources and manpower limitations permit. Further study should be directed toward a determination of the extent to which smaller cities should be included in this program.
5. The Highway Commission should substantially increase its traffic engineering capability by adding traffic engineer positions in the Division of Planning and by adding a traffic engineer in each district office.
6. The Location and Pre-Design Section should be transferred from the Road Design Department of the Development Division to the Planning and Programming Department of the Division of Planning in order to integrate this planning function with other most closely related functions.
7. The Secondary Roads Plan Review Section should be transferred from the Road Design Department of the Development Division

to the Secondary Roads Department of the Operations Division in order to consolidate most activities requiring contact with county officials into the appropriate Department.

8. Positions within the Division of Planning should be upgraded to pay levels comparable with similar positions in other divisions and commensurate with the aptitude, experience, and educational attainment required for these positions.

9. Positions within the Secondary Roads Department should be upgraded to pay levels comparable with similar positions in other departments and commensurate with the aptitude, experience, and educational attainment required for these positions.

10. The decision-making authority of district office administrators should be increased within the existing scope of their responsibilities. The role of district offices and the pay status of district personnel should be the subject of continuous further study and review with a view toward defining this role more concisely.

11. The Highway Commission should provide suitable training for persons appointed as Secondary Roads and Urban Assistant District Engineers and should be sufficiently selective in filling these positions to assure that the occupants can most effectively represent the Highway Commission in its relations with local governments.

12. The Highway Commission should undertake a concentrated effort to project its image as a dedicated group of public servants performing an essential task in an effective manner, an image

that the authors believe is an accurate one. This must be done through attention to public relations by employees at all levels in all divisions to overcome the "we-know-best-what's-good-for-you" image with which the Highway Commission is too often characterized today.

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Consulting Engineers Council of Iowa

Iowa County Engineers Association

Iowa League of Municipalities

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Several state highway organizations and others were most generous in making publications available to research personnel. Literally dozens of organization charts, job descriptions, highway planning and research programs, and miscellaneous reports were supplied to further our understanding of the intricacies of highway planning organizations and procedures. These were invaluable contributions to that understanding.

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The opinions and viewpoints expressed herein are solely those of the research principals and do not necessarily reflect the opinions or viewpoints of the Iowa Highway Research Board, the Iowa Highway Commission, or any individuals associated therewith. Nor do they knowingly represent the opinions and viewpoints of any other individuals or organizations who contributed input to this research.

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APPENDICES

A. PERSONS INTERVIEWED

B. QUESTIONNAIRES TO CHIEF ADMINISTRATORS OF STATE HIGHWAY ORGANIZATIONS

C. QUESTIONNAIRES TO HIGHWAY PLANNING ENGINEERS

D. QUESTIONNAIRES TO LOCAL GOVERNMENT OFFICIALS

E. QUESTIONNAIRES TO PRIVATE CITIZENS

F. QUESTIONNAIRES TO CONSULTING ENGINEERING FIRMS

G. INTERVIEWS WITH IOWA STATE HIGHWAY COMMISSION PERSONNEL

H. ORGANIZATION CHARTS OF IOWA STATE HIGHWAY COMMISSION

I. ADDITIONAL REFERENCES

APPENDIX A

PERSONS INTERVIEWED

Federal Organizations

Federal Highway Administration, Iowa Division

C. E. Foslien, Planning and Research Engineer

J. B. Long, Assistant Division Engineer

A. J. Medford, Division Engineer

State Organizations

Illinois Department of Public Works and Buildings, Division of Highways

Ray Ackerman, Assistant Engineer of Planning

Ralph D. Brown, Deputy Chief Engineer, Planning

Dan Dees, Engineer of Advance Planning

Donald D. Fowler, Engineer of Products Evaluation

H. R. Hanley, Engineer of Planning

Ronald W. Houska, Engineer of Location and Roadway Planning

Melvin B. Larsen, Engineer of Local Roads and Streets

Theodore F. Morf, Deputy Chief Engineer, Administration

Iowa Commerce Commission

Robert J. Buckley, Utilities Engineer

R. L. Pilger, Railroad Safety and Services Supervisor

William J. Terrill, Administrative Assistant, Utilities

Richard H. Walser, Railroad Safety and Services

Iowa Conservation Commission

William C. Brabham, Chief Resources Program Planner

Gerald Schnepf, Resources and Program Planner

Iowa Development Commission

William McLaughlin, Director, Planning Division

Iowa Highway Patrol

James Machholz, Chief

Iowa Office for Planning and Programming

Robert Krebill, Senior State Planner

LeRoy H. Petersen, Director

Richard Sales, Senior Planner (Intern)

Iowa State Highway Commission

C. B. Anderson, Urban Engineer

Gerhard W. Anderson, Deputy Director of Planning

Robert J. Anderson, Needs Study Engineer

Harry S. Budd, Public Hearing Engineer

C. S. Carmean, Traffic Engineer

John B. Carpenter, District Urban Engineer

Robert C. Henely, District Engineer

Robert Humphrey, Assistant Highway Planning Surveys Engineer

Lloyd M. Jackson, Location and Pre-Design Engineer

Arnold Jenison, Urban Design Section Engineer

Elmer Jensen, District Secondary Roads Engineer

Raymond L. Kassel, Planning and Programming Engineer

Kenneth P. McLaughlin, Road Design Engineer

Eugene R. Mills, Highway Planning Surveys Engineer

Robert W. Pratt, Assistant Right-of-Way Director

Harold C. Schiel, Traffic and Safety Engineer

George F. Sisson, Road Design Section Engineer

Leland D. Smithson, Project Planning Engineer

James L. Stober, Secondary Road Engineer

Rex H. Wiant, Acting Urban Engineer

Donald G. Wicklund, Personnel Director

Kansas State Highway Commission

W. E. Allison, Secondary Roads Engineer

A. J. Basile, Urban Traffic Engineer

Dennis Gamble, Needs and Programs Engineer

John D. McNeal, State Highway Engineer

R. L. Peyton, Assistant State Highway Director

G. A. Sutton, Engineer of Planning and Development

William Watts, Design Criteria Engineer

Minnesota Highway Department

C. E. Burrill, Assistant Commissioner, Transportation and Transit Planning and Programming

Glen Carlson, Freeway Surveillance Engineer

Douglas Differt, Chief, Metropolitan Planning Section

Lyle Hansen, Director of Office of System Planning

Wyllys McElroy, Acting Traffic Engineer

Fred Worden, Assistant Traffic Engineer

Missouri State Highway Commission

Phillip W. Jackson, Urban Planning Engineer

James H. Little, Research and Development Engineer

Joseph Mickes, Assistant Division Engineer — Traffic

Walter F. Vandelicht, Assistant Division Engineer — Planning, Research and Traffic

South Dakota Department of Highways

Norman Humphrey, Senior Technician, Urban and Traffic Section

Eugene Schliessmann, Assistant Manager, Research and Planning

George Sherrill, State Traffic Engineer

William T. Voss, Manager, Research and Planning

A. M. Young, State Highway Engineer

Virginia Department of Highways

William S. G. Britton, Director of Programming and Planning

D. L. Eure, Highway Planning Engineer

John P. Mills, Jr., Traffic and Planning Engineer

Herbert R. Perkinson, Jr., Planning and Scheduling Engineer

William B. Shelton, Associate Traffic Engineer

Frank E. Tracy III, Assistant Location and Design Engineer

K. M. Wilkinson, Transportation Planning Engineer (Metropolitan)

Wisconsin Department of Transportation, Division of Planning

Arne L. Gausmann, Director, Bureau of Systems Planning

Wyoming Highway Department

James M. Amen, Assistant Planning and Research Engineer

George A. Dale, State Traffic Engineer

Anthony J. Schepp, Assistant State Traffic Engineer

John D. Warburton, Assistant Planning Engineer

F. O. Witters, Planning and Research Engineer

Local Organizations

Cities

W. W. Amundson, City Engineer, Sioux City

A. O. Chantland, Director of Public Works, Ames

John Curfman, Director, City Plan Commission, Sioux City

Robert Madson, Assistant Director of Planning and Redevelopment, Cedar Rapids

Counties

Vaughan L. Clark, County Engineer, Decatur County

W. G. Davison, County Engineer, Cerro Gordo County

William W. Ellingrod, County Engineer, Palo Alto County

W. A. Groskurth, County Engineer, Mitchell County

William G. Harrington, County Engineer, Linn County

Milton L. Johnson, County Engineer, Clayton County

Lloyd L. Kallsen, County Engineer, Woodbury County

Carl F. Schnoor, County Engineer, Boone County

Eldo W. Schornhorst, County Engineer, Clay County

Wesley D. Smith, County Engineer, Hamilton County

Metropolitan Agencies

Donald Meisner, Director, SIMPCO

Donald Salyer, Director, Linn County Regional Planning Commission

APPENDIX B

QUESTIONNAIRES TO CHIEF ADMINISTRATORS OF STATE HIGHWAY ORGANIZATIONS

Copies of this questionnaire, pp. B-2 and B-3, were sent to the Chief Administrators of the highway organizations of all 50 states, the District of Columbia, and Puerto Rico. All 52 questionnaires were completed and returned. The responses are summarized below.

3. In the structure of your organization, is the planning function, relative to the design function:

    7.7 % At a lower level

    82.7 % At the same level

    7.7 % At a higher level

    1.9 % Did not answer

4. Primary responsibility for the following functions is generally located either with Planning or Design. Indicate the placement of primary responsibility in your organization.

    Interpretation of local comprehensive plans

    88.5 % Planning

    3.8 % Design

    1.9 % Both planning and Design

    5.8 % Others

    Corridor location determination

    61.5 % Planning

    19.2 % Design

    7.7 % Both planning and Design

    3.8 % Planning and others, jointly

    7.7 % Others

QUESTIONNAIRE

CHIEF ADMINISTRATORS OF STATE HIGHWAY ORGANIZATIONS

1. Name of your organization:

_____

2. We will shortly be sending a further questionnaire covering in more detail the organization and procedures for highway planning. This can best be completed by the person directly responsible for the highway planning function. To whom should it be directed?

Name _____ Title _____

Address _____

City and State _____ Zip _____

3. In the structure of your organization, is the planning function, relative to the design function:

At a lower level? ☐ At the same level? ☐ At a higher level? ☐

4. Primary responsibility for the following functions is generally located either with Planning or Design. Indicate the placement of primary responsibility in your organization.

	Planning	Design	Other	(specify)
Interpretation of local comprehensive plans	☐	☐	☐	_____
Corridor location determination	☐	☐	☐	_____
Evaluation of highway impact	☐	☐	☐	_____
Selection of design standards	☐	☐	☐	_____
Route alinement selection	☐	☐	☐	_____
Development of preliminary plans	☐	☐	☐	_____
Capacity analysis	☐	☐	☐	_____
Coordination with local groups	☐	☐	☐	_____

5. Are other agencies of state government involved in the highway planning function in your state?

Yes ☐ No ☐

If answer is yes, which ones and in what way?

_____

_____

_____

6. Comments or expansion upon answers to questions above:

_____

_____

_____

_____

7. It will be most helpful to us if you would enclose a chart of your organizational structure when you return this questionnaire.

Chart enclosed: Yes ☐ No ☐

Being send under separate cover: ☐

8. Questionnaire completed by:

Name _____ Title _____

Address _____

City and State _____ Zip _____

When completed, return to:

Transportation Study Group
Engineering Research Institute
Iowa State University
Industrial Arts Building
Ames, Iowa 50010

Evaluation of highway impact

73.1 % Planning

9.6 % Design

7.7 % Both Planning and Design

1.9 % Planning, Design, and other, jointly

7.7 % Others

Selection of design standards

9.6 % Planning

76.9 % Design

13.5 % Both Planning and Design

Route alignment selection

13.5 % Planning

59.6 % Design

11.5 % Both Planning and Design

11.5 % Location, Surveys, or similar

3.8 % Others

Development of preliminary plans

3.8 % Planning

84.6 % Design

5.8 % Both Planning and Design

3.8 % Design and others, jointly

1.9 % Others

Capacity analysis

55.8 % Planning

25.0 % Design

9.6 % Both Planning and Design

1.9 % Planning, Design, and others, jointly

1.9 % Planning and others, jointly

5.8 % Others

Coordination with local groups

48.1 % Planning

11.5 % Design

26.9 % Both Planning and Design

1.9 % Planning, Design, and others, jointly

5.8 % Planning and others, jointly

5.8 % Others

5. Are other agencies of state government involved in the highway planning function in your state?

53.8 % Yes

46.2 % No

If answer is yes, which ones and in what way?

Comments indicate that other state agencies commonly participate in the highway planning process or, even more frequently, are invited to review plans at some stage of their development. Although nearly half of the respondents answered "No," the federal requirements for establishment of a state clearinghouse for federal-aid funds is leading to greater interchange among state agencies of information concerning highway plans.

6. Comments or expansion upon answers to questions above.

Most comments pointed out that the activities covered by question 4, although they might be primarily the responsibility of one division or department, generally involved some coordination with or

participation by other subdivisions of a state highway organization. Other comments further emphasized the participation of other state agencies and local planning groups in highway planning.

APPENDIX C

QUESTIONNAIRE TO HIGHWAY PLANNING ENGINEERS

This questionnaire, pp. C-2 through C-6, was designed for response by the person directing the subdivision of a state highway organization that has primary responsibility for the highway planning function. The chief administrator, by his response to question 2 of his questionnaire, indicated the person to whom this questionnaire should be sent. These questionnaires were sent to all 50 states, the District of Columbia, and Puerto Rico. Responses were received from 47 states, the District of Columbia, and Puerto Rico. Although it was hoped that this questionnaire would be completed by a different person than the one directed to chief administrators, this proved not to be the case in all instances. Some 22 of the 49 signators on this questionnaire had also signed the previous one. Responses to individual questions are summarized below.

2. Is there a centralized state planning organization in your state?

85.4 % Yes

12.5 % No

2.1 % Did not answer

2a. What is the function of this organization relative to highway transportation planning?

42.9 % Coordinates highway planning with other agencies

40.5 % Serves as clearinghouse for state and federal public works planning

42.9 % Serves as clearinghouse for state, federal, and local public works planning

7.1 % Other

Note: Multiple answers account for total greater than 100%.

QUESTIONNAIRE

HIGHWAY PLANNING ENGINEERS

1. Name of your organization: _____

2. Is there a centralized state planning organization in your state? Yes ☐ No ☐
(if answer is no, omit 2a)

2a. What is the function of this organization relative to highway transportation planning?

	Yes	No
Coordinates highway planning with other agencies	☐	☐
Serves as clearing house for state and federal public works planning	☐	☐
Serves as clearing house for state, federal, and local public works planning	☐	☐
Other (describe below)	☐	☐

Comments _____

_____

3. What is the relationship of the transportation rate-making agencies to the highway organization in your state?

	Yes	No
Located in separate administrative agencies	☐	☐
Located in the same agency	☐	☐

Comments _____

_____

4. What relationship exists in your state between transportation planning at the local (municipal and county) level and your state highway organization?

	Yes	No
No direct relationship	☐	☐
Local government units required to submit periodic capital improvement plans	☐	☐
Other (describe below)	☐	☐

Comments _____

_____

5. Does your organization (or any other state agency) have the power to alter local planning in regard to timing or concept of project in the event of conflict with statewide transportation planning?

Yes ☐ No ☐

6. Is there a statewide transportation plan or highway plan (or both) in effect in your state?

Transportation plan, including highways	☐	
Highway (only) plan	☐	
No plan	☐	(omit 6a)

6a. Has such a transportation or highway plan been adopted by formal legislative action? Yes ☐ No ☐

7. Are intermediate range (2 to 6 years) capital improvement programs on the state highway system required to be prepared and published in your state?

Yes ☐ No ☐

8. What are the salary ranges for the following positions in your organization?

Design Engineer _____ Highway Planning Engineer _____

9. The following activities are sometimes located within that part of a state highway organization having primary responsibility for highway planning. Indicate their placement within your organization.

	Planning	Other (Specify)
O-D studies	☐	☐ _____
TOPICS	☐	☐ _____
Urban transportation studies	☐	☐ _____
Research	☐	☐ _____

9. (Continued)

	Planning	Other	(Specify)
Access control	☐	☐	_____
Photogrammetry	☐	☐	_____
Project scheduling and expediting	☐	☐	_____
Urban design	☐	☐	_____
Relocation assistance	☐	☐	_____
Traffic engineering	☐	☐	_____
Safety and accident records analysis	☐	☐	_____
Needs studies	☐	☐	_____
Highway classification	☐	☐	_____

10. Primary responsibility for the following functions is generally located either with Planning or Design. Indicate the placement of primary responsibility in your organization.

	Planning	Design	Other	(Specify)
Construction programming	☐	☐	☐	_____
Corridor location determination	☐	☐	☐	_____
Interchange type and location	☐	☐	☐	_____
Economic studies	☐	☐	☐	_____
Selection of project design standards	☐	☐	☐	_____
Conducting location hearing	☐	☐	☐	_____
Route alinement selection	☐	☐	☐	_____
Detailed traffic assignment	☐	☐	☐	_____
Capacity analysis	☐	☐	☐	_____
Coordination with local groups	☐	☐	☐	_____
Detailed cost study	☐	☐	☐	_____
Conducting design hearing	☐	☐	☐	_____

11. What is the role of your organization in the urban transportation planning process specified by the Federal-Aid Highway Act of 1962?

Provide traffic data? ☐ Supervise work of consultant? ☐

Arrange for a consultant? ☐ Carry out all of the work? ☐

Other (describe below)? ☐

Comments _____

_____

12. Do you feel that your organization's involvement in urban transportation planning is

Too little? ☐ About right? ☐ (Omit 13) Too great? ☐

13. In what ways would you prefer to see changes in your involvement in urban transportation planning?

_____

_____

_____

14. How many urbanized areas wholly or partially in your state with over 50,000 population were identified on July 1, 1965 (in relation to requirements for comprehensive transportation planning)?

_____

14a. Number commencing <u>continuing</u> phase of transportation planning process:

Prior to July 1, 1965: _____

July 1, 1965, to date: _____

Not yet in continuing phase: _____

15. What is the extent of participation in TOPICS in your state to date using funds provided by the Federal Aid Highway Act of 1968?

Number of eligible cities (over 5,000 or other limitation) _____

Number of cities now attempting to meet requirements _____

Number of areawide TOPICS plans received by State _____

Number of Type II F. A. Systems approved by BPR _____

Number of areawide TOPICS plans approved by BPR _____

Number of projects under agreement for federal participation _____

Number of projects completed (in use by public) _____

Percentage of combined FY 1970 and 1971 TOPICS federal apportionment under agreement _____

16. What is the role of your organization in TOPICS?

Project approval and liaison ☐ Active participation ☐

16a. Has your state established a minimum population size for participation in TOPICS?

Yes ☐ (above _____ population) No ☐

16b. What is your usual federal-state-local financing breakdown for TOPICS?

Federal _____ % State _____ % Local _____ %

16c. May federal-aid TOPICS funds in your state be used for the following purposes?

	Yes	No
Planning	☐	☐
Design	☐	☐
Inspection of construction	☐	☐

16d. Additional comments concerning your experience with TOPICS: _____

_____

_____

17. In your opinion, is highway planning by your organization effectively coordinated with outside groups? Consider the extent of internal communication among persons from your organization who contact outside interests, the frequency of contacts, and other factors.

	Largely Effective	Not Very Effective
With cities and counties	☐	☐
With other state agencies	☐	☐

Suggest ways in which coordination should be improved: _____

_____

_____

_____

18. Please rate as adequate or inadequate the extent to which Planning contributes to the basis for decision-making in the following specific areas:

	Adequate	Inadequate
Establishment of project design criteria and level of service	☐	☐
Route corridor location	☐	☐
Route alinement selection	☐	☐
Analyses of travel inventory data and traffic assignment	☐	☐

19. To what extent does your highway organization employ qualified traffic engineers (graduate engineers engaged full time in traffic engineering functions) and traffic engineering technicians? (show approximate numbers)

	Engineer	Technician
Central office only	_____	_____
Total, central office plus district or division offices	_____	_____

Comments _____

19a. Does your organization provide traffic engineering advisory services to local government units?

Yes ☐ No ☐

19b. Does your state expect to expand its traffic engineering capabilities in the future?

Yes ☐ No ☐

19c. Does your organization engage in field accident surveillance under the supervision of traffic engineers?

Yes ☐ No ☐ (if answer is no, omit 19d and 19e)

19d. Do you use a "diagnostic team" approach for field accident surveillance?

Yes ☐ No ☐ (if answer is no, omit 19e)

19e. Diagnostic teams function at what organizational level?

State ☐ District ☐ Other ☐ Specify _____

20. Which current safety standards promulgated under the Federal Aid Highway Act of 1966 are administered by your state highway organization?

Numbers _____

(Please circle those administered within your planning function.)

21. What professional disciplines (those holding college degrees) in addition to engineers are now employed within your planning function?

	Yes	No		Yes	No
Planner	☐	☐	Environmental specialist	☐	☐
Economist	☐	☐	Landscape architect	☐	☐
Sociologist	☐	☐	Architect	☐	☐
Other (specify below)	☐	☐	Statistician	☐	☐

Comments _____

_____

22. In your opinion, is your organization structure adequately arranged to discharge properly the highway planning function?

Yes ☐ No ☐ Comments _____

_____

23. Do you feel that your organization is authorized a sufficient number of staff positions to carry out the highway planning function properly?

Yes ☐ No ☐

23a. Is there a sufficient number of adequately trained personnel available to satisfy all of the needs in highway planning?

Yes ☐ No ☐ (If answer is yes, omit 23b)

23b. The following classifications are in short supply:

_____

_____

24. Additional comments or expansion upon answers to questions above:

_____

_____

_____

25. May a representative of the Engineering Research Institute, Iowa State University, call upon you for a personal interview to expand upon the information included herein?

Yes ☐ No ☐

26. If the answer to question 25 is yes, what time during the next few months would best suit your schedule?

Preferred days of the week: _____

Periods unavailable: _____

27. It will be most helpful to us if you could furnish any supplemental information available to you that describes in detail the organization and procedures for highway planning in your state. Job descriptions of key individuals involved in planning would also be of value.

Information enclosed: Yes ☐ No ☐

Being sent under separate cover: ☐

28. Questionnaire completed by:

Name _____ Title _____

Address _____ City and State _____ Zip _____

When completed, return to:

Transportation Study Group
Engineering Research Institute
Iowa State University
Industrial Arts Building
Ames, Iowa 50010

3. What is the relationship of the transportation rate-making agencies to the highway organization in your state?

   93.7 % Located in separate administrative agencies

   2.1 % Located in same agency

   4.2 % Did not answer

   Comments indicated that this function generally was carried out by a Public Utilities Commission.

4. What relationship exists in your state between transportation planning at the local (municipal and county) level and your state highway organization?

   18.8 % No direct relationship

   20.8 % Local government units required to submit periodic capital improvement plans

   60.4 % Other

   "Other" responses were described as cooperation, coordination, or consultation with local units of government, especially in connection with metropolitan or regional planning. Limited review authority may be included.

5. Does your organization (or any other state agency) have the power to alter local planning in regard to timing or concept of project in the event of conflict with statewide transportation planning?

   18.7 % Yes

   77.1 % No

   4.2 % Did not answer

6. Is there a statewide transportation plan or highway plan (or both) in effect in your state?

14.6 % Transportation plan, including highways

50.0 % Highway (only) plan

35.4 % No plan

6a. Has such a transportation or highway plan been adopted by formal legislative action? (Excluding states with no plan)

16.1 % Yes

3.2 % Partially

80.7 % No

7. Are intermediate range (2 to 6 years) capital improvements programs on the state highway system required to be prepared and published in your state?

58.3 % Yes

41.7 % No

8. What are the salary ranges for the following positions in your organization?

Responses included positions at different, but comparable levels. Of usable responses, 76.9% gave the same ranges for both positions, 12.8% showed a higher range for the design position, and 10.3% showed a higher range for the planning position.

9. The following activities are sometimes located within that part of a state highway organization having primary responsibility for highway planning. Indicate their placement within your organization.

OD studies

97.9 % Planning

2.1 % Planning Survey Section

TOPICS

45.8 % Planning

6.2 % Planning and Design

14.6 % Planning and others

4.2 % Design

29.2 % Others (mainly Traffic)

Urban transportation studies

87.5 % Planning

2.1 % Planning and Design

2.1 % Planning and other

2.1 % Design

2.1 % Design and other

4.2 % Others

Research

39.6 % Planning

2.1 % Planning and Design and other

20.8 % Planning and others

2.1 % Design

35.4 % Others (mainly Research, Materials, or Materials and Research)

Access Control

29.2 % Planning

2.1 % Planning and Design

4.2 % Planning and others

25.0 % Design

10.4 % Design and others

27.1 % Others

2.1 % Not reported

Photogrammetry

14.6 % Planning

2.1 % Planning and Design

2.1 % Planning and other

29.2 % Design

52.1 % Others

Project scheduling and expediting

31.2 % Planning

4.2 % Planning and others

6.2 % Design

6.2 % Design and others

52.1 % Others (mainly separate subdivisions for this purpose)

Urban design

6.2 % Planning

6.2 % Planning and Design

2.1 % Planning and other

62.5 % Design

4.2 % Design and others

18.8 % Others

Relocation assistance

2.1 % Planning

2.1 % Design

95.8 % Others (mainly Right-of-Way)

Traffic engineering

18.8 % Planning

6.2 % Design

75.0 % Others (mainly separate Traffic subdivision)

Safety and accident records

39.6 % Planning

8.3 % Planning and others

2.1 % Design

47.9 % Others (mainly Traffic)

2.1 % Not reported

Needs studies

95.8 % Planning

2.1 % Planning and other

2.1 % Programming

Highway classification

91.7 % Planning

6.2 % Planning and others

2.1 % Planning Survey

10. Primary responsibility for the following functions is generally located either with Planning or Design. Indicate the placement of primary responsibility in your organization.

Construction programming

54.2 % Planning

16.7 % Design

29.2 % Others

Corridor location determination

60.4 % Planning

6.2 % Planning and Design

4.2 % Planning and others

22.9 % Design

2.1 % Design and other

4.2 % Others

Interchange type and location

29.2 % Planning

20.8 % Planning and Design

45.8 % Design

2.1 % Design and other

2.1 % Not reported

Economic studies

83.3 % Planning

4.2 % Planning and Design

2.1 % Planning and other

10.4 % Design

Selection of project design standards

14.6 % Planning

16.7 % Planning and Design

66.7 % Design

2.1 % Not reported

Conducting location hearing

37.5 % Planning

4.2 % Planning and Design

4.2 % Planning and others

22.9 % Design

2.1 % Design and other

27.1 % Others

2.1 % Not reported

Route alignment selection

27.1 % Planning

8.3 % Planning and Design

2.1 % Planning and Design and other

2.1 % Planning and other

45.8 % Design

2.1 % Design and other

10.4 % Others (mainly Location or Surveys, etc.)

2.1 % Not reported

Detailed traffic assignment

100.0 % Planning

Capacity analysis

58.3 % Planning

14.6 % Planning and Design

4.2 % Planning and Design and others

8.3 % Planning and others

10.4 % Design

2.1 % Traffic

2.1 % Not reported

Coordination with local groups

39.6 % Planning

27.1 % Planning and Design

10.4 % Planning and Design and others

8.3 % Planning and others

4.2 % Design

8.3 % Others

2.1 % Not reported

Detailed cost study

20.8 % Planning

10.4 % Planning and Design

2.1 % Planning and other

58.3 % Design

2.1 % Design and other

4.2 % Others

2.1 % Not reported

Conducting design hearing

10.4 % Planning

8.3 % Planning and Design

52.1 % Design

2.1 % Design and other

22.9 % Others (mainly Districts)

4.2 % Not reported

11. What is the role of your organization in the urban transportation planning process specified by the Federal Aid Highway Act of 1962?

64.6 % Provide traffic data

52.1 % Supervise work of consultant

45.8 % Arrange for a consultant

39.6 % Carry out all of the work

35.4 % Other

2.1 % No response

Multiple responses account for total greater than 100%. About half of the "Other" responses indicate substantial involvement on the part of the state highway organization. Others describe a division of responsibility in which local interests are more deeply involved.

12. Do you feel that your organization's involvement in urban transportation planning is?

12.5 % Too little

79.2 % About right

4.2 % Too great

4.2 % Not reported or indefinite response

13. In what ways would you prefer to see changes in your involvement in urban transportation planning?

Responses may be categorized generally as follows, listed in order of frequency of mention:

- Greater local involvement is required
- Administration of the program needs improvement
- Work is hampered by shortage of staff and funding
- Planning effort should have greater effect upon program development
- Integration of modes should be given greater consideration

14. How many urbanized areas wholly or partially in your state with over 50,000 population were identified on July 1, 1965 (in relation to requirements for comprehensive transportation planning)?

14a. Number commencing continuing phase of transportation planning process:

A total of 216 urbanized areas were reported (including some duplications of inter-state areas). Progress was reported as follows:

14.8 % Prior to July 1, 1965

58.2 % July 1, 1965, to date (of completing questionnaire)

27.0 % Not yet in continuing phase (as of date of completing questionnaire)

15. What is the extent of participation in TOPICS in your state to date, using funds provided by the Federal Aid Highway Act of 1968? (Answers shown below are average values for the 47 states responding)

46.9 Number of eligible cities (over 5000 or other limitations)

16.6 Number of cities now attempting to meet requirements

1.9 Number of areawide TOPICS plans received by State

3.2 Number of Type II F. A. Systems approved by BPR

1.1 Number of areawide TOPICS plans approved by BPR

5.2 Number of projects under agreement for federal participation

0.1 Number of projects completed (in use by the public)

12.8 Percentage of combined FY 1970 and 1971 TOPICS federal apportionment under agreement

16. What is the role of your organization in TOPICS?

35.4 % Project approval and liaison

43.8 % Active participation

16.7 % Both, project approval and liaison and active participation

4.2 % Varies or other answer

16a. Has your state established a minimum population size for participation in TOPICS?

6.2 % Yes, above 50,000 population

89.6 % No (or above 5000 population)

4.2 % Not reported or not applicable

16b. What is the usual federal-state-local financing breakdown for TOPICS?

Federal participation is 50% (except higher in public-lands states)

State-local breakdown is reported as follows:

20.8 % All state

16.7 % State and local, 50%-50%

29.2 % All local

6.2 % State and local, state over 50%

2.1 % State and local, state under 50%

22.9 % All state or all local depending upon jurisdiction

2.1 % Not applicable

Note: Reported breakdown differs between studies and implementation in two states.

16c. May federal-aid TOPICS funds in your state be used for the following purposes?

Planning	89.4 % Yes	10.6 % No
Design	97.9 % Yes	2.1 % No
Inspection of construction	95.6 % Yes	4.4 % No

16d. Additional comments concerning your experience with TOPICS.

70.2% of states responding made comments. Listed in order of frequency of mention, these were as follows:

- Program is too involved, too slow of implementation (over half of comments)
- Program is a good one
- Increased activity is expected in the near future
- Have had little or no experience with program
- Miscellaneous comments or explanation of answer to question 16b.

17. In your opinion, is highway planning by your organization effectively coordinated with outside groups? Consider the extent of internal communication among persons from your organization who contact outside interests, the frequency of contacts, and other factors.

With cities and counties

93.8 % Largely effective

6.2 % Not very effective

With other state agencies

87.5 % Largely effective

10.4 % Not very effective

2.1 % Did not answer

Comments generally expressed a need for more direct contacts with local persons or other state agencies and for better communications. Some respondents felt that Bureau of the Budget requirements for coordination had improved matters.

18. Please rate as adequate or inadequate the extent to which Planning contributes to the basis for decision-making in the following specific areas:

Establishment of project design criteria and level of service

79.2 % Adequate

20.8 % Inadequate

Route corridor location

87.5 % Adequate

12.5 % Inadequate

Route alignment selection

75.0 % Adequate

25.0 % Inadequate

Analyses of travel inventory data and traffic assignment

93.8 % Adequate

6.2 % Inadequate

19. To what extent does your highway organization employ qualified traffic engineers (graduate engineers engaged full time in traffic engineering functions) and traffic engineering technicians? (Show approximate numbers)

Average per state are as follows:

	Engineer	Technician
Central office only	10.8	13.1
Total, central office plus district or division offices	24.6	31.5

19a. Does your organization provide traffic engineering services to local government units?

85.4 % Yes

12.5 % No

2.1 % Did not answer

19b. Does your state expect to expand its traffic engineering capabilities in the future?

79.2 % Yes

16.7 % No

4.2 % Did not answer

19c. Does your organization engage in field accident surveillance under the supervision of traffic engineers?

64.6 % Yes

25.0 % No

10.4 % Did not answer

19d. Do you use a "diagnostic team" approach for field accident surveillance? (Only those answering "Yes" to question 19c)

54.8 % Yes

45.2 % No

19e. Diagnostic teams function at what organizational level? (Only those answering "Yes" to question 19d)

52.9 % State

5.9 % State and District

5.9 % State, District, and several others

23.5 % District

11.8 % Others

20. What current safety standards promulgated under the National Highway Safety Act of 1966 are administered by your state highway organization? (Percentages include only those answering this question. Includes those administered in part by a highway organization.)

92.1 % 12, highway design, construction, and maintenance

92.1 % 13, traffic control devices

81.6 % 9, identification and surveillance of accident locations

36.8 % 16, accident cleanup

34.2 % 10, traffic records

34.2 % 14, pedestrian safety

10.5 % 6, codes and laws

5.3 % None

All of the other nine standards were mentioned, each administered by fewer than 8% of the state highway organizations responding. Those reported as being administered within the planning function, listed in order of frequency of mention, are 9, 10, 12, 13, 14 and 16.

21. What professional disciplines (those holding college degrees) in addition to engineers are now employed within your planning function?

64.6 % Statistician

58.3 % Planner

45.8 % Economist

31.2 % Sociologist

22.9 % Landscape architect

12.5 % Environmental specialist

12.5 % Architect

29.2 % Other (mathematicians, geographers, archeologists, lawyers, geologists, accountants, and one each of several others)

22. In your opinion, is your organization structure adequately arranged to discharge properly the highway planning function?

66.7 % Yes

31.2 % No

2.1 % Did not answer

33.3% of the respondents commented on this question. Many of these mentioned personnel shortages. The rest related to matters of concern within a particular state highway organization.

23. Do you feel that your organization is authorized a sufficient number of staff positions to carry out the highway planning function properly?

56.2 % Yes

41.7 % No

2.1 % Yes and no

23a. Is there a sufficient number of adequately trained personnel available to satisfy all of the needs in highway planning?

12.5 % Yes

87.5 % No

23b. The following classifications are in short supply:

Virtually every specialty found in a state highway organization was mentioned, the following with greatest frequency.

Planners, urban planners, and transportation planners (24 states)

Engineers: civil, highway, traffic, transportation planning, and planning (24 states)

Technicians and engineering aids (11 states)

Statisticians, mathematicians, and statistical analysts (8 states)

Economists and economic analysts (8 states)

Sociologists (4 states)

Architects, landscape architects, and environmental specialists (4 states)

24. Additional comments or expansion upon answers to questions above: Six respondents commented here, five of which further mentioned shortages of personnel.

APPENDIX D

QUESTIONNAIRES TO LOCAL GOVERNMENT OFFICIALS

Questionnaires were sent to local government officials in Iowa (pp. D-2 and D-3) as follows:

- All county supervisors
- All county engineers
- City clerks of all county seats plus all cities and towns with over 1500 population, according to the latest official census prior to 1970
- Mayors of the same cities and towns as for city clerks
- Council members of all cities with over 6000 population
- All city managers or administrators
- All local and regional directors of planning
- All city engineers
- All directors of public works

The numbers of questionnaires and responses are indicated in Table D-1.

Table D-1. Questionnaire to local government officials.

Position	Number of questionnaires	Usable responses Number	Usable responses Percent
County supervisors	361	136	37.7
County engineers	99	73	73.7
City clerks	173	73	42.2
Mayors and council members	475	195	41.1
City managers or administrators	35	21	60.0
Directors of planning	21	14	66.7
City engineers	40	26	65.0
Directors of public works	76	36	47.4
Total	1280	574	44.8

QUESTIONNAIRE

LOCAL GOVERNMENT OFFICIALS

1. Which group of professionals do you feel is best qualified to carry out highway planning?

   Engineers ☐ Architects ☐ Planners ☐

   Team including above professions and others ☐ Local persons, regardless of professional background ☐

2. Most of the work of transportation planning in Iowa's urbanized areas of over 50,000 population has been accomplished by consultants retained by the local communities. The Iowa State Highway Commission is now doing this work with its own forces for urbanized areas with populations from 25,000 to 50,000. Who do you believe should perform transportation planning in urbanized areas?

   Iowa State Highway Commission ☐ County or City Engineering and Planning ☐

   Jointly by ISHC and local officials ☐ Consultant retained by community ☐

3. In your opinion, are local plans and goals given sufficient consideration in the formulation of the state highway system and programs by the Iowa State Highway Commission?

   Yes ☐ No ☐

4. When a state project located within the area of your jurisdiction is being developed, does the Iowa State Highway Commission generally provide sufficient information concerning this project to local officials like yourself?

   Yes ☐ No ☐

5. How would you describe the responsiveness of state and federal highway planners to a majority view of the local citizenry regarding highway location and design?

   Too much attention is paid to local viewpoint ☐ More attention should be paid to the local viewpoint ☐

   It is about right ☐

6. How would you describe coordination for highway planning between levels of government in Iowa?

   Unsatisfactory and could be improved ☐ Generally satisfactory ☐ (skip 6a)

   Inadequate, but probably the best that can be done ☐ I have no basis for an opinion ☐ (skip 6a)

6a. Coordination could be improved as follows: _____

_____

_____

7. What is your opinion as to the manner in which the Iowa State Highway Commission carries out the following functions related to highway planning?

	Adequate	Inadequate	No Opinion
Selection of projects for 5-year program	☐	☐	☐
Functional classification of roads and streets	☐	☐	☐
Selection of route location	☐	☐	☐
Evaluation of local impact	☐	☐	☐
Conduct of public hearings	☐	☐	☐
Meetings with local officials	☐	☐	☐

8. Do you believe that the Iowa State Highway Commission has sufficient staff expertise to carry out its responsibilities?

   Yes ☐ No ☐

9. On the basis of your experience with liaison between the Highway Commission and your organization, how many different individuals have usually represented the Commission in dealings with you regarding a specific project?

   One ☐ Two ☐ Three ☐ More than three ☐

9a. Have you found that the Highway Commission representatives usually have had authority to make decisions themselves on matters of ordinary complexity?

   Yes, made own decisions ☐ No, referred to higher authority ☐

10. Have members of the staff of the Highway Commission generally been available for consultation on local transportation problems when requested by your organization?

   Usually ☐ Sometimes ☐ Infrequently ☐ Don't know ☐

11. Should the Highway Commission decentralize to a greater extent by providing more staff and greater authority to their district offices?

Yes ☐ No ☐ No opinion ☐

Comments: _____

_____

12. Are you kept sufficiently well informed of policies, procedures, and practices of the Highway Commission as they affect local government and your responsibilities?

Yes ☐ No ☐

13. Would you be in favor of the establishment in Iowa of a State Department of Transportation as has been recommended?

Yes ☐ No ☐ No opinion ☐

14. Please evaluate the manner in which the following federal programs related to highways are carried out in Iowa.

	Adequate	Inadequate	No Opinion
Urban transportation planning	☐	☐	☐
TOPICS	☐	☐	☐
Relocation assistance	☐	☐	☐
Highway safety	☐	☐	☐
Highway beautification	☐	☐	☐
Joint use of highway rights of way	☐	☐	☐

15. Are you kept sufficiently well informed of federal programs affecting local highways, roads, and streets?

Yes ☐ No ☐

16. Are you satisfied with the role of the U. S. Bureau of Public Roads in administering the Federal-Aid Highway Programs?

Yes, satisfied ☐ No, dissatisfied ☐ No opinion ☐

17. Please give us your suggestions for improving the effectiveness of highway planning in Iowa or additional comments or expansion upon answers to questions above.

_____

_____

_____

_____

_____

_____

_____

_____

18. Questionnaire completed by:

Name _____ Address _____ City _____ Zip _____

18a. What is your position?

County Supervisor ☐ County Engineer ☐ City Clerk ☐

Mayor or Council Member ☐ City Manager or Administrator ☐ Director of Planning ☐

Director of Public Works or City Engineer ☐

18b. What is your approximate age? Under 45 ☐ 45-64 ☐ 65 or older ☐

18c. What is your sex? Male ☐ Female ☐

When completed, return to: Transportation Study Group
Engineering Research Institute
Iowa State University, Industrial Arts Building
Ames, Iowa 50010

The responses to this questionnaire are summarized below.

1. Which group of professionals do you feel is best qualified to carry out highway planning?

27.9 % Engineers

0.3 % Architects

4.3 % Planners

47.6 % Team including above professions and others

1.9 % Local persons, regardless of professional background

0.7 % Did not answer

17.3 % Multiple answers (84% included engineers, 3% included architects, 41% included planners, 59% included a team, 23% included local persons, with others)

Comments: The more rurally oriented respondents generally tended more frequently to favor the use of engineers for this function. Urban respondents, including all directors of planning, favored a team approach.

2. Most of the work of transportation planning in Iowa's urbanized areas of over 50,000 population has been accomplished by consultants retained by the local communities. The Iowa State Highway Commission is now doing this work with its own forces for urbanized areas with populations from 25,000 to 50,000. Who do you believe should perform transportation planning in urbanized areas?

6.3 % Iowa State Highway Commission

10.5 % County or City Engineering and Planning

72.7 % Jointly by ISHC and local officials

6.1 % Consultant retained by community

2.1 % Did not answer

2.3 % Multiple answers (mostly consultants with other participation)

Comments: All groups were predominantly in favor of this work being done jointly by the Highway Commission and local officials. County officials were most likely to suggest that local officials alone do transportation planning. City engineers were most likely to suggest that consultants be engaged.

3. In your opinion, are local plans and goals given sufficient consideration in the formulation of the state highway system and programs by the Iowa State Highway Commission?

39.1 % Yes

56.5 % No

3.5 % Did not answer

0.9 % Both, or other answer

Comments: Respondents over age 65 were most inclined to a "Yes" response while females were most inclined to a "No" response.

4. When a state project located within the area of your jurisdiction is being developed, does the Iowa State Highway Commission generally provide sufficient information concerning this project to local officials like yourself?

51.6 % Yes

44.0 % No

3.5 % Did not answer

0.9 % Both, or qualified answer

Comments: Mayors, city council members, and county supervisors are more inclined to respond "No," Appointed officials and respondents above age 65 are most inclined to a "Yes" response.

5. How would you describe the responsiveness of state and federal highway planners to a majority view of the local citizenry regarding highway location and design?

3.7 % Too much attention is paid to local viewpoint

50.2 % More attention should be paid to the local viewpoint

42.5 % It is about right

3.3 % Did not answer

0.3 % Answered with a comment

Comments: Although there is substantial divergence of opinion among certain groups (by type) of officials, no clear differences emerge between urban-rural, elective-appointive, or the youngest-oldest groups.

6. How would you describe coordination for highway planning between levels of government in Iowa?

40.0 % Unsatisfactory and could be improved

27.2 % Generally satisfactory

15.0 % Inadequate, but probably the best that can be done

12.9 % I have no basis for an opinion

3.5 % Did not answer

1.4 % Qualified response

Comments: Most female respondents answered "Unsatisfactory." "Generally satisfactory" responses predominated among mayors and council members of larger cities, engineers

of urban counties, city engineers, and directors of public works.

6a. Coordination could be improved as follows:

28.8% of the respondents commented here. The general sense of these comments was as follows:

- 39% suggested more local involvement and participation, earlier in the highway planning process and felt that local feelings were entitled to more consideration
- 22% felt that more information should be afforded local officials and that communications needed to be improved
- 11% reemphasized a need for coordination among levels of government, especially at earlier stages when plans are being formulated
- 3% expressed a need for statewide or regional transportation goals and objectives as a guide to highway planning
- 3% suggested greater authority to Highway Commission Districts
- 3% expressed a feeling that coordination did not need to be improved
- 19% made comments on specific problems or that otherwise were not readily categorized

7. What is your opinion as to the manner in which the Iowa State Highway Commission carries out the following functions related to highway planning?

Selection of projects for 5-year program

55.5 % Adequate

22.3 % Inadequate

18.3 % No opinion

3.7 % Did not answer

0.2 % Qualified answer

Comments: No particular pattern of response was discernible.

Functional classification of roads and streets

50.0 % Adequate

20.2 % Inadequate

16.6 % No opinion

5.2 % Did not answer

0.2 % Qualified answer

Comments: County engineers, city engineers, and respondents over age 65 were most likely to afford an "Adequate" response.

Evaluation of local impact

34.2 % Adequate

42.1 % Inadequate

17.8 % No opinion

5.9 % Did not answer

Comments: "Adequate" responses were received with greatest frequency from older respondents, county engineers, city engineers, directors of public works, and city clerks and elected officials from smaller cities.

Conduct of public hearings

61.7 % Adequate

18.4 % Inadequate

15.2 % No opinion

4.7 % Did not answer

Comments: Although a majority of each group responded "Adequate," elective officials were much more likely to respond "Inadequate" than were appointive officials.

Meetings with public officials

43.9 % Adequate

44.6 % Inadequate

6.8 % No opinion

4.4 % Did not answer

0.3 % Qualified answer

Comments: A majority of the following groups responded "Inadequate": Female respondents, elective officials except those over 65 years of age and those from cities over 20,000 population, county engineers of the southern one third of the state.

8. Do you believe that the Iowa State Highway Commission has sufficient staff expertise to carry out its responsibilities?

74.0 % Yes

18.7 % No

7.0 % Did not answer

0.3 % Qualified answer

Comments: City clerks and county supervisors predominantly answered "Yes." "No" responses were the most frequent from county engineers and planning directors. No other clearly discernible patterns of response to this question were evident.

9. On the basis of your experience with liaison between the Highway Commission and your organization, how many different individuals have usually represented the Commission in dealings with you regarding a specific project?

25.8 % One

29.0 % Two

14.5 % Three

21.1 % More than three

8.0 % Did not answer

1.6 % Number varies or qualified response

Comments: The greatest number of individuals contacting them were reported by the employees occupying technical positions, directors of planning, directors of public works, county engineers and city engineers.

9a. Have you found that the Highway Commission representatives usually have had authority to make decisions themselves on matters of ordinary complexity?

35.6 % Yes

57.2 % No

6.3 % Did not answer

0.9 % Qualified answer

Comments: City clerks were the most likely to respond "Yes" while city managers or administrators and directors of planning were the most likely to respond "No."

10. Have members of the staff of the Highway Commission generally been available for consultation on local transportation problems when requested by your organization?

69.4 % Usually

16.0 % Sometimes

5.6 % Infrequently

7.3 % Don't know

1.7 % Did not answer

Comments: A response of "Usually" occurred somewhat less frequently from mayors and council members, especially those from cities over 5000 population.

11. Should the Highway Commission decentralize to a greater extent by providing more staff and greater authority to their district offices?

49.0 % Yes

23.6 % No

23.0 % No opinion

4.4 % Did not answer

Comments: 21.8% of the respondents amplified their answer with a comment. County engineers, especially in the southern part of the state, were most likely to answer "Yes." City managers or administrators and public works directors were least likely to answer "Yes." Responses from all other groupings adhered closely to the average responses shown above.

12. Are you kept sufficiently well informed of policies, procedures, and practices of the Highway Commission as they affect local government and your responsibilities?

53.5 % Yes

42.5 % No

3.7 % Did not answer

0.3 % Qualified answer

Comments: "No" answers are in a majority among mayors and city council members, directors of planning, and respondents under 45 years of age.

13. Would you be in favor of the establishment in Iowa of a State Department of Transportation as has been recommended?

30.5 % Yes

36.1 % No

30.3 % No opinion

3.1 % No answer

Comments: Rural government officials and city clerks from smaller cities are most inclined to a "No" response, others tend toward a "Yes" response. All directors of planning who had an opinion answered "Yes."

14. Please evaluate the manner in which the following federal programs related to highways are carried out in Iowa.

Urban transportation planning

33.6 % Adequate

20.4 % Inadequate

38.6 % No opinion

7.1 % Did not answer

0.3 % Qualified response

Comments: Mayors and council members from cities over 50,000 population (the only cities directly affected by this provision of the 1962 Federal-Aid Highway Act) were likely to respond "Inadequate." Directors of planning, city engineers and directors of public works were most likely to answer "Adequate" and were least likely to have no opinion.

TOPICS

24.6 % Adequate

18.1 % Inadequate

46.0 % No opinion

11.3 % Did not answer

Comments: A slight majority of mayors, council members, and city managers or administrators who had opinions answered "Inadequate." Other groups tended more frequently toward an "Adequate" answer.

Highway safety

54.2 % Adequate

20.8 % Inadequate

17.2 % No opinion

7.8 % Did not answer

Comments: "Adequate" responses occurred in the highest proportion from city engineers and from female respondents. No other significant patterns of response were discernible.

Highway beautification

55.0 % Adequate

19.4 % Inadequate

18.4 % No opinion

7.0 % Did not answer

0.2 % Qualified answer

Comments: Directors of planning tended strongly to feel that this program was "Inadequate." Female respondents predominantly felt the program was "Adequate."

Joint use of highway right-of-way

38.2 % Adequate

17.1 % Inadequate

36.5 % No opinion

8.2 % Did not answer

Comments: A majority having an opinion from all groups felt that this program was adequately administered in Iowa except city engineers, of whom two thirds of those having an opinion thought it was "Inadequate."

15. Are you kept sufficiently well informed of federal programs affecting local highways, roads, and streets?

40.6 % Yes

55.5 % No

3.7 % Did not answer

0.2 % Qualified answer

Comments: A majority of the following groupings answered "Yes": City managers or administrators, city engineers, directors of planning, and county engineers. A majority of city clerks, mayors and council members, directors of public works, and county supervisors felt that they were not kept sufficiently well informed.

16. Are you satisfied with the role of the U.S. Bureau of Public Roads in administering the Federal-Aid Highway Programs?

27.0 % Yes

38.6 % No

30.8 % No opinion

3.3 % Did not answer

0.3 % Qualified response

Comments: Responses to this question were extremely divergent. Rural officials, city managers or administrators, and directors of planning responded "No" by at least a two to one margin among those holding an opinion. Other city officials tended with greatest frequency to answer "Yes."

17. Please give us your suggestions for improving the effectiveness of highway planning in Iowa or additional comments or expansion upon answers to questions above.

45.4% of the respondents made comments. These tended generally to amplify one or more of the following thoughts, listed in order of frequency of mention:

- Better coordination of efforts is required in highway planning; local involvement should be broadened; more cooperation is needed.
- Apportionment of highway funds should be changed in some way; they should not be diverted for other purposes.
- Highway planning decisions should be directed toward satisfying local needs and should not be based on political considerations
- Highway planning is satisfactory as things now stand
- More local authority in highway planning is desirable, the ISHC and BPR should be involved less in decisions affecting local areas
- Various suggestions are made for specific changes in highway design, traffic studies, and law enforcement; specific problem locations are described

- Federal standards for local rural roads are too high and cause excessive expenditures
- Iowa needs more freeways, more urban bypasses, and higher quality roads
- There is too much red tape and delay in highway planning
- People should be better informed of highway programs and needs
- The planning function of the ISHC should have more emphasis, greater influence, and increased staff
- ISHC activities and lines of authority should be decentralized further, the Secondary Roads Department should have higher status
- The ISHC or the BPR or both are inefficient or ineffective or wasteful
- We have enough highways; land resources must be conserved; more attention should be devoted to transit; the environment needs to be improved
- More guidance from the ISHC is desirable; lines of authority need to be clarified; programs and standards should be uniform from state to state
- The five-year construction program should be more closely adhered to

18b. What is your approximate age?

Responses are tabulated below by percent.

Position	Under 45	45-65	Over 65	Did not answer
County supervisors	3.7	67.6	25.0	3.7
County engineers	49.3	43.8	5.5	1.4
City clerks	30.1	54.8	13.7	1.4
Mayors and council members	33.8	53.9	10.8	1.5
City managers or administrators	47.6	52.4	0	0
Directors of planning	85.8	0	7.1	7.1
City engineers	69.3	26.9	3.8	0
Directors of public works	33.3	61.1	5.6	0
Total	31.6	53.8	12.7	1.9

18c. What is your sex?

Responses by percent are as follows.

Position	Male	Female	Did not answer
County supervisors	97.1	0	2.9
County engineers	97.3	0	2.7
City clerks	75.3	21.9	2.8
Mayors and council members	95.8	2.1	2.1
City managers or administrators	95.2	0	4.8
Directors of planning	92.9	0	7.1
City engineers	100.0	0	0
Directors of public works	100.0	0	0
Total	94.1	3.5	2.4

APPENDIX E

QUESTIONNAIRES TO PRIVATE CITIZENS

Questionnaires (p. E-2) were sent to a representative group of private citizens, both urban and rural. Rural residents were picked by a random selection process from five counties that are representative of a range of population classes and are distributed geographically in Iowa. The rural sample came from Henry, O'Brien, Polk, Ringgold, and Winneshiek Counties.

The urban sample was selected randomly from telephone directories for the Sioux City and Waterloo metropolitan areas. Selection of these two cities was based on a hypothesis that their residents probably would express the two extremes of satisfaction with regional highway service, at least among the seven largest cities in Iowa.

The number of questionnaires and returns is indicated in Table E-1. Figure E-1 shows the locations of the survey groups.

Responses to this questionnaire are indicated below:

Table E-1. Number of private citizen questionnaires.

Group	Number of questionnaires	Number returned	Percent returned
Sioux City	244	85	34.8
Waterloo	244	113	46.3
Total urban	488	198	40.6
Henry County	57	20	35.1
O'Brien County	78	43	55.2
Polk County	68	25	37.8
Ringgold County	75	27	36.0
Winneshiek County	92	30	32.6
Total rural	370	145	39.2
Total	858	343	40.0

QUESTIONNAIRE

FOR

PRIVATE CITIZENS

1. Have you ever attended a public hearing or open meeting held to discuss a highway improvement?

   Yes ☐ No ☐

2. Have you ever been directly affected or involved in a highway improvement project?

   Owned property taken for right of way ☐
   Lived adjacent to the highway ☐
   Inconvenienced daily by construction ☐
   Participated in developing the project ☐

3. What is your opinion of the current level of expenditure for highway purposes in Iowa?

	Spending Too Much	About Right	Need to Spend More
On primary (state) highways	☐	☐	☐
On county roads and highways	☐	☐	☐
On municipal streets	☐	☐	☐

4. Are you satisfied with the rate at which new four-lane highways are being built in Iowa?

   Yes ☐ No, building too many ☐ No, need to speed up construction ☐

5. Please indicate your degree of concern with the following items that are associated with the construction or use of highways:

	Major Concern	Minor Concern	Not of Concern
Traffic detours during improvement	☐	☐	☐
Removal of land from other use	☐	☐	☐
Highway accident rates	☐	☐	☐
Appearance of highways	☐	☐	☐
Highway noise, dust, and fumes	☐	☐	☐
Billboard removal	☐	☐	☐

6. Which group of professionals do you feel is best qualified to carry out highway planning?

   Engineers ☐ Architects ☐ Planners ☐
   Group representing various professions ☐
   Local persons regardless of professional background ☐

7. How would you describe the responsiveness of state and federal highway planners to the local viewpoint regarding highway location and design?

   Too much attention is paid to local viewpoint ☐
   It is about right ☐
   More attention should be paid to local viewpoint ☐

8. Please give us your suggestions for improving the effectiveness of highway planning in Iowa or comments or expansion upon answers to questions above.

   _____

   _____

   _____

   _____

9. What is your approximate age? Under 45 ☐ 45-64 ☐ 65 or older ☐

10. What is your sex? Male ☐ Female ☐

When completed, return to:

Transportation Study Group
Engineering Research Institute
Iowa State University
208 Industrial Arts Building
Ames, Iowa 50010

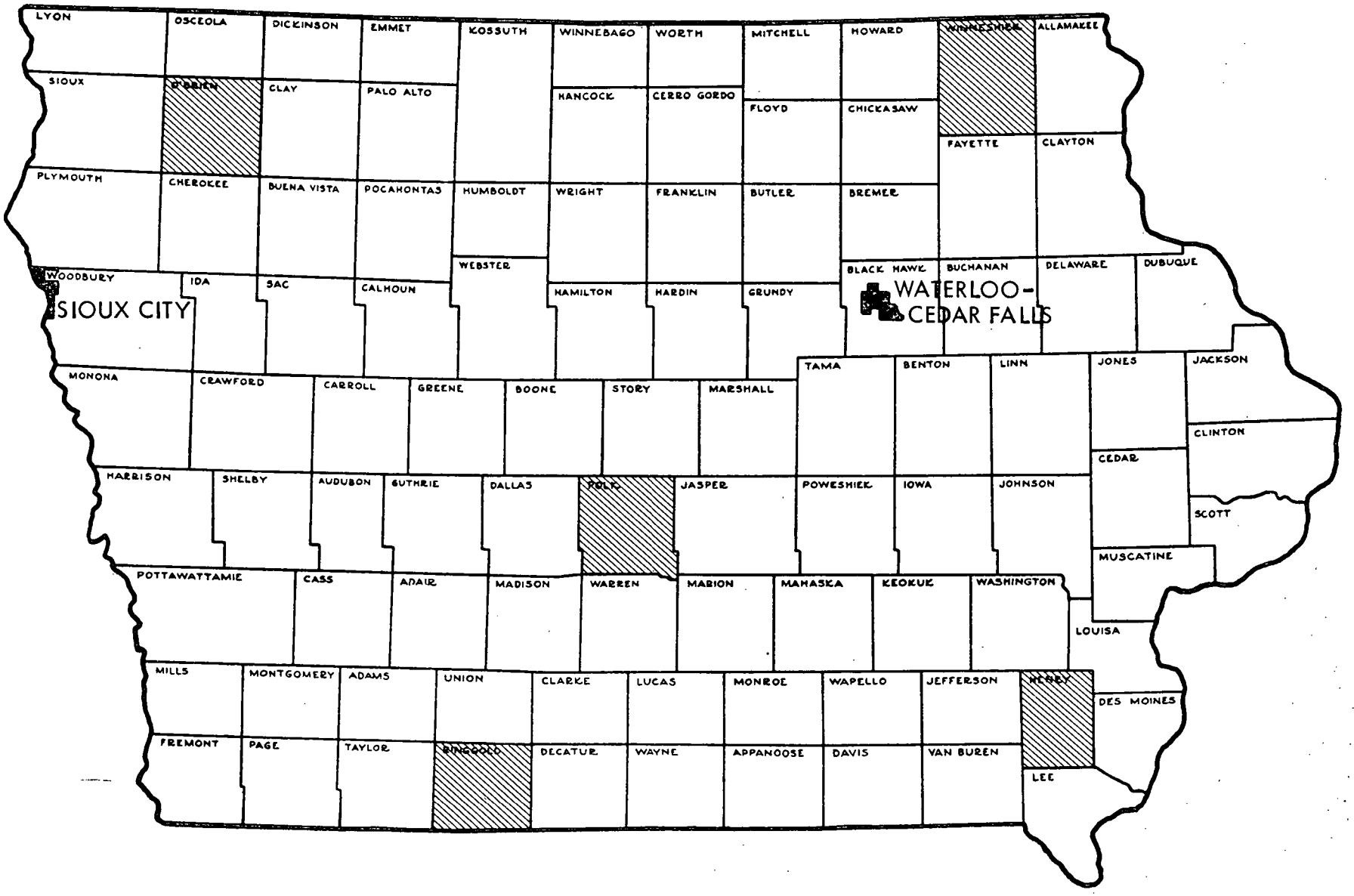


Fig. E-1. Location of private citizens surveyed.

1. Have you ever attended a public hearing or open meeting to discuss a highway improvement?

   13.4 % Yes

   85.7 % No

   0.9 % Did not answer

   Comments: Rural residents in Henry and Polk Counties were most likely to have attended such a gathering. Female respondents and older persons also were most likely to respond "Yes."

2. Have you ever been directly affected or involved in a highway improvement project?

   19.0 % Owned property taken for right-of-way

   22.8 % Lived adjacent to the highway

   40.8 % Inconvenienced daily by construction

   7.0 % Participated in developing the project

   38.5 % None of these or no answer

   Comments: Rural residents were more likely to have owned property taken for right-of-way or lived adjacent to a highway. Waterloo residents were most likely to have been inconvenienced by construction. The probability of having property taken for right-of-way was directly a function of age while a feeling of having been inconvenienced by construction was inversely related to age.

3. What is your opinion of the current level of expenditure for highway purposes in Iowa?

   On primary (state) highways

   10.2 % Spending too much

   51.3 % About right

32.7 % Need to spend more

5.8 % Did not answer

Comments: Residents of Winneshiek County were most likely to answer "Spending too much." Residents of urban areas and Ringgold County seldom answered that the level of spending was too high. Waterloo residents especially felt that more needed to be spent on primary highways. Female respondents were much more likely than males to feel that spending was too high.

On county roads and highways

19.8 % Spending too much

41.7 % About right

26.8 % Need to spend more

11.7 % Did not answer

Comments: Urban residents were over five times as likely as rural residents to feel that spending for rural roads was at too high a level.

On municipal streets

7.3 % Spending too much

37.9 % About right

39.1 % Need to spend more

15.7 % Did not answer

Comments: Urban residents were almost five times as likely as rural residents to respond "Need to spend more." Over 75% of respondents from Sioux City gave this answer.

4. Are you satisfied with the rate at which new four-lane highways are being built in Iowa?

47.2 % Yes

6.7 % No, building too many

41.4 % No, need to speed up construction

4.7 % Did not answer

Comments: A majority of rural residents were satisfied with the current rate of construction, while a majority of urban residents, especially those from Waterloo, favored more rapid building of four-lane highways. Males and elderly persons were most inclined to answer "Yes" while females and younger persons more frequently favored a speed-up in four-lane highway construction.

5. Please indicate your degree of concern with the following items that are associated with the construction or use of highways.

Traffic detours during improvement

30.3% Major concern

47.3% Minor concern

14.8% Not of concern

7.6% Did not answer

Comments: No pattern of response by location, age, or sex is apparent.

Removal of land from other use

38.8% Major concern

36.4% Minor concern

16.3% Not of concern

8.5% Did not answer

Comments: This problem is seen as a major concern to a majority of rural residents of O'Brien, Polk, and Winneshiek Counties and to most female respondents.

Highway accident rates

81.6 % Major concern

9.3 % Minor concern

3.5 % Not of concern

5.6 % Did not answer

Comments: All groups of respondents viewed this very strongly as a problem of major concern.

Appearance of highways

49.0 % Major concern

36.1 % Minor concern

7.3 % Not of concern

7.6 % Did not answer

Comments: Citizens from urban areas and from O'Brien and Polk Counties were most likely to view this as a major concern. Most respondents from Ringgold County felt that highway appearance was of minor concern.

Highway noise, dust, and fumes

47.5 % Major concern

33.2 % Minor concern

11.7 % Not of concern

7.6 % Did not answer

Comments: Rural residents, except for those from Polk County, were less likely to view this as a major concern than urban

residents. A majority of respondents over 65 years of age also viewed highway noise, dust, and fumes as a major concern. Females were somewhat more concerned than males.

Billboard removal

30.0% Major concern

35.3% Minor concern

26.5% Not of concern

8.2% Did not answer

Comments: Billboard removal also was most likely to be of major concern to persons residing in Polk County or in urban areas. Citizens of O'Brien and Ringgold Counties expressed little concern with this item.

6. Which group of professionals do you feel is best qualified to carry out highway planning?

37.6 % (50.1%) Engineers

1.5 % (4.4%) Architects

14.3 % (30.0%) Planners

13.4 % (25.1%) Group representing various professions

4.7 % (15.5%) Local persons regardless of professional background

26.2 % (—) Multiple answers

2.3 % (2.3%) Did not answer

Comments: Values shown above in parentheses include multiple answers and total more than 100%. Rural residents, especially those in Winneshiek County, were more likely than urban residents to favor local persons for highway

planning and were less likely to favor engineers. Persons under 45 years of age and females gave greatest support to highway planning by engineers.

7. How would you describe the responsiveness of state and federal highway planners to the local viewpoint regarding highway location and design?

16.6 % Too much attention is paid to the local viewpoint

27.7 % It is about right

52.2 % More attention should be paid to local viewpoint

3.5 % Did not answer

Comments: The point of view that the local viewpoint is given too much attention is expressed more than twice as often by urban residents as by rural residents. A majority of rural respondents from each county felt that the local viewpoint demanded greater attention. The same was true of citizens from the Waterloo area. On the other hand, the most frequent response from Sioux City was "It is about right." Female citizens were somewhat more dissatisfied with this aspect of highway planning than males.

8. Please give us your suggestions for improving the effectiveness of highway planning in Iowa or comments or expansion upon answers to questions above.

66.5% of the respondents made some comment. Most of these amplified the answers given to questions 1 through 7. Many comments were extremely discerning and made specific suggestions for improvements in highway planning, design or operations. All of these are

summarized below and are listed in order of frequency of occurrence, the most frequent listed first.

Question 1: Public hearings

- Why go to meetings; decisions are already made

Question 3: Expenditure level

- Widen and straighten existing roads, remove curbs and narrow bridges
- There are too many hard-surfaced county roads
- Keep old roads in good repair
- Maintain gravel and paved roads
- Maintain and improve shoulders
- Spend too much money overall
- Taxes are too high in cities
- Road use tax distribution formula too much in favor of secondary roads
- Need more hard-surfaced county roads

Question 4: Four-lane highway construction

- We need more four-lane highways; also, link cities to freeways with four-lane roads
- Run parallel to present routes, use present surface and land

Question 5A: Traffic detours

- Shorten projects and reduce construction time
- Keep public informed about construction and detours
- Maintain detours
- Use better signing

- Detours do not fit semi-trucks
- Repair city detours after construction completed

Question 5B: Land use

- Too much land is wasted
- Eminent domain used too freely
- No diagonal highways
- Use steel not grass medians
- Close some county roads

Question 5C: Highway accidents

- General comments concerning highway safety
- Speed too high
- Improve high volume intersections
- Do not use small islands
- Use overhead warning and luminous paint more
- Restrict driving privilege, also concern with drinking
- Publicize accidents, make public aware
- Reduce number of cars
- Lengthen no-passing zones
- Better railroad crossing marking
- Use longer access lanes
- Do not design forced lane hopping — I-235

Question 5D: Highway appearance

- Appearance poor — general
- Litter
- Use prison and welfare people as labor
- Weeds unsightly
- Utilize state beauty more

Question 6: Design personnel

- Let the professionals do the planning
- Use team work
- Pay to get good professionals
- Promote honest cooperation in planning

Question 7: Local viewpoint

- Consult more with local people, they know local problems
- Local people have too much influence
- Control local access more rigidly
- Allow more local access

Question 8: Suggestions for improving planning effectiveness

- Get rid of politics in highway planning at all levels
- Design for the future to avoid high maintenance or reconstruction due to redesign in area
- Use long-range practical planning based on needs
- The people involved in highway design are doing a good job
- Use common sense in planning
- Design with economy
- Stick to the five-year plan
- Get rid of "dead wood"
- Too many chiefs, not enough Indians

Other comments and suggestions:

- Cities and towns should be by-passed
- Heavy trucks damage roads and should be restricted
- Need more road signs, particularly on county roads
- Interchanges should be standardized and reduced in number

- Maps and road signs are too confusing
- Land surveys are duplicated too often
- Slip forms make surface too rough
- Road use tax should not be used for other purposes
- Surveys like this are a waste of money

9. What is your approximate age?

39.1 % Under 45

45.2 % 45-64

15.7 % 65 or older

Comments: Urban respondents and males tended to be somewhat younger than rural respondents and females.

10. What is your sex?

86.6 % Male

12.8 % Female

0.6 % Did not answer

Comments: Female respondents were most numerous from urban areas.

APPENDIX F

QUESTIONNAIRES TO CONSULTING ENGINEERING FIRMS

Questionnaires were sent to 31 consulting engineering firms headquartered in Iowa that were involved to some degree in highway design or planning or both. A sample of this questionnaire is included in this report on pp. F-2 and F-3.

Completed questionnaires were returned from 26 of these firms. Three others replied that their involvement in highway work was not sufficiently significant to justify completing the questionnaire.

A majority of the respondents are properly categorized as small consulting firms. However, since one very large firm was included among those completing the questionnaire, average or mean values tend to distort the answers to some questions. Median values are more meaningful in these cases and are reported where applicable. A complete summary of responses is as follows:

1. What was the average number of employees of your firm during the past year?

   Median number is 20.

1a. What was the dollar value of the engineering services performed by your firm during the year?

   Median value is $277,500.

2. Approximately what percentage of your firm's engineering consulting effort during the last five years has been concerned with highway planning or design, excluding 701 planning?

   Average is 19%.

QUESTIONNAIRE

CONSULTING ENGINEERING FIRMS

1. What was the average number of employees of your firm during the past year?

_____ employees

1a. What was the dollar value of the engineering services performed by your firm during the past year?

$_____

2. Approximately what percentage of your firm's engineering consulting effort during the last five years has been concerned with highway planning or design, excluding 701 planning?

_____%

2a. Does your firm do 701 planning? Yes ☐ No ☐

3. Please estimate the percentages of the highway planning or design work that have been done by your firm during the last five years under contract with the following:

Outside Iowa _____%

In Iowa:

State Highway Commission _____%

Counties _____%

Municipalities _____%

Other _____%

4. Has all your firm's work referred to in questions 2 and 3 been such that it properly may be described as design: i.e., standards, alinement, and level of service were specified to you?

Yes ☐ (Skip questions 5 through 7) No ☐

5. Are BPR programs for trip distribution and traffic assignment (or suitable alternatives) available to your firm and do you have the computer capability to utilize these, either in-house or otherwise available?

Yes ☐ No ☐

6. Do you have persons in your firm with college-level training, experience, and whose primary work responsibilities are such that they may be described as members of the following professions? Please indicate the number in each category, 0 if you have none.

	Number		Number
Landscape Architect	_____	Sociologist	_____
Statistician	_____	Urban Planner	_____
Environmental Specialist	_____	Economist	_____
Civil Engineer	_____	Traffic Engineer	_____

7. Check the one statement following that best describes your typical highway planning project concerning the extent to which you were able to contribute to the final recommendations made for consideration by decision makers.

☐ The scope of our work was very broad so that we effectively did the planning for this project.

☐ We were able to exercise quite a bit of discretion and our suggestions were considered in formulating final recommendations.

☐ Our work was largely mechanical in nature and served only to provide input for others who actually made recommendations.

8. In your opinion, are local plans and goals given sufficient consideration in the formulation of the state highway system and programs by the Iowa State Highway Commission?

Yes ☐ No ☐

9. Please give us your suggestions for improving the effectiveness of highway planning in Iowa or comments or expansion upon answers to questions above.

10. Your name _____ Firm name _____

Address (Street) _____

(City and State) _____ Zip _____

When completed, return to:

Transportation Study Group
Engineering Research Institute
Iowa State University
Industrial Arts Building
Ames, Iowa 50010

2a. Does your firm do 701 planning?

34.6 % Yes

65.4 % No

3. Please estimate the percentages of the highway planning or design work that have been done by your firm during the last five years under contract with the following:

3.9 % Outside Iowa

96.1 % In Iowa

18.8 % State Highway Commission

8.5 % Counties

66.6 % Municipalities

2.2 % Other

4. Has all your firm's work referred to in questions 2 and 3 been such that it properly may be described as design: i.e., standards, alignment, and level of service were specified to you?

50.0 % Yes (Skip questions 5 through 7)

42.3 % No

7.7 % Did not answer

5. Are BPR programs for trip distribution and traffic assignment (or suitable alternatives) available to your firm and do you have the computer capability to utilize these, either in-house or otherwise available?

57.1 % Yes

42.9 % No

Comments: This question was not responded to by those who replied "Yes" to question 4. A "No" response to this question would tend to establish limits for the level of the

firm's capability for highway planning and indicate that some of the input data for their use would need to be provided for them.

6. Do you have persons in your firm with college-level training, experience, and whose primary work responsibilities are such that they may be described as members of the following professions? Please indicate the number in each category, 0 if you have none.

1 Landscape Architect

0 Statistician (or Mathematician)

0 Environmental Specialist

4 Civil Engineer

0 Sociologist

1 Urban Planner

0 Economist

0 Traffic Engineer

Comments: These are median values. A few responses indicated that some of these professionals were available to a firm on a consulting basis but were not regularly employed. Sixteen firms responded to this question.

7. Check the one statement following that best describes your typical highway planning project concerning the extent to which you were able to contribute to the final recommendations made for consideration by decision makers.

23.1 % The scope of our work was very broad so that we effectively did the planning for this project.

69.2 % We were able to exercise quite a bit of discretion and our suggestions were considered in formulating final recommendations.

7.7 % Our work was largely mechanical in nature and served only to provide input for others who actually made recommendations.

Comments: Thirteen firms responded to this question.

8. In your opinion, are local plans and goals given sufficient consideration in the formulation of the state highway system and programs by the Iowa State Highway Commission?

42.3 % Yes

42.3 % No

7.7 % Both or varies

7.7 % Did not answer

9. Please give us your suggestions for improving the effectiveness of highway planning in Iowa or comments or expansion upon answers to questions above.

Comments included a wide range of suggestions regarding highway planning. These may be paraphrased and summarized as follows, listed in order of frequency of mention:

- More state work could and should be performed by consultants
- The Highway Commission has a competent staff and an excellent Planning Division
- Local participation in highway planning should be broadened and initiated earlier in the planning process; some Highway Commission decisions appear arbitrary
- Highway planning in urban areas often is not satisfactorily coordinated with long-range local street plans

- The State's method of programming could be improved; political pressures sometimes create bad publicity
- Communities need utility plans which must be an important design consideration
- Transportation planning needs to be more comprehensive with less emphasis on moving traffic
- The Highway Commission should have increased authority for advanced right-of-way purchase
- Salaries and benefits to Highway Commission employees should be increased
- Truck weight limits should be standardized nationally and the effect of truck loadings should be the subject of further research

APPENDIX G

INTERVIEWS WITH IOWA STATE HIGHWAY COMMISSION PERSONNEL

Detailed interviews were conducted with several department heads and section leaders to gain an insight into the day-to-day operation of the Iowa State Highway Commission organization. Staff opinions regarding the actual effectiveness of the organizational structure in providing a framework for operation were obviously varied, being dependent on the individual, his activity association, and his conceptual knowledge of the overall situation. Based on these personal interviews the following general summary is an attempt to identify the staff's concept of the organizational framework, and the effectiveness of activities.

1. Is the organizational structure adequately arranged to discharge properly the highway planning function? What type of organizational framework would you suggest?

   - About half the interviewees responded with a qualified "Yes". Most had minor suggestions such as:

     Secondary Roads should be under the Division of Planning.

     Location and Pre-Design should be under the Division of Planning.

     Traffic and Safety should be under the Division of Operations.

     Establish a Division of Department of Local and Urban Affairs.

     Combine Urban Design with Urban Planning.

   - About half responded with a "No". The objection centered around the location of the Division of Planning under the Director of Highways – with the suggestion that it be placed under the Chief Engineer. The comment that the informal organization chart is

entirely different from the formal organization chart was frequently expressed. The problem is due to the overlapping of responsibilities and authority relative to the mission of the Division of Planning and the activities of Location and Pre-Design in the Development Division. It was suggested that Location and Pre-Design were more closely allied with planning and that the present organization constituted a fragmentation of this basic function and created jurisdictional problems. However, those currently associated with location and pre-design stressed the need for a close relationship with detail design in order to assure a compatible, viable project.

2. Have you encountered or observed any operational difficulties in the carrying out of the planning functions?

- About 20% of the interviewees expressed no knowledge of any operational difficulties. Also, they commented that this situation had rapidly changed in the past few years from a prior adverse setting for planning activities.
- The remaining 80% of the interviewees expressed some degree of concern for the organization's effectiveness in carrying out the planning activities. The following items were specifically noted:

  Lack of input of traffic engineering expertise. This item was expressed by a number of persons, and is pursued in further detail later in the questioning.

  Inadequate basic studies and decisions. The results are manifested as project concept confusion, post-justification studies, duplication and wasted effort, stalemates, and delays.

  Lack of recognition of nonhighway interests at the initial stages of project development.

  Inadequate internal coordination, communication, and overall control of activities.

Overlapping responsibilities leading to conflicts and duplication of effort. Those expressing concern identified specifically the location and pre-design activities overlapping and duplication with project concept and development in the Division of Planning. It appears incongruous that the ISHC management Manual MM 2300, 4-D.03 vests the sole responsibility for a highway location decision in the Road Design Department.

Inadequate recognition of other agencies' interests and coordination with other agencies.

Lack of authority at the District Engineers' level and the lack of any planning or traffic engineering expertise in the district office.

3. Is adequate emphasis being given to the basic planning functions?

   - About 50% of the interviewees expressed generally, "yes, in recent years."
   - The remaining interviewees identified one or more of the following areas of activities as needing strengthening:

     Traffic engineering. It was noted that this lack of specialized input into the planning function has been fragmented insofar as it is being conducted, so as to be ineffective, and in most cases, is superficial at best.

     Recognition of environmental and socio-economic aspects in considerations for highway location and design needs emphasis.

     Added study and coordination emphasis for location, impact, and type of interchanges, intersections and separations for freeway and expressway planning is needed.

4. Do you believe more of the planning function should be decentralized?

   - Practically all persons interviewed recommended that the District Office's power, authority, status, and staffing expertise should be somewhat increased for improving organizational effectiveness. (Only one person recommended "strong" decentralization.) Primarily, the unavailability of planning and traffic engineering expertise in the district office was their concern. The common expression

for defining the function of the district office was a service group with little authority, and that this situation had developed in recent years.

5. Is there an adequate number of personnel to carry out the planning function?

   - The primary shortage of personnel is in the specialized areas of traffic engineering and urban transportation planning. Special concern was expressed for the unavailability of traffic engineering expertise as a fundamental input to planning and design.
   - Some individuals were concerned with the practice of filling specialized positions without prior training, or no program of on-the-job education. Ineffectiveness and personal frustration occurs, resulting in poor motivation and the consequent problems. The District Urban Engineer position was specifically noted.

6. Do the administrative leaders in the Division of Planning have the authority, responsibility, and status to adequately carry out their activities?

   - The answers to this question depended upon the interviewees' orientation. Those in planning generally felt that the positions in planning were rated below corresponding Operations and Development Division positions and as such represented reduced bargaining power for effective day-to-day activities. Most department heads and section leaders in Planning indicated an inability to function competitively with the other divisions. They stated that this "de-emphasis" of planning position's

status had occurred in recent years from a prior condition of more equal status.

7. Within the organization structure is there a satisfactory condition of internal coordination and communication between the various departments and sub-groups?

   - The answers to this question were fairly well divided with some expressing no concern and others very much concerned. It was noted that the formal flow of information at the division and department level is supplemented by an informal flow at the section and technicians level, which generally results in enough flow of information to consummate a project.
   - It was noted by the interviewer that very few below the section head level have a broad conceptual knowledge of the organization's functioning. And that documents, manuals, studies, policies, and items of this nature are seldom disseminated beyond those areas with immediate application.

8. Is the Highway Commission planning activity being adequately coordinated with the local agencies concerned?

   - Most persons felt that an adequate flow of information to outside agencies exists, but failed to identify any real outside agency participation. The role of other agencies is to provide local data and information as input, and subsequently to review the decisions reached by the Highway Commission. Even though changes are usually possible, this appears to be a negative approach relative to the planning process. The lack of professional staff and expertise in other agencies was noted as historically being the basis for this condition.

In summary, the investigator's concept of the Highway Commission organization as achieved through staff interviews can be stated as follows:

1. The basic Highway Commission organizational framework is consistent with the nationwide trend in state highway departments, and in general follows recommendations of management specialists. There appears to be a trade-off between the benefits gained from having the Division of Planning reporting directly to the Administrator, and the disbenefits to organizational effectiveness due to the insulation developed between the other divisions under the Chief Engineer. Some states have found advantages with the organizational structure of Planning, Development, and Operations all under the Chief Engineer, in order to better coordinate, direct and control these interrelated activities.

   A major Highway Commission organizational problem is the fragmentation of the basic planning function between the Division of Planning and the Development Division. This incomplete division of functional activity creates a problem in a large part due to the location of the Division of Planning under the Administrator. As a consequence, a devious chain of command and communication exists between the two divisions, along with an overlapping of responsibility and resultant duplication of effort.

   Fundamental to the dilemma of organization design is the uniqueness of the interrelationship that exists between the planning and design functions. Rather than two discrete

entities, these activities can be better explained as a continuum. The terms are in fact synonymous. Detail design provides an input into the initial planning activities and, on the other hand, planning must permeate all activities to the stage of drafting of contract plans, regardless of the title of the group doing the work.

2. The obvious lack of traffic engineering expertise is astonishing throughout the planning, design, and district activities. The total effect of this inadequacy can only be conjectured, but at best it must have negated to a significant degree the planning and design input efforts. In addition to the many facets of planning and design which require the services of a traffic engineer, the benefits to be derived by providing these services to a local community lies untapped. A traffic engineer in each district could provide local service as well as the needs of the highway commission.

3. Increasing concern for outside interests in the planning for highway systems is a forgone conclusion. Recognition of the need for participative, creative development by other groups will expedite achieving the desired goals. The concept of design teams and advisory boards offer a method of utilizing the multi-disciplinary approach and achieving a higher degree of coordination and objective action.

4. From an administrative standpoint it appears that two problems exist. First, the present organization's classification and pay plan is archaic, in that it does not provide the profession of planning an opportunity to function competitively.

(Transportation planning positions have been upgraded to levels comparable with engineering positions since these interviews were conducted.) Secondly, from expressions by the staff, it appears that there is a lack of basic documented input analysis and decision making. And, due to overlapping authority and responsibility, a duplication of efforts occurs.

APPENDIX H

ORGANIZATION CHARTS OF IOWA STATE HIGHWAY COMMISSION

Fig. H-1. Divisions and Districts.

Fig. H-2. Departments.

Fig. H-3. Sections-Operations Division.

Fig. H-4. Sections-Development Division.

Fig. H-5. Sections-Planning Division.

Fig. H-6. Districts.

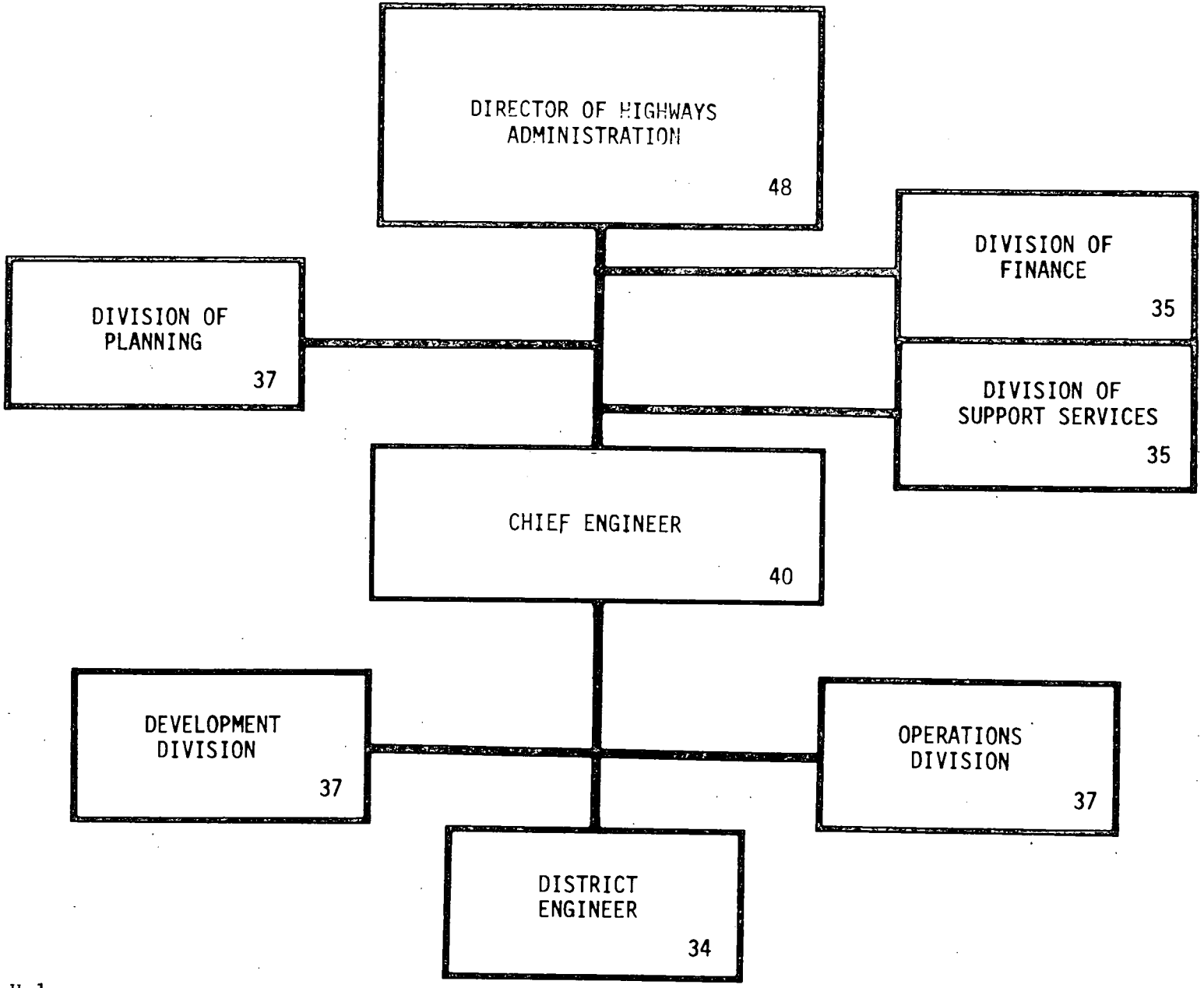


Fig. H-1.

DIVISIONS AND DISTRICTS

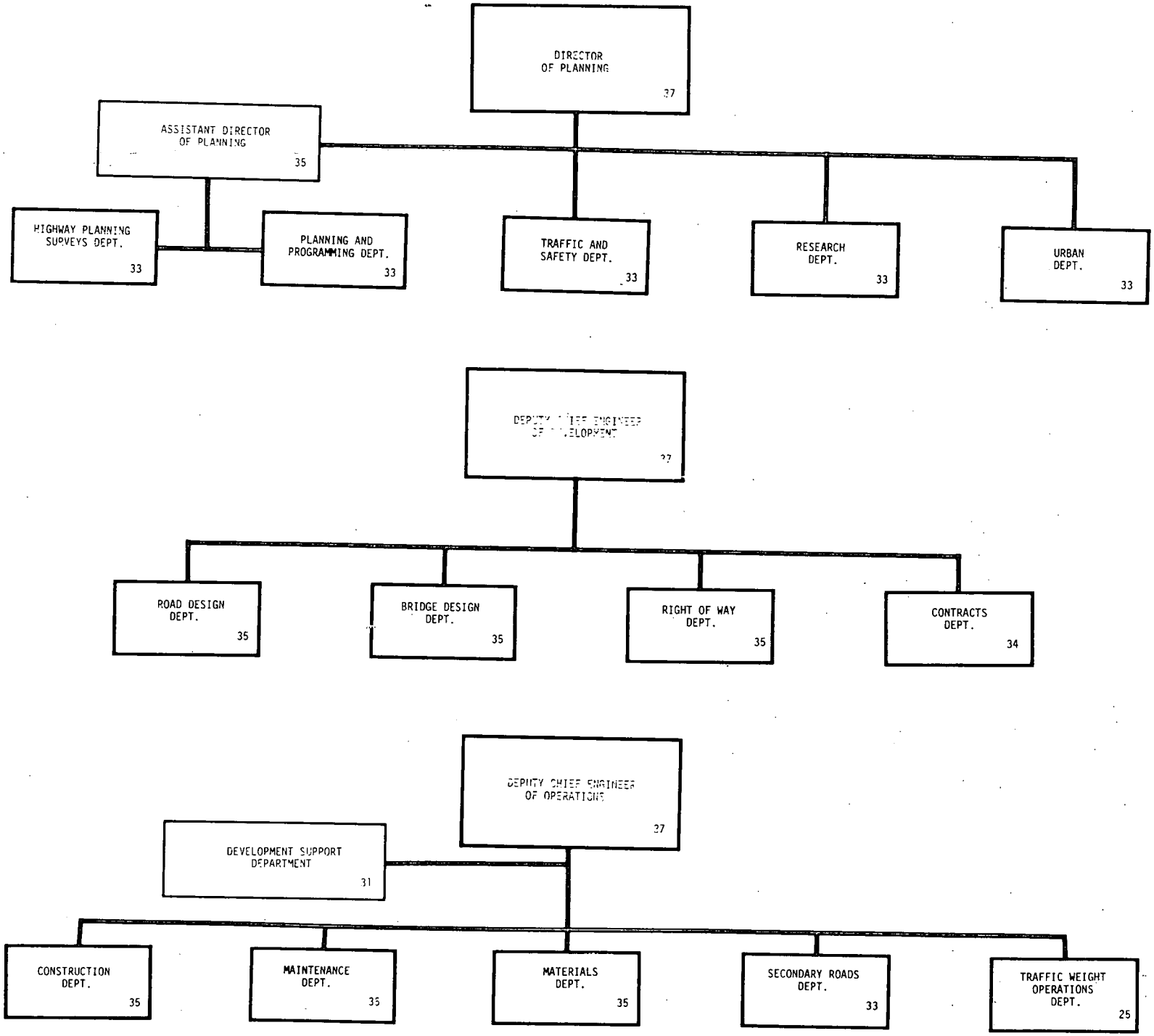
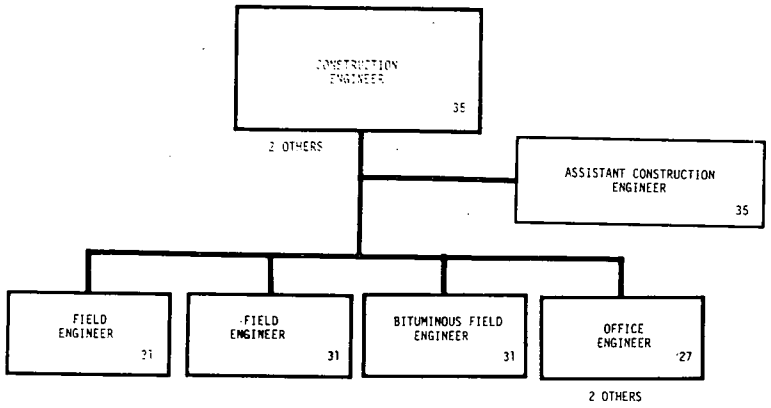
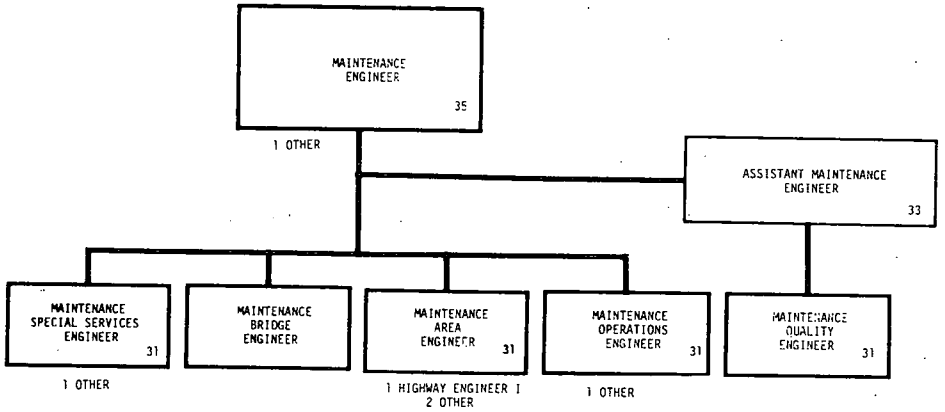
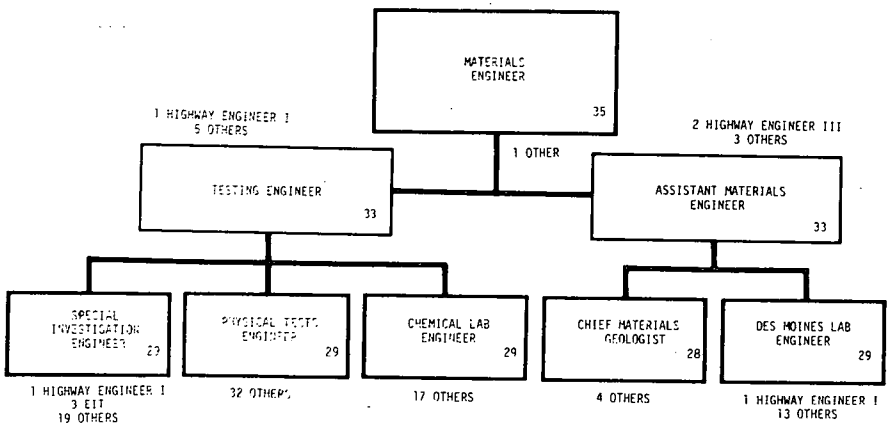
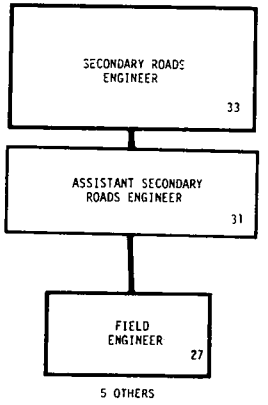


Fig. H-2. DEPARTMENTS









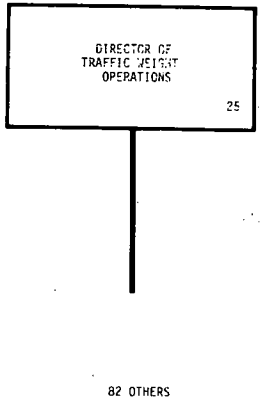


Fig. H-3.
SECTIONS – OPERATIONS DIVISION

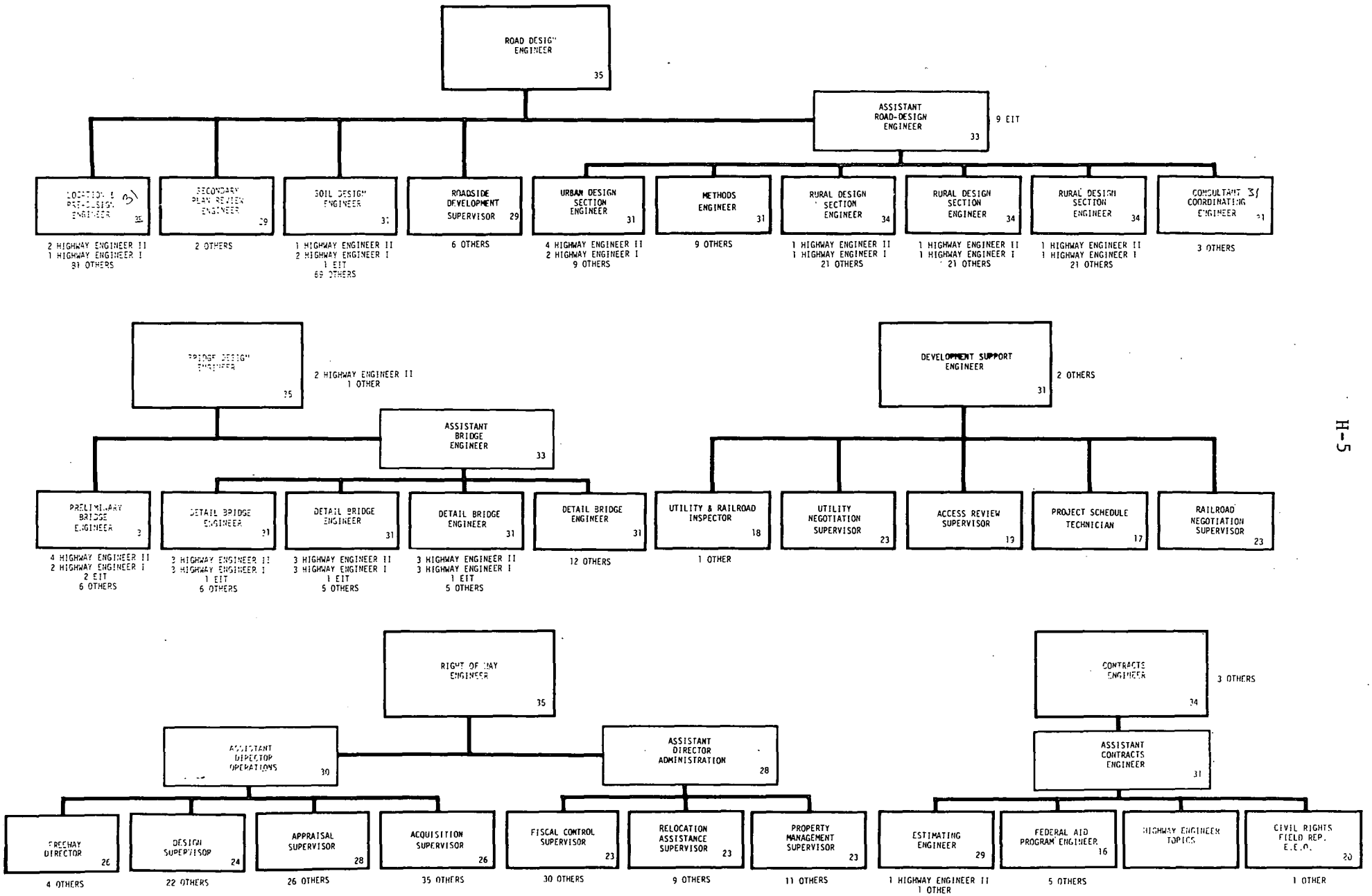


Fig. H-4. SECTIONS - DEVELOPMENT DIVISION

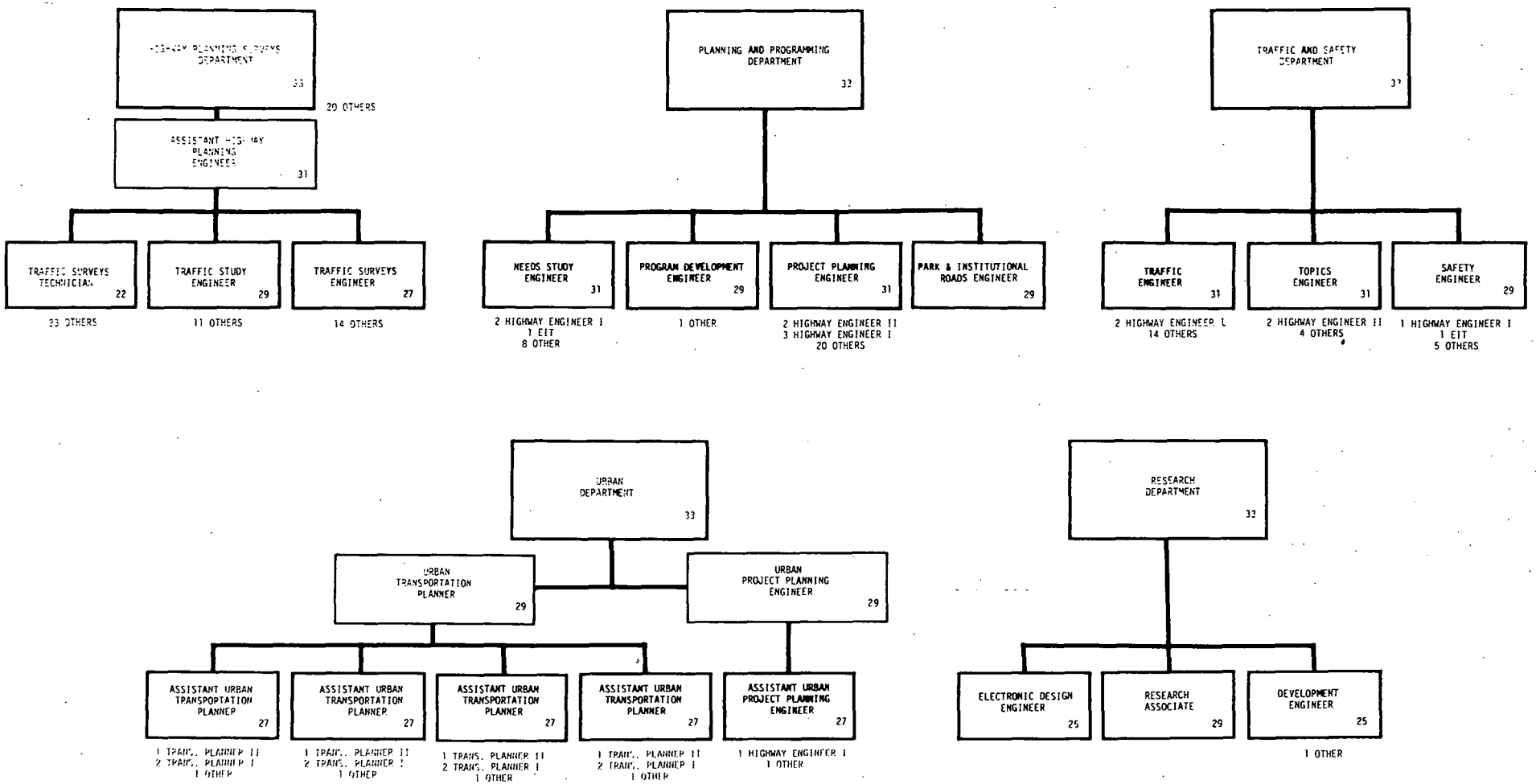


Fig. H-5. SECTIONS - PLANNING DIVISION

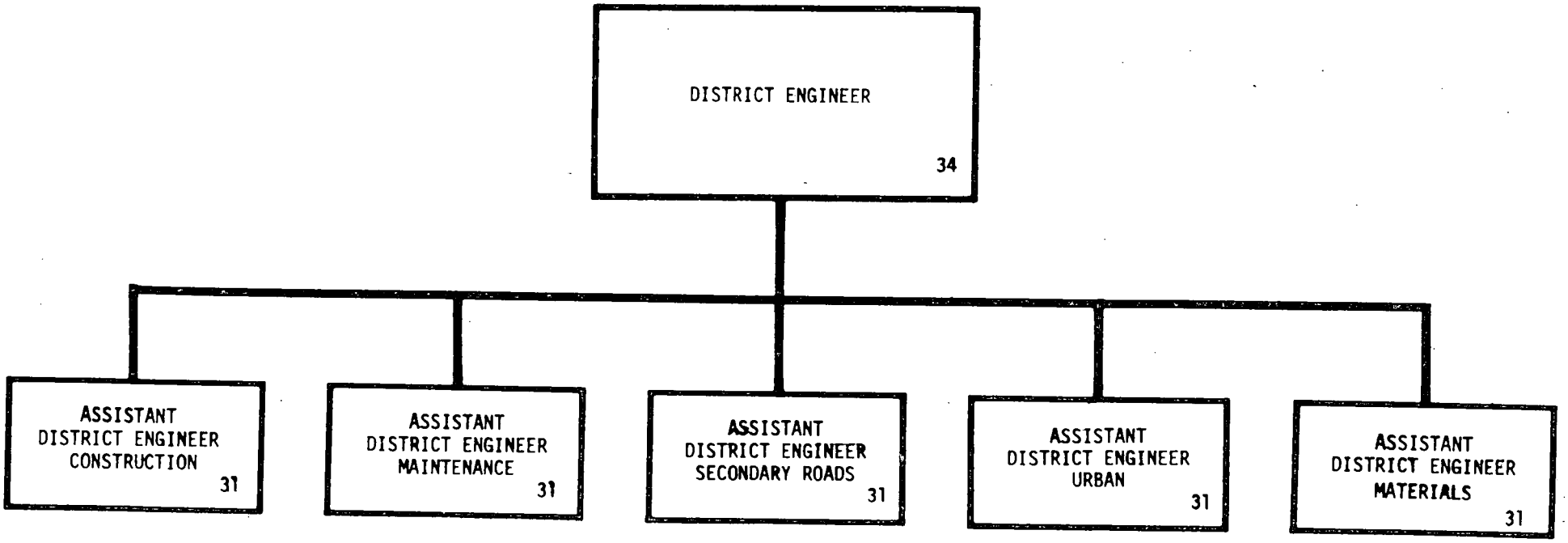


Fig. H-6. DISTRICTS

APPENDIX I

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