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1975

NORTHWEST REGIONAL TRANSPORTATION STUDY

A STATUS REPORT FOR PUBLIC REVIEW OF THE

- **STUDY APPROACH**
- **PRELIMINARY HIGHWAY ALTERNATES**
- **OTHER MODAL CONSIDERATIONS**

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MICHIGAN DEPARTMENT OF STATE HIGHWAYS AND TRANSPORTATION

NOVEMBER 1975

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TOWARD A REGIONAL TRANSPORTATION SYSTEM PLAN



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DEPARTMENT OF STATE HIGHWAYS
AND TRANSPORTATION**

NOVEMBER, 1975

This brochure will provide, in a question and answer format, an explanation of the Michigan Department of State Highway and Transportation's development of Regional Transportation System Plans for Michigan.

WHAT IS THE PURPOSE OF A REGIONAL TRANSPORTATION SYSTEMS PLAN?

Until recently, the planning of transportation systems has primarily been conducted on a statewide or urban region basis and has not included a full range of the existing transportation modes; rail, air, highway, public transportation and non-motorized. The central purpose of systems planning was to identify national, state and urban transportation needs. In recent years, it has been recognized that within the individual states there were sub-state regions -- each with its own special requirements for transportation services. Michigan has 14 such regions.

The purpose of the regional transportation systems planning process is to interrelate national, state and urban needs with the special problems associated with each region and with alternative future situations which can be expected to occur. The interrelationships uncovered in the planning process will illustrate transportation needs in the context of the national and community values.

WHAT WILL BE THE CHARACTER OF THE PLAN?

The pace and magnitude of changes which occur in our society have increasingly illustrated the problems associated with development of a master plan.

Recent situations such as adverse economic conditions, the oil embargo, together with unanticipated changes in population trends and distributions have shown that a master plan can be obsolete before it can be implemented. Systems planning must be more flexible and recognize that changing realities change systems needs. The emphasis must therefore be on process rather than on product.

The Regional Transportation Systems Plan will show the level of transportation service required for a range of population, social, and economic levels. It will identify transportation corridors for the surface modes, such as highways and railroads, and facility service areas for airports and ports. It will identify inter-modal transfer points and examine how these points are and should be served by the various modes so that railroad, bus stations and airports have direct and timely access to the other transportation systems. It will identify priorities for the various modes to attain a level of transportation system development consistent with the level of social and economic activity within the region.

WHAT IS THE RELATIONSHIP OF REGIONAL TRANSPORTATION SYSTEMS PLANNING WITH PLANNING FOR SPECIFIC FACILITIES?

Utilizing the priorities established within the Regional Systems Plan to achieve the required level of transportation service associated with the existing and range of forecasted levels of population and social and economic activity within the region, the Department can develop programs to provide specific transportation facilities to meet the identified needs. The project planning process will then develop the specific details of the location and design of the required facility and the social, economic and environmental costs associated with providing that service.

WHAT ARE THE MAJOR ISSUES THAT ARE CONSIDERED IN THE DEVELOPING OF A REGIONAL TRANSPORTATION SYSTEMS PLAN?

A wide range of social, economic, environmental and transportation issues will be considered with special emphasis placed on the following items:

1. SOCIAL AND ECONOMIC NEEDS

For various existing or projected levels of social and economic activity, different types and levels of transportation service are required. The complexity of today's situation does not, at this time, permit the determination of all of the existing aspects of social and economic activity, let alone permit the totally accurate prediction of future activity. For this reason, alternative future levels should be established and the resulting transportation needs evaluated. This effort is essential even though the predictive abilities are limited since the quality of life is directly associated with social, economic and environmental conditions.

2. ENVIRONMENTAL VALUES

In each regional context there remain certain natural environmental areas which have particular value to all other activities. It is essential that these areas be identified and, where at all possible, protected. It is also an important function of the regional systems planning process to attempt to determine an overall environmental character to be preserved or, where possible, enhanced.

3. POPULATION

The level of social and economic activity which both results from and is required by various population levels and densities should be evaluated. Travel demand which is the determining factor in the demand for transportation services is also related to these population levels.

4. ENERGY

Energy availability considerations are an important issue to be analyzed during the development of a regional systems transportation study. The United States is presently experiencing the third energy availability problem in its history. The previous situations resulted in the conversion of the national energy dependency from wood to coal and from coal to petroleum. The existing and anticipated petroleum supplies indicate that within the next twenty to thirty years another shift in the basic energy dependency will be required. The previous shifts resulted in dramatic changes in the transportation services available to the American people. In each case individual mobility was greatly increased. We do not as yet know the direction the future energy dependency shifts will take or how they will influence mobility; however, our projections must take into consideration the potential changes which would result if different energy availability situations should occur.

5. TRAVEL DEMAND

To a great extent, the quality of life in the United States, and particularly Michigan, is associated with mobility. This is true both in terms of life style and in terms of economic activity which, in turn, provides the basis for the standard of living Michigan residents enjoy. Travel demand is directly associated with population, the level of economic activity and life style. A large percentage of the economic activity in the sub-state regions is directly dependent upon adequate transportation.

6. LAND USE

The issue of land use and whether controls should be developed to preserve certain land areas and uses has been a major concern throughout Michigan. Transportation service and accessibility has a significant impact upon land and the uses to which it can be put. Alternate transportation systems, modes, facility locations, and designs can have differing influences on land use. The consideration of these influences is part of the analysis conducted during the transportation planning process. The use, for example, of limited access instead of free access right-of-way can reduce the scatterization of development and preserve the viability of a highway facility. The regional transportation systems plan focuses on the major transportation corridors within a region and how they influence land use characteristics. Emphasis is placed on land use or land capability characteristics including those land forms which can be classified as special environments and how the alternative transportation systems impact those areas.

HOW DO THE EXISTING TRANSPORTATION SYSTEMS FIT INTO THE PROCESS?

Determination of the condition of existing transportation facilities within the region reveals both the adequacies and deficiencies of the existing systems. This provides the basis against which all future transportation decisions made to provide an adequate level of transportation services will be compared.

HOW DO YOU DETERMINE WHAT FUTURE TRANSPORTATION NEEDS WILL BE?

The consideration of the identified deficiencies in existing transportation systems provides a guide for determining the level and focus of public expenditures in the transportation field. It is difficult, if not impossible, to precisely predict the broad range of social, economic and environmental trends which will lead to future regional characteristics. It is therefore necessary that alternative transportation systems be developed to assess the relationships between social, economic and environmental values, the level of necessary public expenditure, and the impact which would result from each system.

While the range of possible alternative systems is infinite, the regional systems planning process requires that a reasonable number of illustrative systems be developed for the various modes from which a set of practical alternatives can be considered. Illustrative alternatives represent a broad range of possible transportation systems which could provide the needed service. The illustrative alternatives can include a wide range of possible system arrangements which might be difficult to seriously consider in detail because of the sheer number. The illustrative alternatives are then analyzed to determine if there is any practical basis for considering them as possible solutions to the transportation problem.

WHAT HAPPENS AFTER THE DEVELOPMENT OF ILLUSTRATIVE ALTERNATIVES?

The illustrative alternatives are considered in light of their ability to provide an adequate level of transportation service. The number of alternatives are reduced to a set of practical alternatives which are consistent with the goals and objectives of the region which have been established during the early stages of the planning process. The practical alternatives are then subjected to an intensive analysis as to their ability to provide adequate transportation services relative to the various ranges of population, social, and economic levels which were predicted.

IF THESE REGIONAL PLANS ARE FOR EACH MODE, HOW CAN A MULTI-MODAL PLAN BE DEVELOPED?

Each modal plan will be analyzed according to a range of social, economic and population projections. These projections will be organized into alternative future conditions and then a multi-modal plan or plans will be developed which best satisfy the conditions for each alternative future. An analysis of these alternative multi-modal system plans will identify those transportation facilities which are required to provide adequate service under the range of conditions determined for the various social, economic and population levels thus identifying priorities.

WHAT HAPPENS WHEN THE PLAN IS DEVELOPED?

The Department will publish a document setting forth its conclusions with regard to the level of transportation service required, the major corridors in which this service can be provided and the alternatives which will be considered over time as the future social, economic and population trends un-

fold. The Regional Transportation Systems Planning process will continue as the Bureau of Transportation Planning monitors changing conditions and transportation systems problem areas. Updating of the Plan will thus be a continuing activity responsive to changing conditions within the region, a process we consider essential in our complex society.

NORTHWEST REGIONAL TRANSPORTATION STUDY

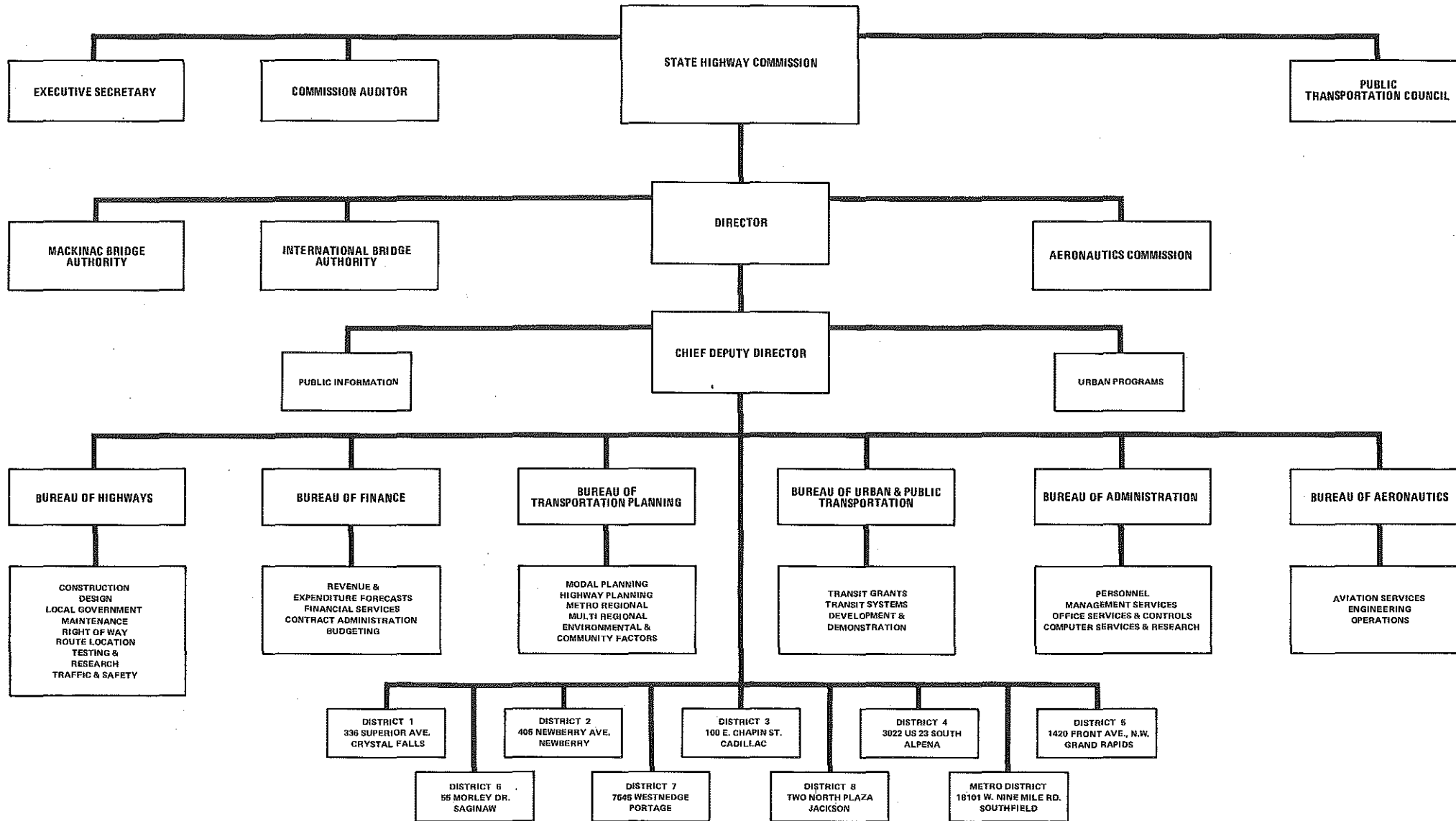
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NOVEMBER 1975

Department of State Highways and Transportation



Department District Offices

Traditionally, a report of this size and scope has been considered too detailed and long for a "public" brochure. However, if the public is to be fully involved in the planning process, it must have facts upon which to base its decisions. It is understood that few citizens will be interested in all aspects of the study, however, it is also understood that many diverse interests are represented within the multi-county study area and that which might be inconsequential to one person or group may be important to other persons or groups. Therefore, all pertinent information that the Department has gathered to date is included here. The Table of Contents on page iii provides an outline of the report and will assist the reader in locating those portions of the report that most interest him.

PREFACE

The Constitution and Statutes of the State of Michigan make the Michigan Highway Commission responsible for planning, building and maintaining a transportation system for our State. To fulfill these responsibilities the Michigan Department of State Highways and Transportation has developed a planning process to guide the State and its governmental units in analyzing the adequacy of existing transportation systems and in preparing plans for future systems and facilities.

The overall goal of the planning process is to provide a transportation system for the State that will allow for the attainment of desired social, economic and environmental goals while minimizing costs and adverse impacts. To attain this goal it is necessary to identify the social, economic and environmental goals of the people to be served and then make certain that these goals are reflected in the transportation system that is constructed.

The planning process is designed to achieve this end. It requires an analysis of the existing system and facilities and their relationship to goals and objectives of the State and local areas. It requires the participation of all levels of government and allows for continued participation of individuals and groups who feel that their interests are being or will be affected. Central to the process is the concept of negotiation. The process has been designed in the belief that the best plan can only be developed when there is a great deal of reasoned interaction between people with diverse perspectives. This brochure has been written to increase this interaction. It is hoped that the information contained herein will provide a basis for informed discussion and thereby enhance the possibility that the eventual plan will satisfy the transportation needs of the Region.

FORWARD

The Northwest Regional Systems Study is a new type of planning effort for the Department of State Highways and Transportation. It is new because it contains two major new responsibilities and reflects a new attitude toward the process itself.

The two new responsibilities are (1) to create a regional transportation plan that includes consideration of all modes of travel in the Region, not just highways; and (2) to comprehensively analyze how possible transportation changes will effect the social, economic and natural systems of the Region.

The new attitude toward the process is derived from the belief that there is a much greater need today for direct public participation in the planning process than in the past. This is so because with increased population, decreasing supplies of energy and a decreasing natural resource base, transportation decisions have a more profound impact on our lives than previously.

To meet the new responsibilities a new planning process has been created. This process is explained in the INTRODUCTION and BACKGROUND sections of this report. It includes a number of public meetings and hearings to involve the citizens of the Region as

fully as possible. This report, designed to accompany one of these meetings, is an additional attempt to involve the public. It is intended that the public review:

1. The study approach,
2. The preliminary highway alternatives which have been developed, and
3. The considerations for modes of transportation other than highways.

Hopefully, enough familiarity will be gained to assist in narrowing the range of options, especially those involving US-31 and US-131. Specifically, with regard to the highway options, the intent is to select approximately five alternatives for more in-depth analysis. A more detailed explanation is on page 103.

In considering the information provided, the reader should keep in mind that, because the responsibility of making comprehensive social, economic and environmental impact analyses of transportation alternatives is new, the "state-of-the-art" for conducting many of the analyses is relatively unrefined. The planning team has recognized these limitations as it has attempted to evaluate the alternatives. Hopefully the public review of information and techniques that is made possible by this brochure will result in suggestions about how the analyses can be improved.

Furthermore, because it is considered a technical report prepared by the Study Team as a "working document", this report has not been reviewed by the Highway Commission nor does it necessarily reflect their views.

NORTHWEST REGIONAL TRANSPORTATION STUDY

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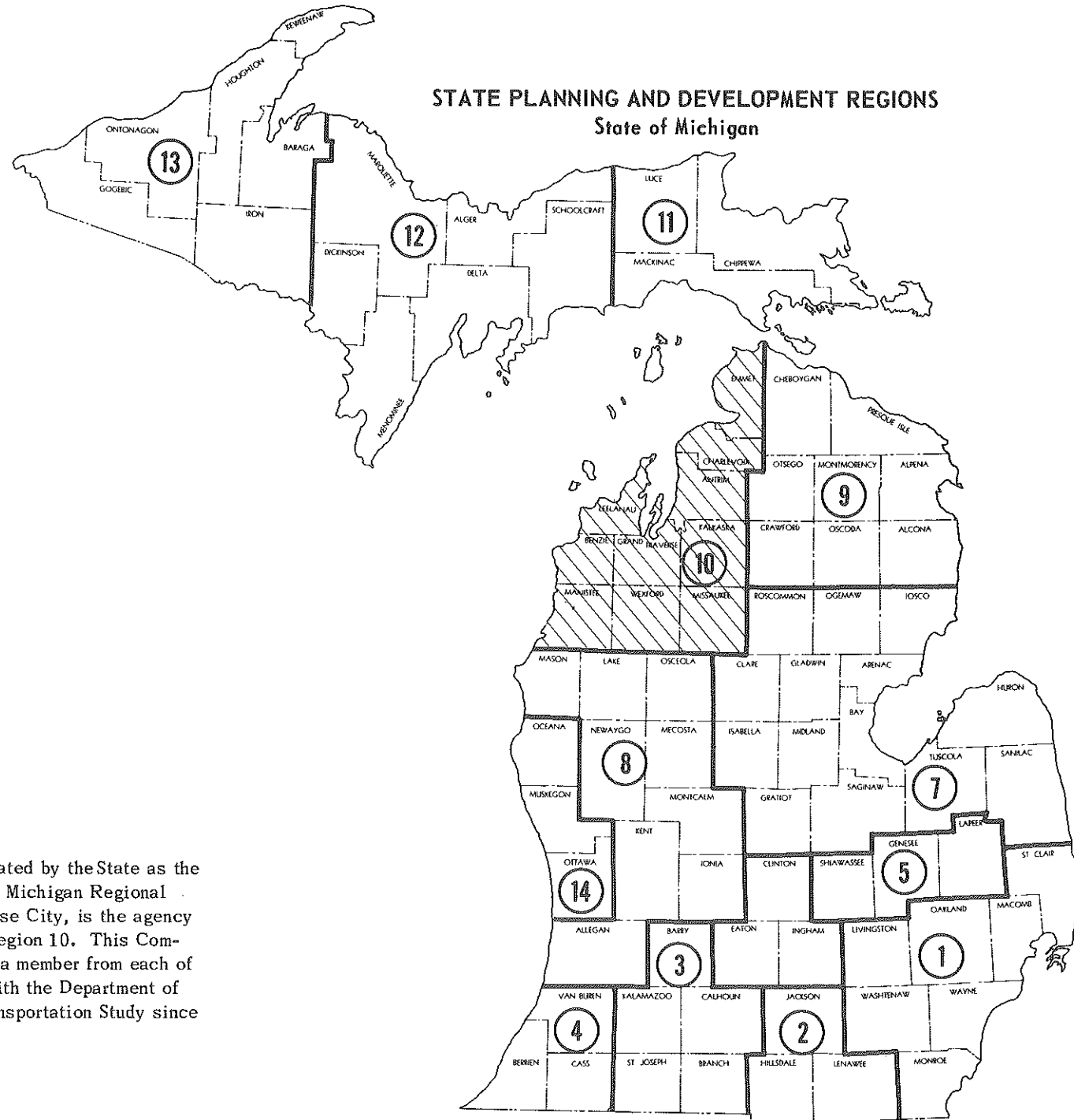
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INTRODUCTION

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STATE PLANNING AND DEVELOPMENT REGIONS State of Michigan



This map depicts the 14 geographical areas that have been designated by the State as the official multi-county planning regions of the State. The Northwest Michigan Regional Planning and Development Commission, with staff based in Traverse City, is the agency recognized by the State as the official planning organization for Region 10. This Commission and the Transportation Advisory Committee (comprised of a member from each of the ten County Planning Commissions) has worked continuously with the Department of State Highways and Transportation on the Northwest Regional Transportation Study since its inception.

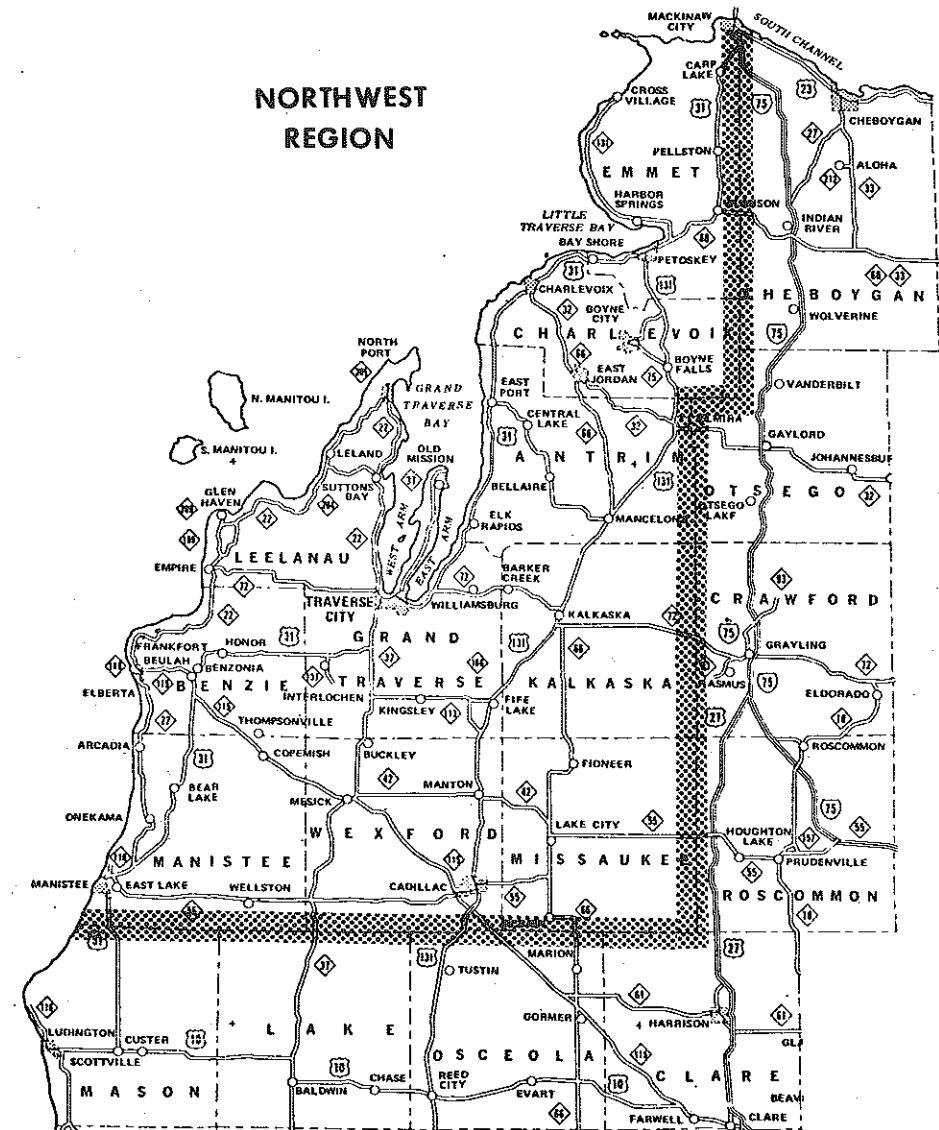
WHEN AND WHY WAS THE STUDY INITIATED?

The Northwest Regional Transportation Study was initiated as a pilot project in March, 1972. It has two major purposes. The first was to develop a transportation plan for the ten-county Northwest Region and adjacent areas through which facilities would be located to provide continuity of service. (See accompanying map). The second major purpose of the study was to test new concepts and procedures which were being considered for adoption in the Michigan Department of State Highways and Transportation Action Plan — a document required by the Federal government to specify how transportation planning will be conducted by the State. At the inception of the project the plan was to be developed only to facilitate the flow of one mode of transportation — highway travel. The focus was to be on the improvement or relocation and reconstruction of US-31 and US-131 as mandated by Act 327 of the Public Acts of 1972. Shortly after the project had begun, however, the Department of State Highways was charged by the Governor with the task of providing adequate transportation by all modes of travel in the State. Consequently, the Northwest Regional Transportation Study became a multi-modal transportation planning effort and the scope of the project expanded to include integrated planning of rail, air, public transportation, water and non-motorized facilities as well as highway facilities.

The first step in such a planning effort is to determine if there are transportation problems, and if so, exactly what the problems are. This step was taken with respect to highways early in the study. Based upon 1970 counts of the actual number of vehicles using US-31 and US-131 in the Northwest Region it was found that the number of vehicles using those roads exceeded their design capacities in a number of places. The highway segments that were deficient in this respect in 1970 are shown on the first map on page 4. These conditions indicate that there is already a need for some system improvements.

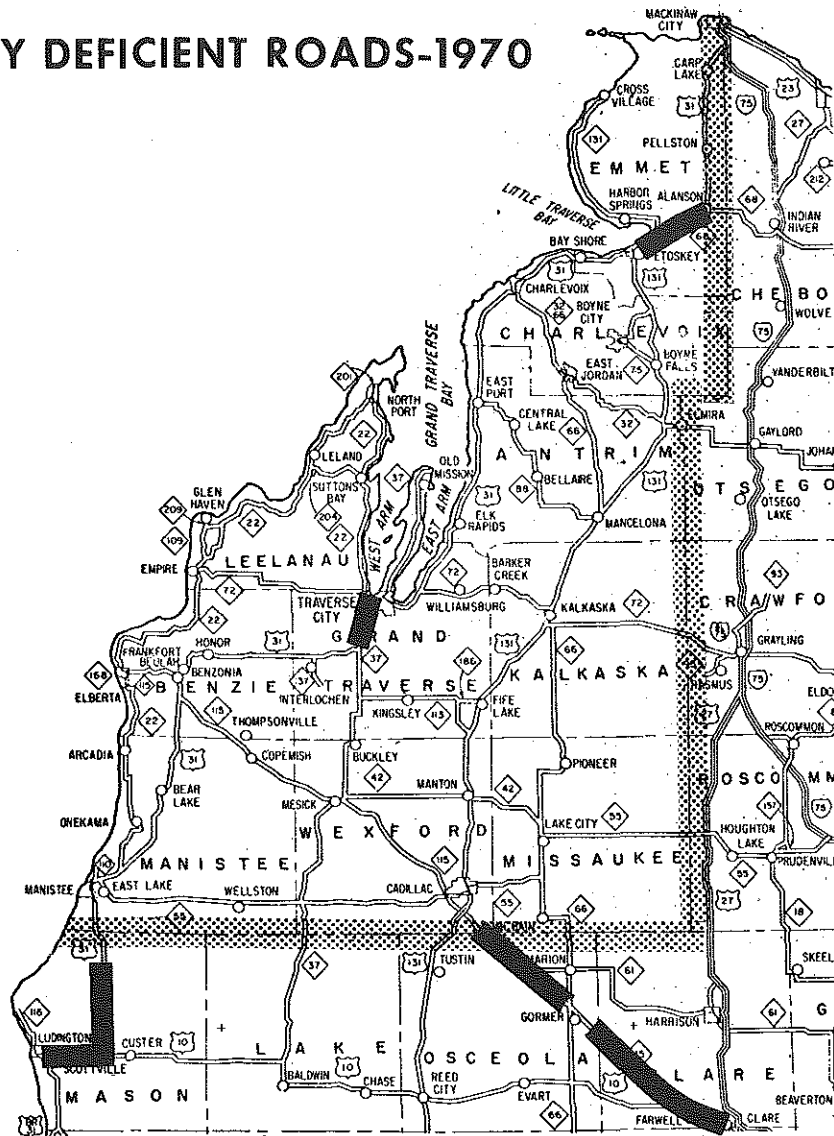
In addition, it is also necessary to look beyond the short range needs and estimate what parts of the highway system may be deficient in future years under various conditions and then make provisions to overcome these deficiencies.

Accordingly, projections were made to determine how many vehicles may be using state highways in the Region in 1980, 1990 and the year 2000 if present trends continue. By comparing the estimated number of vehicles with the design capacities of the roads, it was determined that a large portion of US-31 and US-131 will be deficient in capacity by the year 2000. The deficient parts of these and other state highways in the Region are shown in an incremental manner on the maps on pages 4 and 5. It is clear from these estimates that if the transportation goals of the State and Region, as articulated in the next section of this report, are to be met then some changes will have to be made.

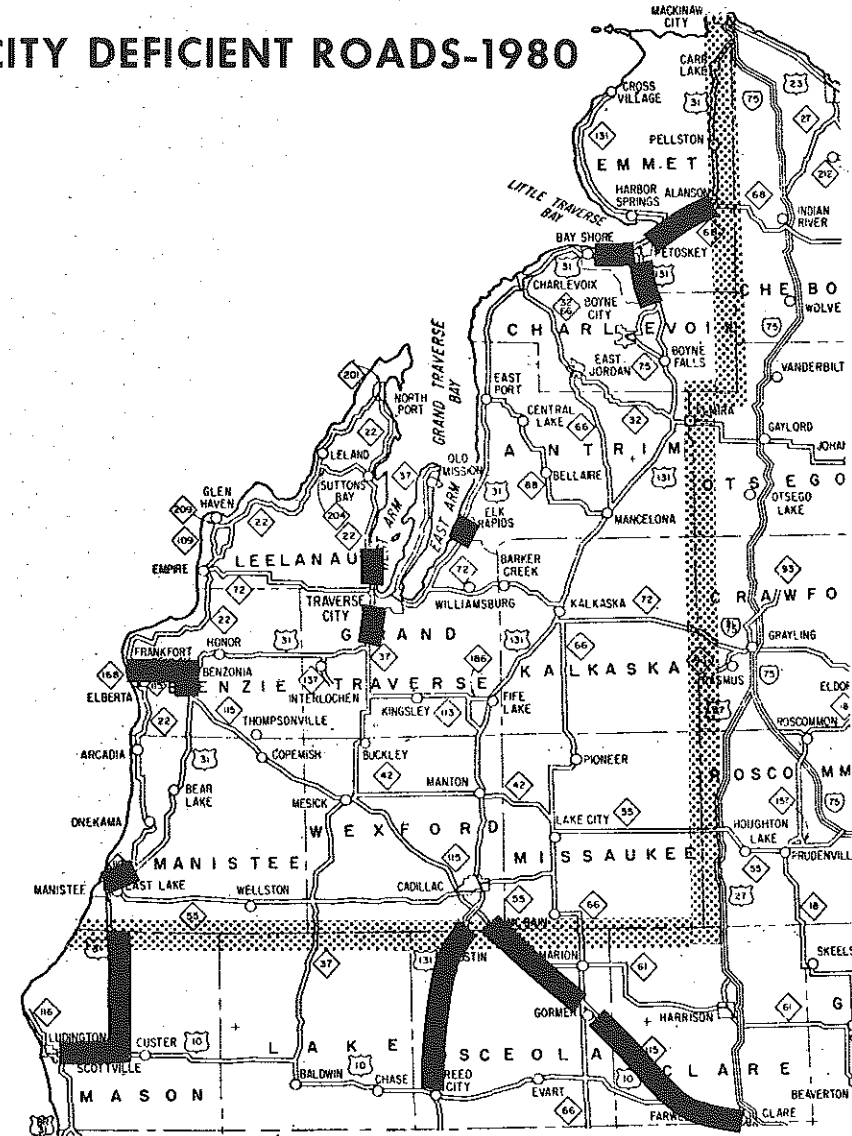


EXISTING AND PROJECTED..

CAPACITY DEFICIENT ROADS-1970



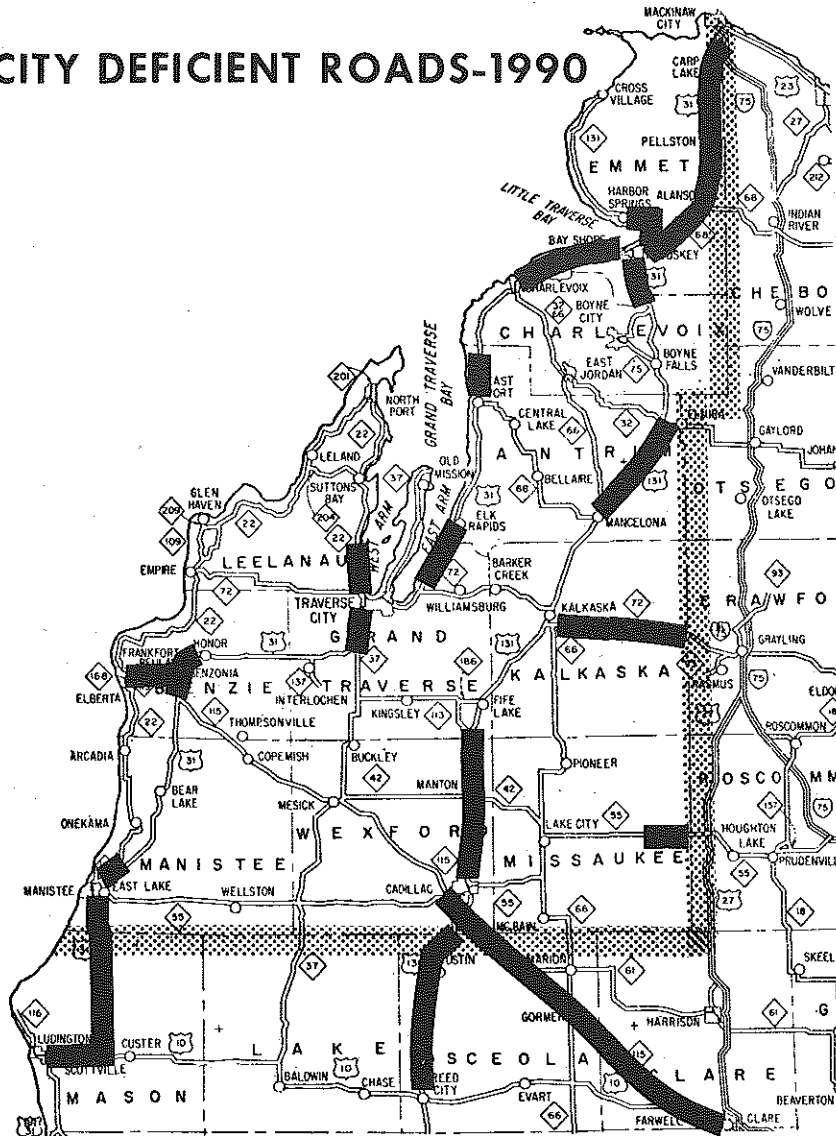
CAPACITY DEFICIENT ROADS-1980



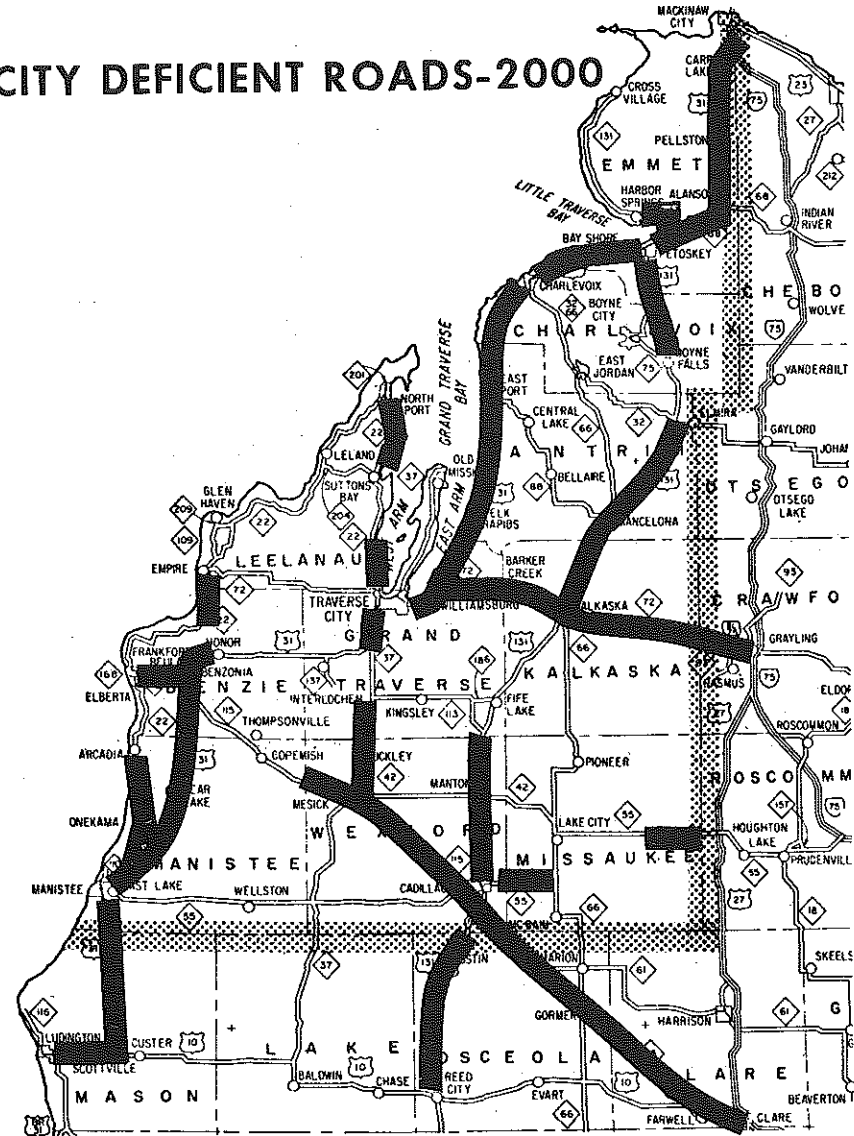
Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

...HIGHWAY CONDITIONS

CAPACITY DEFICIENT ROADS-1990



CAPACITY DEFICIENT ROADS-2000



Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

Concurrently, these stated goals cannot be met until questions concerning other modes of travel are resolved. A very uncertain situation exists in the Northwest Region concerning the future of railroad service. Almost all of the railroad lines in the area are extremely deteriorated, service is slow and sporadic, rolling stock is in poor repair and, most importantly almost all the links are proposed for final abandonment. If rail service is to improve, or even continue, then significant planning efforts will have to be made and plans will have to be implemented. Each of the other transport modes also has its problem areas. There is a demonstrated need for planning in each area. However, it should be noted that even if there were no immediate demonstrated need for new or upgraded facilities for certain individual transport modes, each mode would still have to be considered in a multi-modal systems planning effort such as the Northwest Regional Study. This is so because each of the modes interacts with the others and changes in one may cause changes in the others.

As mentioned previously, the second purpose of the study was to test new concepts and procedures to be considered as part of the Action Plan. The major concepts and procedures to be tested included:

- 1) System planning on a regional scale.
- 2) Use of a multi-disciplinary planning group called a Location Team.
- 3) Increased public involvement in the planning process.
- 4) Multi-modal considerations – that is, consideration of the need for and interrelations between all the methods of transportation including air, rail, bus, and water transport.
- 5) Consideration of a wide range of system alternatives including the possibility of doing nothing.
- 6) Comprehensive evaluation of the probable social, economic and environmental impacts of each of the alternatives under consideration.

WHAT IS EXPECTED TO BE ACCOMPLISHED?

The ultimate goal of the Northwest Regional Systems Study is to create a multi-modal transportation plan. This plan should contain recommendations for the provision of an integrated system of transportation facilities that will:

- (1) Adequately meet the transportation needs of the citizens of the Region and the State.

- (2) Promote the attainment of social, economic and environmental goals of the citizens of the Northwest Region and the State.

A transportation system is not an end in itself, rather it is a means to other ends. A transportation network is a service network built to facilitate the flow of goods and the movement of people. As a service network the transportation system should be designed to provide safe and efficient movement of people and goods with minimal adverse impact on social, economic and natural systems.

When any transportation facility is constructed there are monetary, social and environmental costs. However, if the facility is built to meet known transportation needs, there will also be benefits. These benefits will be social and economic, and possibly environmental. In determining which facilities should be built the costs and benefits, which will be different for each alternative, must be weighed against one another. A major objective of the planning process is to facilitate the choice of a network which will provide the types of benefits desired yet incur the fewest social, economic and environmental costs.

To make a choice, decision makers must have information upon which to base their decisions. The more facts and the more realistic estimates they can obtain about the future, the easier it will be for them to decide which alternative transportation system should be implemented. However, information is only one of the necessary elements in a decision making process. Another essential element is knowledge of what is wanted. There should be an explicit set of goals, a set of desired future situations, against which the alternatives can be judged. In making any decision the major question is, "Does this alternative do the best job of giving us what we want?" This question can be answered by comparing the probable effects of each alternative with goals that the community has set for itself.

In determining which transportation plan is best for the Northwest Region the goals of two groups of people must be considered. One group consists of all the citizens of the State; the other consists of the citizens of the Northwest Region. Because the latter group is contained within the former, in many instances the goals of the groups will be compatible. However, there may be instances in which State interests diverge from Regional goals. Moreover, the two groups have differing geographical perspectives. For these reasons the expressed goals of both groups must be considered in the transportation planning process. By assessing the alternatives relative to these goals it should be possible to determine which alternative transportation facilities are most desirable. Following are the State and Regional transportation related goals against which the alternatives have been and will continue to be evaluated.

STATEWIDE TRANSPORTATION GOALS

- a) Minimize the number and severity of transportation related accidents.
- b) Minimize the amount of time necessary for travel and commodity movement between trip origins and destinations.
- c) Minimize distance traveled between origins and destinations.
- d) Minimize energy consumption for travel and commodity movement.
- e) Minimize congestion upon travel facilities.
- f) Provide efficient service to cities and areas of national and statewide importance:
 - 1) Maximize educational opportunities
 - 2) Maximize employment opportunities
 - 3) Maximize health care opportunities
 - 4) Maximize recreational opportunities
- g) Minimize capital costs for transportation facilities.
- h) Minimize user operating costs.
- i) Minimize the disruption of social and economic patterns, and coordinate transportation facilities with future land use plans.
- j) Maximize the accessibility to all forms of transportation.
- k) Minimize adverse impacts on the natural environment including:
 - 1) Primary agricultural lands
 - 2) Protected areas
 - 3) Wildlife and vegetational ecosystems
 - 4) Areas of cultural significance
 - 5) Areas of historic importance
 - 6) Open space
 - 7) Rivers, streams and wetlands
 - 8) Air

REGIONAL TRANSPORTATION GOALS ¹

Goal

To provide a variety of transportation systems which will efficiently serve the needs and facilitate the movement of people and goods within the Region and with points outside the Region.

Policies

- a) Design and construct the transport systems to encourage a desired pattern of land use development.
- b) Develop various modes of transportation which are separated to avoid interference, and integrated to be compatible and complementary.
- c) Give assistance and cooperation to the development of a regional network of airports, as part of the State Airport Plan, and integrated with supporting modes of transport.
- d) Locate airports to afford adequate access to regional population centers, with due consideration given to land use patterns adjacent to the facilities.
- e) Develop a hierarchy of functional street classifications and right-of-way standards for uniform local application.
- f) Determine new roadway locations in response to both natural environmental features and man-made elements.
- g) Direct efforts toward the development of a scenic highways network, expanding on existing roads, through and between points and areas of scenic attraction.
- h) Incorporate in planning for new roads consideration of unique scenic assets, maximizing roadside interest without placing such natural assets in jeopardy.
- i) Encourage efforts to organize and strengthen Great Lakes port management agencies and assist in the coordination of port management agencies' efforts within the Region.
- j) Encourage and support efforts to maintain and improve rail service to and within the Region in coordination with other modes of conveyance.

¹ Taken from Regional Sketch Plan, 1972 prepared by the Northwest Michigan Regional Planning and Development Commission.

HOW IS THE STUDY BEING CONDUCTED?

THE LOCATION TEAM

The study is being conducted by a multi-disciplinary planning team called a Location Team. A multi-disciplinary team is one made up of people each of whom has been educated and trained differently. The reason for using a multi-disciplinary team is to bring together people with varying perspectives who can provide a wide variety of ideas that can be applied to problem identification and solution.

In addition to the Team Leader, who is responsible for the overall supervision of the team and its activities, the Location Team has personnel from within and without the Department representing the following perspectives or areas of responsibility:

Airport Planning	Route Location
Non-Motorized Transportation Planning	Right-of-Way
Environmental Assessment	Social-Economic Analysis
Federal Highway Administration	State Needs Study
Mass Transportation Planning	Statewide Planning
Port Authority	Statewide Traffic Model
Public Hearings	System Planning (Highways)
Railroad Planning	Traffic Analysis
Regional Planning and Development	Urban Planning

As indicated, the Northwest Regional Planning and Development Commission is represented on the Team. A member of the Commission's staff has been actively involved in the study since its initiation. Moreover, recent contractual arrangements have permitted an additional regional agency staff position to be assigned to Location Team activities on a full-time basis.

THE PLANNING PROCESS

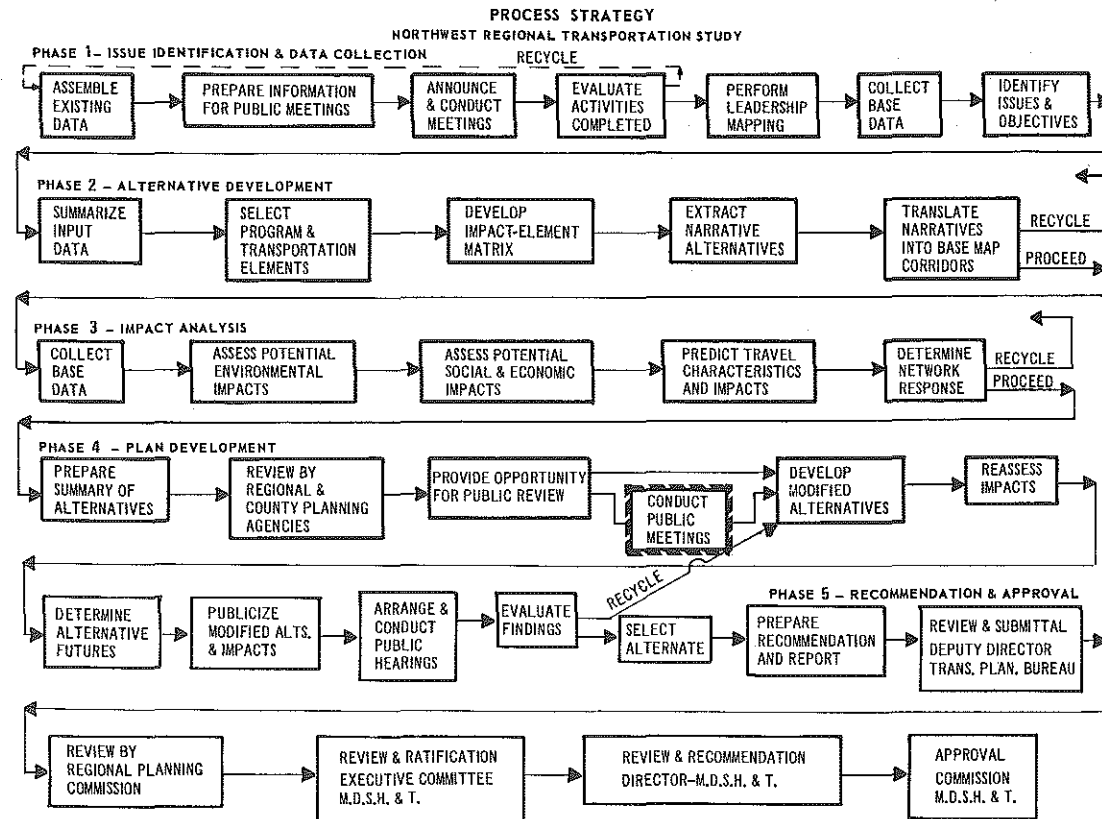
RECOMMENDATION



THE PROCESS

The study process consists of five basic phases: (1) issue identification, (2) alternative development, (3) impact analysis, (4) plan development and (5) recommendation. To insure that pertinent ideas or information are not being overlooked, cycles of each phase in the process are conducted, meaning that if any important steps or ideas are missed at an earlier stage of the planning, the Team will incorporate them in another cycle of the process. The cycling process is conceptually represented in the accompanying diagram.

To complete each of the five basic phases, the Location Team developed a series of activities within each phase as shown in the diagram below. The following sections provide a brief description of the activities completed by the Team to date. The completed activities extend into Phase 4.



Indicates Current Status

The process also has included and will continue to include many opportunities for public involvement and review of the planning proposals and subsequent analysis. It has been the intention since the beginning, to encourage the public to voice their feelings and interests so that these concerns of the Region can be given equal weight with the statewide transportation needs. Without these indications the planning process will be void of the attitudes of the people as expressed directly by them.

Prior to the presently scheduled public meetings, the following steps have been utilized by the Location Team in an attempt to engender this public participation.

Public Opinion and Issue Identification

1. Public Informational Meetings
2. First Questionnaire
3. Public Workshop Meetings
4. Second Questionnaire

Issue Verification and Alternative Development

5. Interviews (Formal and Informal Leadership)

Impact Analysis and Plan Development

6. Meetings With Northwest Michigan Regional Planning and Development Commission
7. Meetings With Individual County Planning Commissions
8. Meetings With Regional Transportation Advisory Committee
9. Meetings With Interest Groups Upon Request
10. Meetings With Federal and State Agencies

BACKGROUND

WHAT HAS BEEN DONE IN THE DEVELOPMENT OF HIGHWAY ALTERNATIVES?

PHASE 1: ISSUE IDENTIFICATION AND DATA COLLECTION

One of the first steps in the process was to conduct informational meetings throughout the Region. These were held in May, 1972 in Manistee, Cadillac, Traverse City and Petoskey. Their purpose was to announce the initiation of the study, determine the major issue to be addressed, and explain both the new planning process and how the public could participate in it.

Because public attendance at these information meetings was low, it was decided that the step should be repeated. On the second round informal workshops were scheduled instead of the more formal meetings of the first round. Also more intensive efforts were made to publicize both the meetings and the new planning effort. Hundreds of questionnaires and personal invitations were distributed prior to the meetings.

Information obtained for the meetings, questionnaires and other correspondence led to the identification of sixteen primary areas of interest. These were as follows:

- | | |
|-------------------------------------|------------------------------|
| 1. Protect the natural environment | 9. Growth in tourism |
| 2. Improve highway service | 10. Growth in population |
| 3. Maintain existing highway system | 11. Growth in agriculture |
| 4. Improve air, rail or bus service | 12. No growth in industry |
| 5. Quality of human environment | 13. No growth in business |
| 6. Community cohesion | 14. No growth in tourism |
| 7. Growth in industry | 15. No growth in population |
| 8. Growth in business | 16. No growth in agriculture |

To provide assurance that the identified list of interests was valid and complete, personal interviews were conducted with people in leadership roles throughout the Region. Elected and appointed county, city and township officials were interviewed as well as interested and involved persons who were referred to us, or were identified through the daily and weekly newspapers as representing various segments of the population. In total, 580 persons were personally interviewed. This survey not only validated the list of interests but also provided the reasons why those persons favored certain interests, an aspect which later provided essential in combining sets of interests which, due to their common characteristics, could be served by a single alternative. When asked to identify which of the areas of interest were of primary importance, the response of those interviewed was as follows:

76% expressed concern for the protection of the natural environment, 68% indicated the need for improved highway transportation, 26% felt other transportation modes should be improved, 71% were for and 17% against growth in the various economic categories. (These were recorded individually for the study but are grouped here for simplicity).

PHASE 2: ALTERNATIVE DEVELOPMENT

Having identified the primary issues and transportation problem areas, the Location Team began Phase 2, Alternative Development. At the time this phase began, the Department of Highways was just beginning to assume responsibility for total transportation planning in the state. The division of the Department that was to be responsible for the planning of transportation modes other than highways was just being formed. Because there would have been considerable delay in the Northwest Region System Study if the Location Team were to wait for the Multi-Modal Division to gear up to full strength, it was decided that the Location Team would proceed to develop highway alternatives for evaluation while the Multi-Modal Division completed its organization and staffing, and began to develop alternative proposals for the other modes.

This course of action seemed quite reasonable for two reasons. (1) Highway travel is presently the major mode of transportation in the Region. (2) Given the transportation trends of the past 30 years, it was assumed that in the future the relative roles of the different transportation modes in the region would remain essentially the same. Moreover, by proceeding with the development of the highway alternatives the Location Team could test the new methods called for in the Action Plan, methods which could then be utilized by the modal sections in their planning efforts.

Of course, recent changes in the availability and cost of fuel, and recommendations by the United States Railway Association to abandon most of the railroad track in the Region have indicated that the relative roles of the modes probably will not remain the same. Consequently, the Department has intensified its efforts to analyze alternative possibilities for each mode. These intensified efforts will be outlined in a following section on what has been done to date in the planning of other transportation modes, whereas this section will focus on what has been done in the development of highway alternatives.

To develop the highway alternatives the Location Team first needed to create a logical methodology. The result of Team efforts was a matrix, or large chart, which helped the Team establish a set of relationships between selected transportation facilities or characteristics and the major areas of interest and objectives identified in Phase 1. By comparing the degree to which the various transportation characteristics satisfied each

of the areas of interest and objectives, and by combining a number of individual characteristics to meet sets of objectives, it was possible to develop alternative highway systems which could be described in words. In effect, a series of ideal networks was created that had no form other than a narrative description; each satisfying a different set of objectives. It remained then to translate these narrative descriptions into real corridor proposals on a map of the Northwest Region. These corridors were located by following the directions for their locations contained in the narrative descriptions. Maps of each of the corridors are contained in a following section entitled "Transportation Alternatives".

PHASE 3: IMPACT ANALYSIS

Once the various highway alternatives had been identified and mapped it was necessary to begin impact analysis. The Action Plan calls for three levels of planning and impact analysis; (1) Regional Systems Planning and analysis, (2) Project planning and analysis, and (3) Alignment planning and analysis. Each level is more narrowly focused than the previous. Regional systems planning is designed to consider how state or regional transportation, growth, environmental and other policy issues will be impacted by alternative transportation systems. At this scale attention is focused on how differing transportation facilities located in different generalized 6 to 10 mile wide corridors will affect long-run trends in the social, economic and environmental systems of the Region. Project planning concerns the conduct of planning and engineering studies within a designated study area to determine the best location and type of facility for a specific transportation project which has been determined through the regional systems planning process. The alignment planning and analysis level concerns the evaluation of social, economic and environmental effects. Impacts that are analyzed are predominantly primary impacts resulting from the location of the alignment with regard to individual properties and property holders, from the construction and operation of the facility and from the physical characteristics of the final structure. The major approach of the study, regional systems level, is not specifically concerned with which pieces of land will be needed for the construction of a transportation facility; such issues will be addressed at the latter two levels. Rather, emphasis is on determining what would happen in the long run to land use patterns, economic growth or decline, sensitive environmental areas, and so on, if a transportation facility of a specific type were to be located in one general area as opposed to another.

Environmental Impact Analysis

Due to the essentially conceptual nature of planning at the regional systems level with proposed corridors that are 6 to 10 miles wide, it is not possible to make detailed analyses of the affects of alternatives on the environment. Rather, the effort must be directed toward determining how a transportation facility might cause changes, in general, in environmentally sensitive areas.

To make this determination it is first necessary to identify the sensitive areas. The environmental specialists on the Location Team devised a way to make this identification. In considering the situation they decided that they needed to focus on identification of two types of area: (1) Primary Agricultural Areas, and (2) Primary Special Environments.

Primary Agricultural Areas are those that are either the best existing production areas or the best potential production areas in the Region. The areas designated to be the best in each county by these standards were selected by the County Agricultural Extension Director of each county.

Primary Special Environments are those that have historic significance, unusual aesthetic quality or ecological character of particular importance or fragility in that they are subject to easy destruction through manipulation by man. Examples of the types of lands that might be in this category are: Watersheds; Wetlands or Marshes; Streams, Lakes or Rivers; Wildlife Areas; Forest lands; Federal, State or local recreation areas; and areas of National or State historical or archaeological significance. An area might also be in this category if it has steep topography or unstable soil types.

To obtain the necessary information by which to identify the Primary Special Environments the Team used a number of techniques:

- (1) Infra-red photography: High-altitude photographs were taken of the entire Region using the infra-red portion of the light spectrum. Interpretation of these permitted "single point in time" identification of various types of sensitive areas and land use patterns.

- (2) Field surveys: An extensive field survey of the Region was made and each section in the study area was classified.
- (3) Interpretation of existing maps: Existing United States Geological Survey, State Department of Natural Resources, and other maps were used to identify and locate both natural and man-made features.
- (4) Historical and Archaeological Site Identification: The History Division, Department of State, was consulted to determine the historical and archaeological areas of National or State Significance in the Region. At this time, only five counties in the Region have been surveyed by the History Division. These are: Charlevoix, Antrim, Emmet, Grand Traverse and Leelanau. The rest of the counties in the Region will be surveyed in the near future and the information will be included as it becomes available.

The areas identified through these techniques are shown on the map on page 54 and their descriptions are on pages 55 and 56.

In addition to the primary agricultural and special environments, other sensitive areas have been identified. These include protected areas such as public recreation, wildlife refuge and park areas. These existing or potential 4 (f) sites, as they are known, are shown on the map on page 57.

Social and Economic Impact Analysis

At the regional system scale of planning, social and economic impact analysis must also be performed on a general basis with emphasis on possible changes in long run trends. Attention should be focused on how transportation alternatives will impact activity centers and specifically on how they will impact such social and economic variables as:

- (1) Population – total numbers and general distribution
- (2) Employment – availability and general character
- (3) Health and Social Services – general location and availability

- (4) Educational, recreational, and cultural opportunities – availability and general character
- (5) Marketing centers – regional shopping availability and use
- (6) Resource base – interrelationships with commercial and industrial users and markets both within and without the Region

Particular regard should be given to how transportation systems increase or decrease the availability and access to these opportunities and services. A major aspect of the economic analysis should be consideration of the potential for preserving resources and for preserving commercial and industrial activities that are essential parts of the economy, particularly with regard to those that are dependent on specific locational characteristics.

To perform these analyses representatives on the Location Team performed the following tasks:

- (1) Inventory: To perform the needed analyses it was first necessary to gather all available relevant data. Much of the needed data had already been gathered by the Northwest Regional Planning and Development Commission, and therefore, the Social and Economic Studies personnel had only to reformat it to suit their needs. However, many other data sources were also tapped: Census information; State Department of Natural Resources information; State Commerce Department information; and other sources.
- (2) Proximity Analysis: Proximity Analysis is an analysis technique for determining accessibility (how close things are to each other) by using travel times by auto, bus, rail, air, or a combination of these transportation modes, from one travel zone to another. Each section, or link, of road in the highway system has an average time that it takes to travel that section, and this time is known. Thus it is possible to determine the shortest time it will take to get from one place to any other in the Region by finding the combination of links that add up to the shortest time. This analysis technique, a part of the Statewide Transportation Modeling System, is computerized because there are so many links in the transportation system. This computerization allows a number of these travel time comparisons

to be made in a very short time. By using this travel time information for the existing network and by estimating travel times on alternative networks using the same technique, it is possible to compare changes in accessibilities of such things as:

1. Population to major cities in the Region
 2. Population to schools, churches, police and fire departments and other social services
 3. Manufacturing firms to rail or truck terminals or to water ports.
- (3) Accident analysis: For each section, or link, of road in the highway network, information has been compiled about accidents. By using this information it is possible to determine how many accidents have occurred per 100 million vehicle miles traveled on that link in the past. Then by projecting traffic on these links and on links like them in proposed networks, it is possible to use the past accident rates to estimate the overall accident rates on alternative networks in the year 2000.
- (4) Auto and Truck Running and Time Cost Analysis: By projecting how many miles will be traveled by cars and trucks on each alternate for the year 2000 and by knowing what their average operating speeds are, it is possible to determine how many hours cars and trucks will spend driving on each alternate. A dollar cost can then be assigned to these hours using average pay of a truck driver and by estimating the value people place on their time. Similar techniques can be used to determine operating costs for vehicles by alternate. Operating costs are the amount spent for gasoline, oil, tires, maintenance, depreciation, etc.
- (5) Capital Expenditure and Maintenance Cost Analysis: It is possible to estimate what these costs will be for any type of highway that might be built by comparing what such costs have been for similar construction in the past. These past cost

figures can then be multiplied by an appropriate factor to account for inflation that will probably occur between the present and the time of construction.

- (6) Other Trunk Line Cost Analysis: Network improvements costs are those that will be incurred to improve parts of the system that are not scheduled for immediate new construction or improvement as part of the US-31 and US-131 corridor, but which will need to be upgraded or improved. The same technique is used to estimate these costs as was used to estimate capital costs on the US-31 and US-131 corridor.

Results of these analyses are found throughout the text and are summarized in the table on page 93.

Travel Impact Analysis

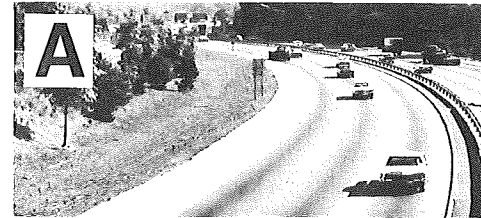
This group of analysis techniques has been developed by transportation planners over the last 30 years. Nationally accepted and proven computerized procedures have been developed to estimate a range of future travel related variables for different highway alternatives. Variables that can be estimated by alternate are:

- (1) Vehicle Miles and Hours of Travel: These are total hours and total miles that vehicles are projected to travel on each alternative system in the year 2000. These projections are based on the number of trips, the average speed of a trip, and the average length of a trip on each alternate. These total figures can then be reported for each of four road classifications according to the total network travel sustained by each.
- (2) Through, Terminal and Intra-Regional Trips: These figures indicate how many trips taken by people will go through the Region, how many will start outside the Region but end in it and vice-versa, and how many will start and end in the Region. By having this information it is possible to determine which alternates best serve the regional population, the statewide population, or both.

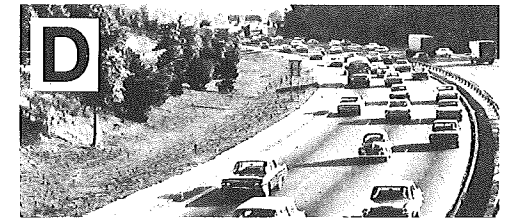
LEVELS OF SERVICE

- (3) Average Daily Traffic and Design Hour Volumes: Average daily traffic figures indicate the number of vehicles that travel on a given section of road on an average day of the year. Design hour volumes are the number of vehicles that travel over a given section of road during the 30th most heavily traveled hour of the year. The projected design hour volumes for a future planning year are those which a highway is designed to accommodate.
- (4) Total Travel To and From the Region: By establishing a "cordon-line" around the ten-county region and totaling the projected average daily traffic volumes on state highways crossing that line, the total volume of traffic in and out of the Region can be determined for each alternate. These volumes are not the same for each alternate because traffic volumes between communities are influenced by travel times. Therefore, as the highway network is improved, volumes in and out of the Region will likely increase.
- (5) Levels of Service: Level of service can be described as the condition under which a highway functions given a certain capacity and traffic volume. The accompanying diagram depicts the range of service levels, with "A" being ideal conditions with no restrictions on operating speed, and "F" representing an almost intolerable situation with traffic operating at low speeds with frequent stops. Design hour volumes (volumes at peak periods of operation) are used to determine levels of service through comparisons with the design capacity.

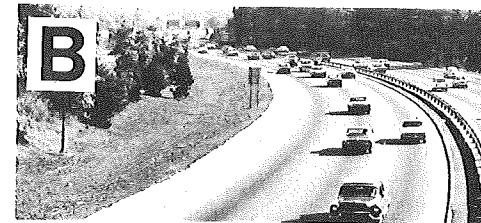
(Note: for determining levels of service for the highway alternatives in this report, no distinction was made between cars and trucks; all vehicles were considered to be passenger cars. In reality, however, trucks have a more serious effect on traffic movements than cars. In fact, one truck is equivalent to several cars, the amount varying depending upon whether the terrain is level or rolling. Therefore, if truck volumes were identified and converted to equivalent car volumes when calculating levels of service, the condition would be even more critical than that shown in the data included for the highway alternates.)



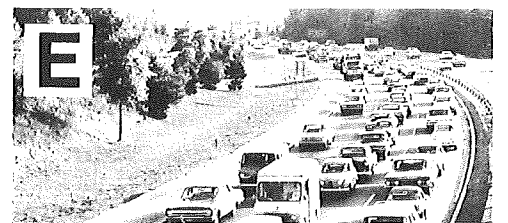
NO RESTRICTION ON OPERATING SPEED



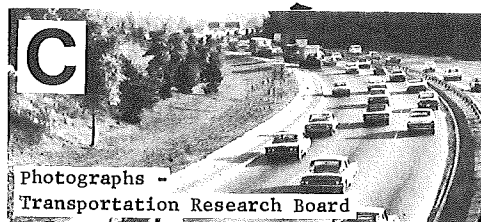
APPROACHING UNSTABLE FLOW –
LITTLE FREEDOM TO MANEUVER



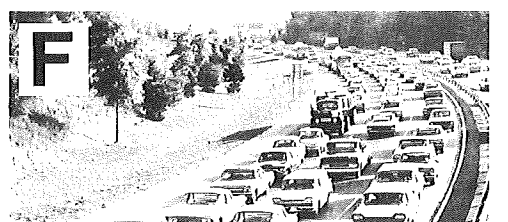
STABLE FLOW – FEW SPEED
RESTRICTIONS



UNSTABLE FLOW – LOWER SPEED –
SOME STOPS



STABLE FLOW – HIGHER VOLUMES –
RESTRICTED SPEED and LANE CHANGING



FORCED FLOW OPERATION AT LOW
SPEEDS – MANY STOPS

Note: The photographs above are the only ones available at this time to depict levels of service. Unfortunately, they show only a multiple-lane facility (three lanes in each direction). Comparable levels of service on a two-lane roadway would not appear as congested as these. However, because of slower moving vehicles and limited passing opportunities, traffic would be grouped into large "platoons" with gaps between. Therefore, the effect on traffic maneuverability, would be comparable to that shown above.

PHASE 4: PLAN DEVELOPMENT

- (6) Miles of Trunk Line Operating Above and Below a Desirable Level of Service: Because future levels of service are estimated for each section of road in a highway alternate, it is possible to tell how much of each alternate will function above or below a "desirable level". All parts of a system operating at or above level of service C are considered to be operating at a desirable level, and all those operating in the D, E, or F range are considered to be operating at an undesirable level. By knowing the levels of service that will probably occur on existing or proposed roads in the future it is possible for planners to determine what types of improvements should be made to provide adequate highway facilities.
- (7) Projected Travel Times Between Selected Cities: By using the technique described in the paragraph on Proximity Analysis it is possible to determine the shortest travel time between any two points in the Region that are connected by state highways. It is also possible to estimate the shortest travel times that might occur between two points if proposed new facilities were built. These results can then be used to show travel times might change between major cities in the Region with the construction of different highway possibilities.

The results of these analyses are found throughout the text and are summarized on pages 93 and 94.

The purpose of the Plan Development Phase is to generate a set of recommendations for regional transportation improvements. These recommendations will then be submitted to the State Highway Commission for approval. Only the first two steps in this phase have been taken thus far. This report and attendant public meetings constitute the third step.

This past winter and early spring Steps 1 and 2 were taken. The data generated in the Impact Analysis Phase was summarized and presented to each of the ten county planning commissions in the Region and to the Transportation Advisory Committee of the Northwest Regional Planning and Development Commission. Each planning commission was asked to choose approximately five alternatives that it would like to see subjected to more in-depth analysis. It was stressed by the Department of State Highways and Transportation that the planning commissions could choose five existing alternatives, five completely new alternatives, or a mix of new and existing alternatives. It was also stressed that the choice of some alternates did not automatically terminate further consideration of those not chosen. Rather, those not chosen could be brought into the process again if circumstances warranted such an action.

After considerable deliberation all county commissions responded to the request and recommended corridors for further analysis. These recommendations were sent to the Transportation Advisory Committee of the Northwest Regional Planning and Development Commission. The Advisory Committee then eliminated duplications and synthesized various recommendations to coordinate corridor locations from one county to the next. The results of the Advisory Committee actions are presented in the section entitled "Modification of Alternatives". The five alternatives recommended for further analysis have been sent to the Regional Commission itself, however, the Commission has delayed any formal recommendations to the Department of State Highways and Transportation until after public meetings have been held and enough time has passed to incorporate the recommendations of the public into the selection of the alternatives for further in-depth analysis.

The study has now reached steps 3 and 4 of Phase 4. This step calls for public meetings to allow for citizen review and comment on the steps taken to date and to gain information from the public about which alternatives it would like to see selected for more in-depth analysis. It is hoped that all concerned citizens will utilize both the data presented and their own personal knowledge to evaluate the various illustrative alternatives in light of the transportation and other goals of the Region. Having made this evaluation they should then be able to suggest which alternatives they would like to see analyzed more fully.

WHAT HAS BEEN DONE IN THE PLANNING OF OTHER TRANSPORTATION MODES?

AVIATION

In August, 1974 the Michigan Aeronautics Commission published the Michigan State Airport System Plan Through 1990. This plan, prepared with the aid of a System Planning Grant from the Federal Aviation Administration, indicates the improvements that have to be made in the air transportation system by 1975, 1980, and 1990 to meet projected demands for these years. An advisory committee, composed of aviation industry spokesmen and representatives from all of the State Planning and Development Regions guided the study in the consideration of alternative ways to meet projected demands.

The plan was developed as the result of extensive multi-modal modeling and analysis. The current interrelationships between auto, truck, rail, bus and the air system were identified and then adjusted to simulate the projected interrelationships for the years under study. This technique provided planners with realistic projections of future air transportation demands in relation to demands for other modes of travel. An extensive explanation of this process is provided in the publication Michigan State Airport System Plan, Technical Report, prepared by Stanford Research Institute, the prime consultant for this study.

The results of this study for the Northwest Region are presented on pages 60, 61, and 62 in the section of this report entitled "Transportation Alternatives".

RAILROADS

The future of rail service in the Northwest Region is in doubt. The United State Railway Association has proposed that all Penn Central and Ann Arbor Railway lines in the Northwest Region not be included in the ConRail System. Additionally, the C&O Railroad has filed for abandonment of its tracks in the Region. If all of these abandonment proposals are accepted, the Northwest Region could be left with no rail service.

There is much conflicting opinion about the USRA rail reorganization proposals, both in the Northwest Region and in the entire seventeen state area affected by the USRA Final System Plan. It has been argued that the USRA did not meet the requirements of the Rail Reorganization Act of 1973 because it did not estimate a range of social, economic and environmental impacts of rail abandonment on the areas involved. Rather, the USRA based abandonment proposals solely on analysis of the profitability of these lines to existing operators. Hopefully, this issue and all others in dispute will be fully discussed before Congress acts on the proposals in the Fall of 1975.

If, after debate, the Congress agrees that the lines in the Northwest Region should be abandoned, then action will have to be taken by the State or by private interests, or both, if rail service is to be continued in the Region. If Congress rejects the USRA proposals, other possibilities for continuance of service may exist. In either case, additional, in-depth analyses will have to be made to determine how to provide adequate rail service in the Region.

The objectives of this study, in agreement with the Michigan State Railroad Planning Goals, are to determine 1) Which facilities should be retained, 2) Which facilities should be upgraded, 3) What types of service should be provided, and 4) What would be the costs. Answers to these questions will require more analysis than is now available. The Rail Planning Section of the Department of State Highways and Transportation has created a work program to perform these analyses. However, because analyses have never before been performed to determine the impact of changes in rail service in an area, these analyses will require considerable time.

COMMERCIAL HARBORS

Despite the uncertainty which surrounds the existing situation, long range planning must of necessity evaluate the need for rail service in the Region. This has been initiated through the selection of a number of possible rail system alternatives. Some measures are provided to help determine the degree of comparative importance of each to the Region.

These system analyses are viewed as a long range approach. A short range approach has also been analyzed to help determine the relationship between the rail situation and the highway alternatives being considered.

The point has been made by a number of spokesmen that there may be no need for new highways if rail service is improved sufficiently so that a considerable amount of highway traffic shifts onto the rail network. Conversely, if all the railroad service in the Northwest were to be abandoned it has been suggested that the resulting truck movements would seriously overload the highway facilities -- present or planned.

The Location Team tested these two hypotheses in their most extreme cases and concluded that any railroad network alternatives would have minimal effect on highway alternatives. The effects, although measurable, would not be of magnitude to affect corridor location or facility design decisions. The point, however, must be stressed that, these studies do not attempt to gauge the community impacts that would result from a loss of railroad services. Nor do these analyses imply, that major or minor county arterials would not be impacted by railroad abandonment. A more detailed description of these analyses is presented on pages 64 through 79.

There are three principal departments of Michigan State government that are concerned with the planning, development, maintenance and operation of commercial harbors in the State: the Department of State Highways and Transportation which has the statutory responsibility to assist commercial harbors in all aspects of planning and development; the Department of Natural Resources which is responsible for environmental concerns related to commercial harbor development; and the Department of Commerce which is concerned with port oriented industrial development and promotion of international waterborne commerce.

The principal Federal agencies include the U.S. Army Corps of Engineers in harbor and channel development and maintenance; both the Bureau of Sports Fisheries and Wildlife, and the Environmental Protection Agency in environmental matters; and the U.S. Department of Commerce -- Maritime Administration in marine technology and commerce.

The Michigan Departments cooperate with the Federal agencies to coordinate commercial harbor development at two levels; the statewide policy level at which they work to mesh State and Federal goals; and the project level at which they work to coordinate development, maintenance and operation activities.

Although State and Federal agencies become involved in commercial harbor development, in general they are not initiators of development. The initiative in this area must come from local port districts, harbor commissions or other local governmental units. Therefore, the major functions of the Port Development Section of the Michigan Department of State Highways and Transportation are supportive of local governmental units. The Section advises local governmental units about the growth and development potential of their harbors; maintains files on Federal, State and local legislation, regulations and rules relating to water transportation and port development; and coordinates the efforts of State and Federal agencies with those of organizations in the private sector when appropriate. However, another important function of the Port Development Section is participation in multi-modal systems planning on Location Teams. A representative of this Section is on the Northwest Location Team working with other members to develop a coordinated and balanced transportation system for the Northwest Region.

A description of the commercial harbors in the Northwest Region is on page 80 in the "Transportation Alternatives Section" of the report. This description includes an indication of the developments or improvements planned for these harbors in the Region.

NON-MOTORIZED TRANSPORTATION

Non-motorized transportation includes bicycling and horseback riding. The popularity of these two types of transportation has risen rapidly in the past five to ten years, and with this rise, safety and congestion problems have increased. Bicyclists and equestrians, lacking other facilities, have been using highways and unpaved highway shoulders to travel from one place to another. Because movement by these modes is slow relative to movement by motorized transport, bicyclists and equestrians have impeded the flow of motorized traffic. When traffic flow is impeded, the probability of accidents is greatly increased and both motorists and non-motorists face increased risks of serious personal injury. One solution to this problem is to separate these modes of transport. To do this it is necessary to provide separate facilities for both bicyclists and equestrians.

Having recognized the need to plan directly for the specific needs of the non-motorized transport user, the Department of State Highways and Transportation has established a Non-Motorized Transportation Planning Unit within its Bureau of Transportation Planning. A representative of this unit is on the Northwest Location Team and is formulating plans for the provision of bicycle paths and equestrian trails in the Region.

A description of the types of facilities that can be provided are on page 85 of the "Transportation Alternatives Section" of this report.

PUBLIC TRANSPORTATION

Governor Milliken has announced that a transportation goal of the State of Michigan is the provision of public transportation service to all citizens of the State. To achieve this goal it will be necessary to create a comprehensive public transportation system which will include urban, rural, regional and intercity services. The Department is aggressively moving to create this system.

Two types of dial-a-ride transportation systems have been implemented in the Region and a third type is being considered for implementation. The name dial-a-ride is descriptive of the type of service provided. Prospective users of the service call a dispatcher and ask to be picked up. A bus comes to where the riders are and then takes them to where they want to go. The two types of dial-a-ride systems that have been implemented in the Northwest Region are urban systems and county systems. Urban systems provide service only to citizens of the city in which they are located, county systems provide service to the citizens of a county-wide area. The third type of dial-a-ride system that is being considered for implementation in some parts of the Region is a system designed to service elderly and handicapped persons through grants to public or private nonprofit organizations.

In addition to dial-a-ride the Department is working in two other areas to augment existing bus services. The first area is that of regional service. A region-wide, fixed route system is being considered for implementation. The second area is that of major commercial intercity service. The Department is consulting with the major commercial carriers to coordinate the provision of service in the Region and elsewhere in the State.

A detailed description of work that has been completed or that is currently being executed is provided on pages 86 through 88 of the "Transportation Alternatives Section" of this report.

TRANSPORTATION ALTERNATIVES

HIGHWAYS

ALTERNATES








This section includes a map of each alternate that was developed in Phase 2 of the Study as described on pages 13 and 14.

The title of each map indicates the type of improvement considered. Included on the maps are the network improvements which would likely be necessary to provide adequate capacity to the existing roadway or to provide desirable access to a given area. The alternates are presented in an evolutionary fashion from the "Do-Nothing", to freeway alternates based upon the extent and type of improvement considered. Alternate 1, the "Do-Nothing" option (the existing system), is presented first forming the basis upon which all other alternates can be compared. Alternates 1-4 involve non-freeway improvements and alternates 5-15 involve freeway construction.

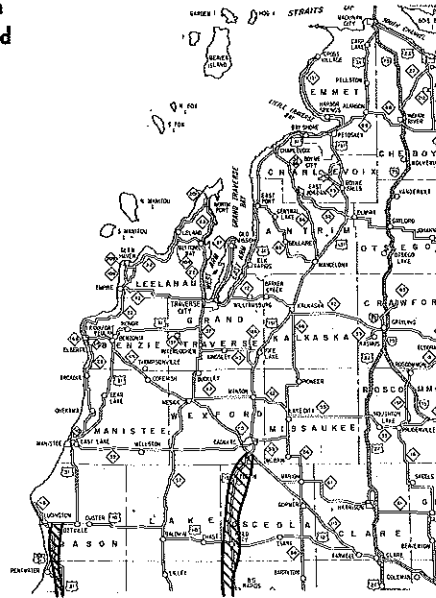
It should be noted that in each instance the assumption has been made that US-31 south of Ludington and US-131 south of Cadillac will be constructed as freeways. This assumption is made even with the "Do-Nothing" alternate.

It is hoped that the information contained herein will provide a sufficient base for decisions to reduce the number of alternates or modify them to satisfactorily represent all affected interests.

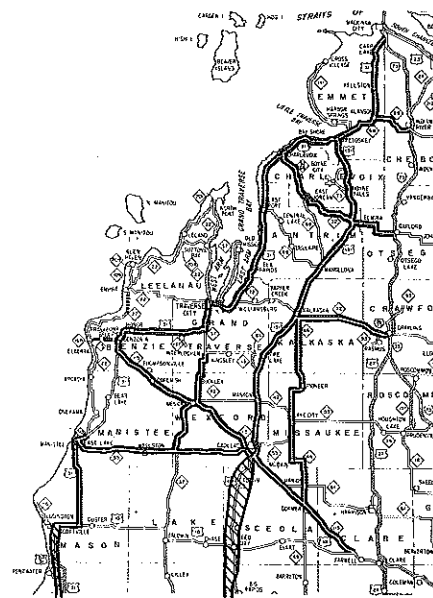
These small exhibits are provided for quick comparison purposes only. Larger, more detailed maps are provided on the following pages.

-  Required Minor Improvement (Widening of Existing Lanes)
-  Required Major Improvement (Construction of Additional Lanes)
-  Reconstruction to New 2-Lane Standards
-  Prop US-31, & US-131 Corr. 2 Lane, Free Access
-  Prop US-31, & US-131 Corr. 4 Lane, Div., Free Access
-  Anticipated Freeway Corridor
-  Proposed US-31 & US-131 Freeway Corridor

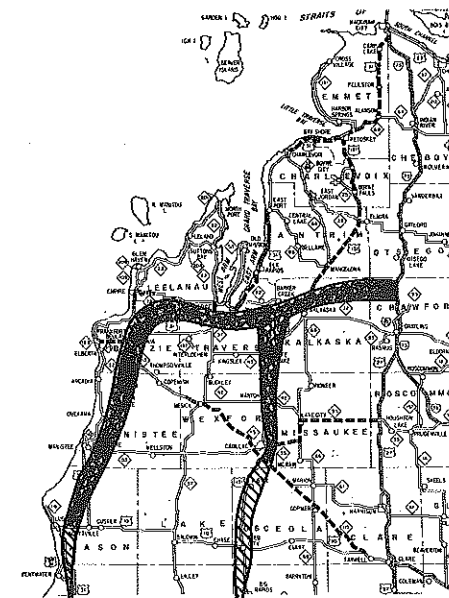
ALTERNATE 1
"DO-NOTHING"



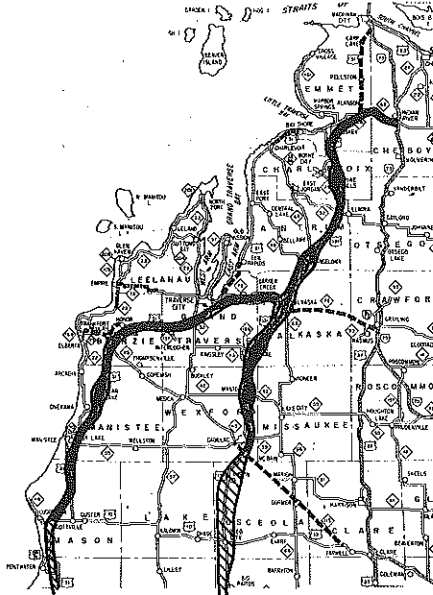
ALTERNATE 2
IMPROVED TWO-LANE FACILITY
ON EXISTING LOCATION



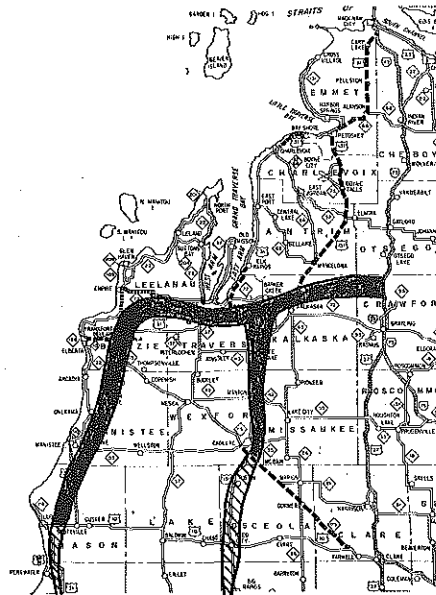
ALTERNATE 3
TWO LANE, FREE ACCESS
FACILITY ON NEW LOCATION



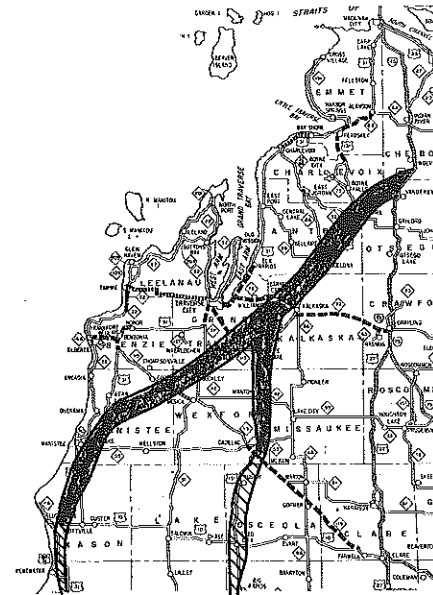
ALTERNATE 4
FOUR LANE, DIVIDED, FREE ACCESS FACILITY ON
EXISTING LOCATION WITH URBAN BY-PASSES



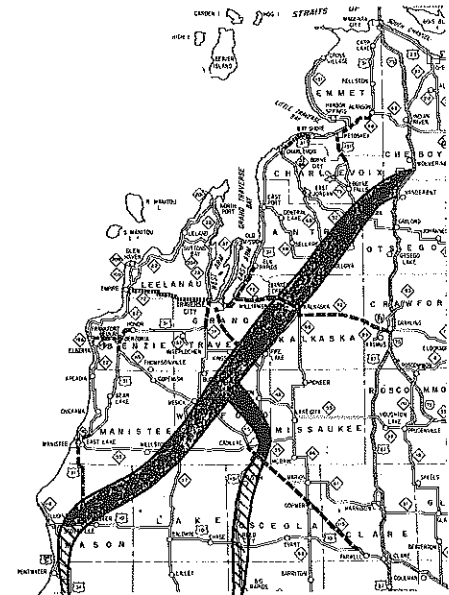
ALTERNATE 5
FREWAY FACILITY ON NEW LOCATION



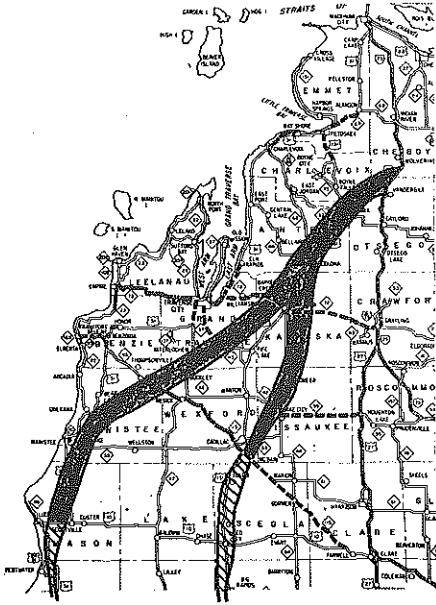
ALTERNATE 6
FREWAY FACILITY ON NEW LOCATION



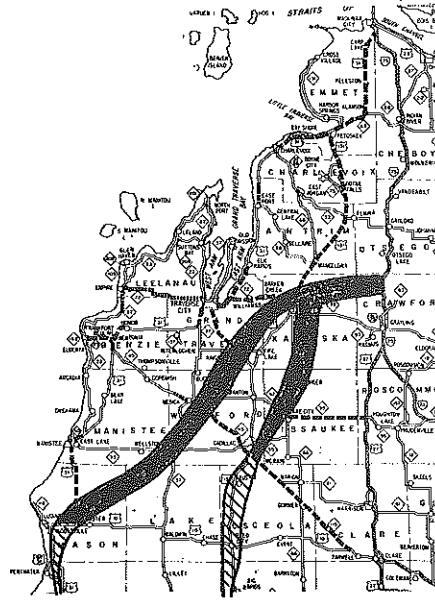
ALTERNATE 7
FREWAY FACILITY ON NEW LOCATION



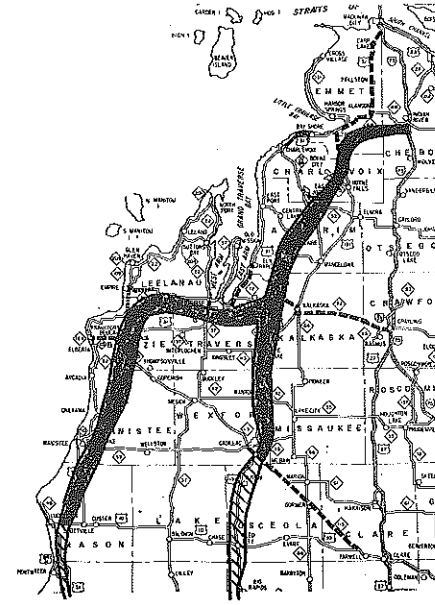
ALTERNATE 8
FREEWAY FACILITY ON NEW LOCATION



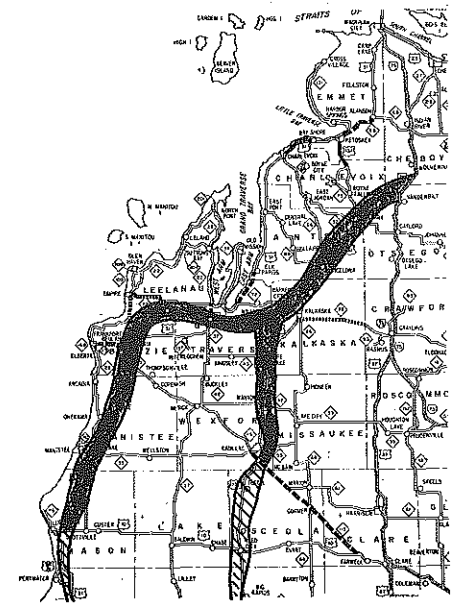
ALTERNATE 9
FREEWAY FACILITY ON NEW LOCATION



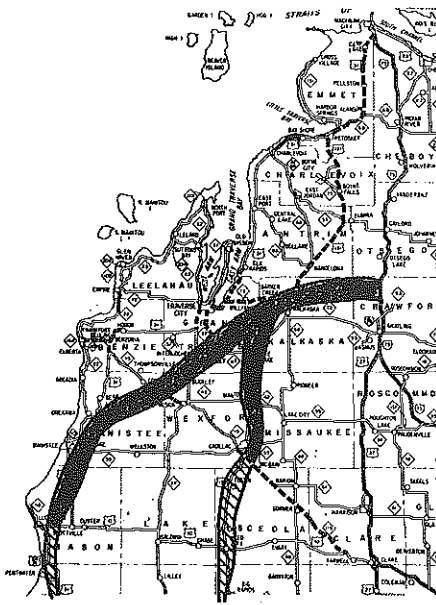
ALTERNATE 10
FREEWAY FACILITY ON NEW LOCATION



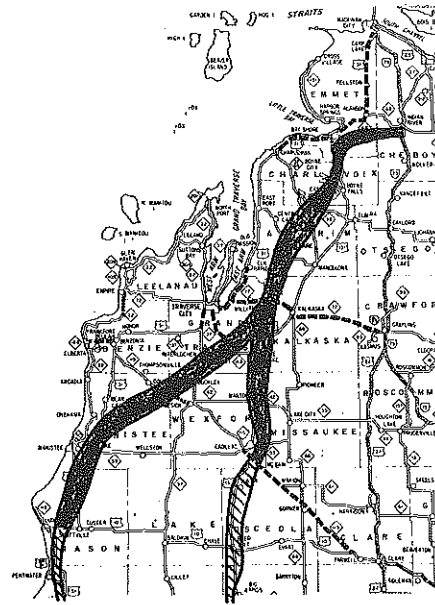
ALTERNATE 11
FREEWAY FACILITY ON NEW LOCATION



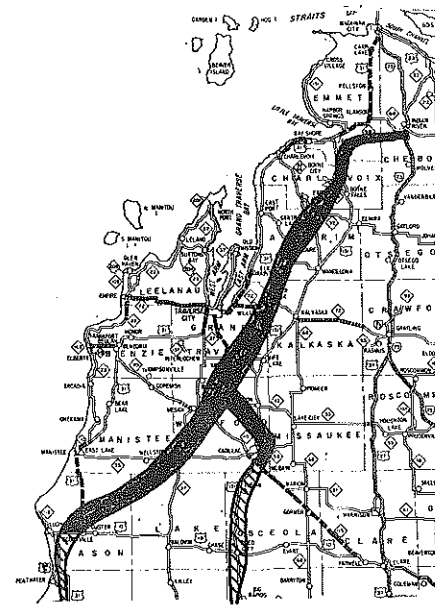
ALTERNATE 12
FREEWAY FACILITY ON NEW LOCATION



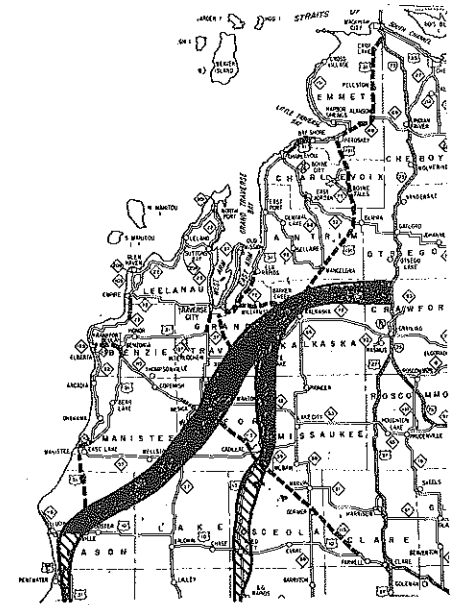
ALTERNATE 13
FREEWAY FACILITY ON NEW LOCATION



ALTERNATE 14
FREEWAY FACILITY ON NEW LOCATION



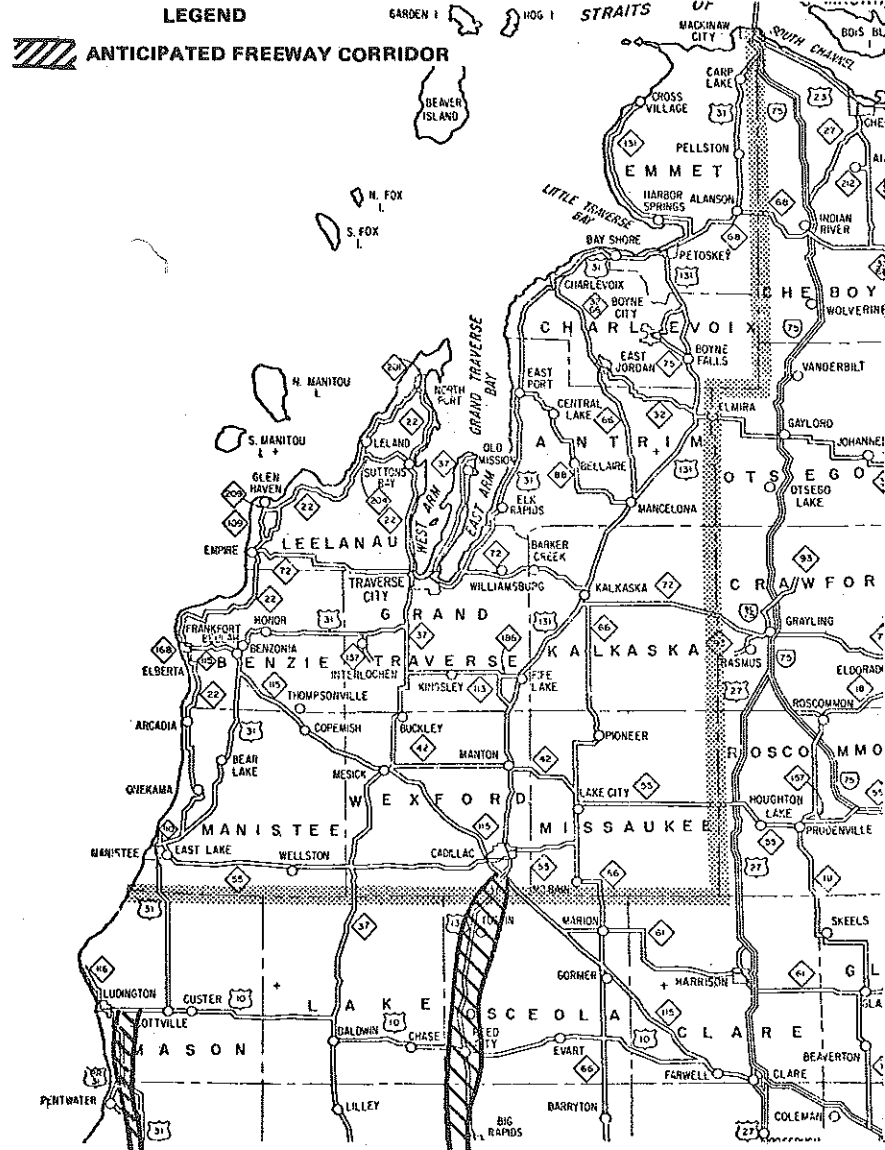
ALTERNATE 15
FREEWAY FACILITY ON NEW LOCATION



ALTERNATE 1 "DO-NOTHING"

HIGHWAY ALTERNATE 1 (DO NOTHING)

Note: All data based upon year 2000 projections for rural state trunk line highways only.
Cost estimates represent a total accumulation between the years 1970 and 2000
with costs adjusted to 1975 values.







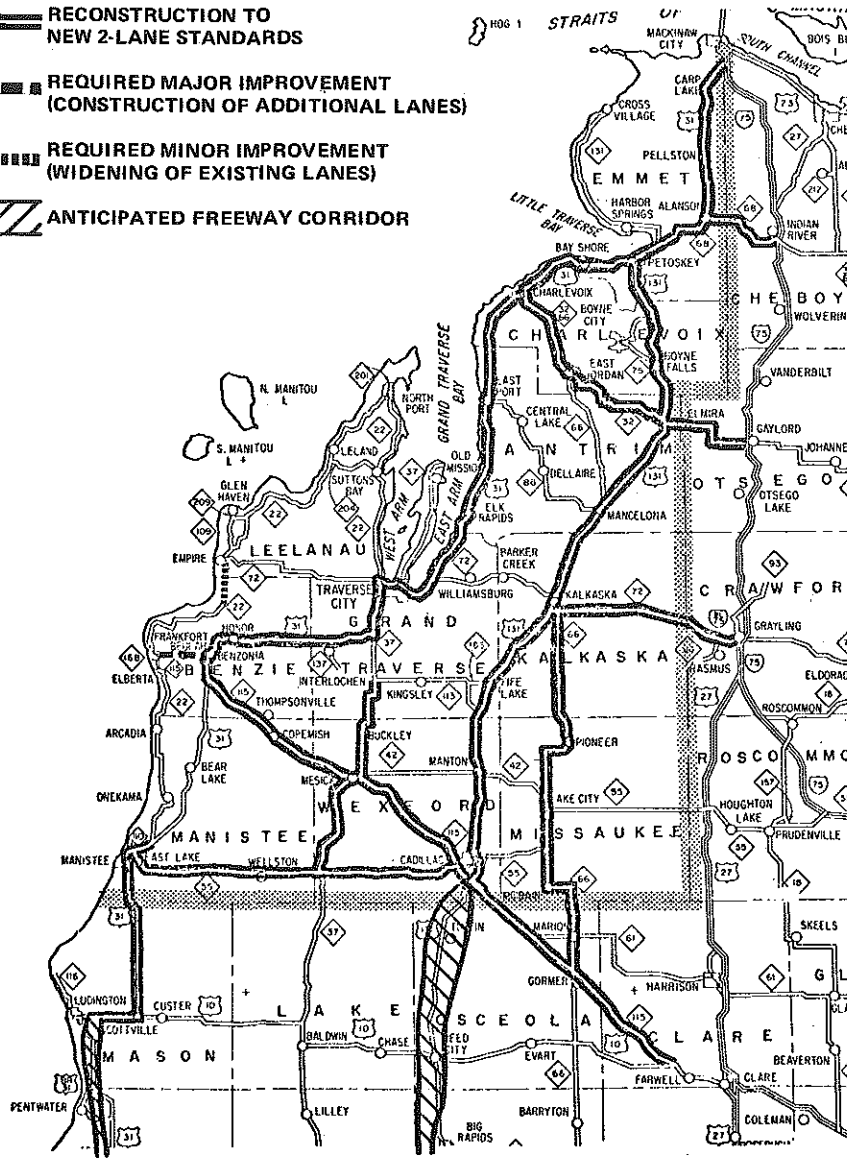
	For Comparison with other Alts. see page(s)	For Comparison with other Alts. see page
SOCIAL CRITERIA		
With Alternate 1, the "Do Nothing" alternate, there would be:		
553,194 people accessible to major cities*	44-47	
193,585 people accessible to existing airports**	63	
550,655 people accessible to bus stations**	89-92	
For a visual comparison of proximity to seasonal housing densities, see page 43.		
ECONOMIC CRITERIA		
With Alternate 1, the "Do Nothing" alternate, there would be:		
No capital expenditure costs for US-31 and US-131	49	
No improvement costs for other state trunk lines	49	
\$1.55 million maintenance cost	50	
\$1.146 million auto and truck running and time costs	50	
356 manufacturing firms accessible to truck terminals**	51-53	
511 manufacturing firms accessible to rail stations**	76-79	
321 manufacturing firms accessible to port facilities**	81-84	
For a visual comparison of proximity to areas of various assessment values, see page 48.		
ENVIRONMENTAL CRITERIA		
For a visual comparison of proximity to primary environmental issue areas and 4(f) areas, see pages 54 and 57.		
TRAVEL CRITERIA		
With Alternate 1, the "Do Nothing" alternate, there would be:		
3 miles of freeway in the Region		58
60,978 average daily trips to and from the Region (compared to 25,866 in 1970).		59
1,290 million annual vehicle miles of travel in the Region (compared to 504 million in 1970).		59
437 miles of state highway operating at or above Level of Service C (compared to 633 miles in 1970).		59
345 miles of state highway operating below Level of Service C (compared to 107 miles in 1970).		59
5,118 total annual accidents (compared to 2077 in 1970).		58
*The figure used for comparison represents a total for all of the major cities evaluated and includes only the cumulative 60 minute time band data. Cities include: Cadillac, Charlevoix, Gaylord, Grayling, Ludington, Manistee, Petoskey and Traverse City.		
**Figures used for comparison represent only the cumulative 60 minute time band data.		

ALTERNATE 2

IMPROVED TWO-LANE FACILITY ON EXISTING LOCATION

LEGEND

-  RECONSTRUCTION TO NEW 2-LANE STANDARDS
-  REQUIRED MAJOR IMPROVEMENT (CONSTRUCTION OF ADDITIONAL LANES)
-  REQUIRED MINOR IMPROVEMENT (WIDENING OF EXISTING LANES)
-  ANTICIPATED FREEWAY CORRIDOR



Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

HIGHWAY ALTERNATE 2 COMPARISON WITH "DO NOTHING" ALTERNATE (1)





Note: All data based upon year 2000 projections for rural state trunk line highways only.
Cost estimates represent a total accumulation between the years 1970 and 2000
with costs adjusted to 1975 values.

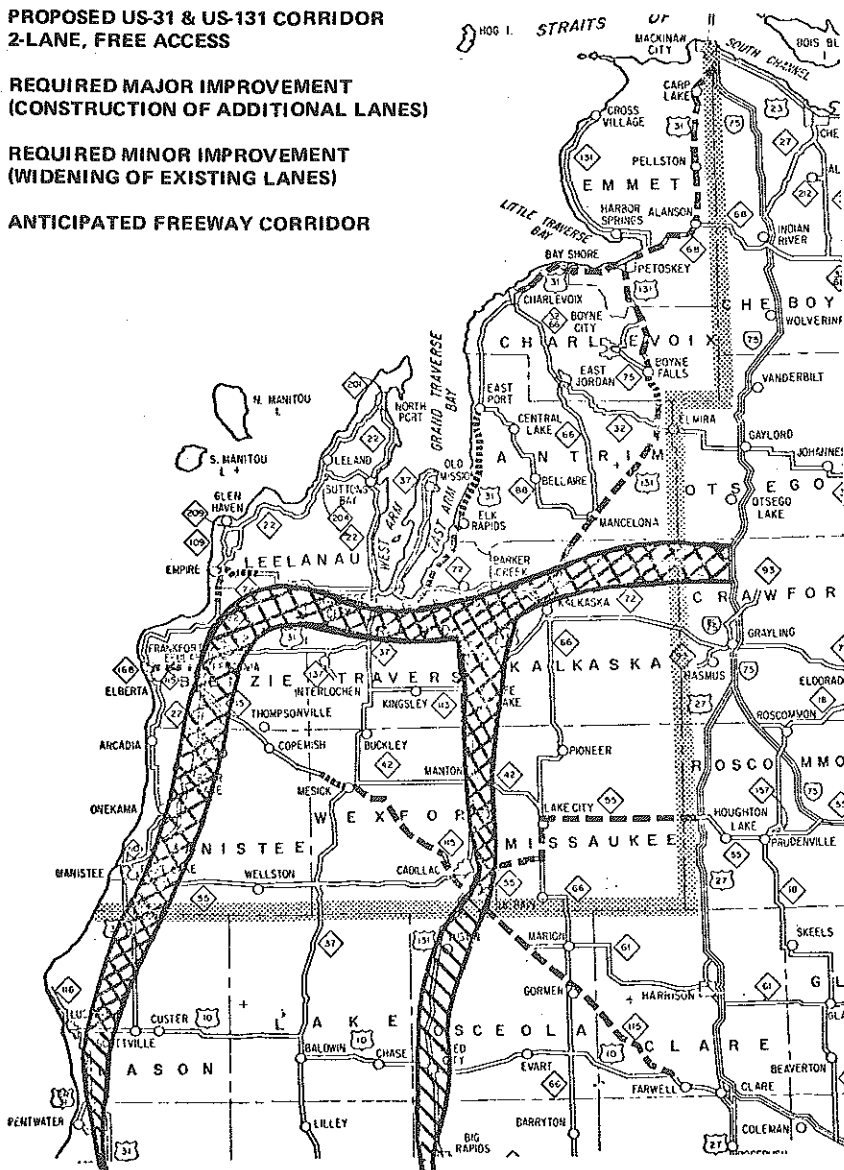
	For Comparison with other Alts. see page(s)		For Comparison with other Alts. see page
SOCIAL CRITERIA			
Compared to the "Do Nothing" alternate, Alternate 2 has:			
Same population accessible to major cities*	44-47		
Same population accessible to existing airports**	63		
Same population accessible to bus stations**	89-92		
For a visual comparison of proximity to seasonal housing densities, see page 43.			
ECONOMIC CRITERIA			
Compared to the "Do Nothing" alternate, Alternate 2 has:			
\$17 million <u>more</u> for capital expenditure costs on US-31 & US-131 ***	49		
\$15 million <u>more</u> for improvements on other state trunk lines ***	49		
Same amount of maintenance costs	50		
1.1% <u>more</u> auto and truck running and time costs	50		
Same number of manufacturing firms accessible to truck terminals**	51-53		
Same number of manufacturing firms accessible to rail stations**	76-79		
Same number of manufacturing firms accessible to port facilities**	81-84		
For a visual comparison of proximity to areas of various assessment values, see page 48.			
ENVIRONMENTAL CRITERIA			
For a visual comparison of proximity to primary environmental issue areas and 4(f) areas, see pages 54 and 57 .			
TRAVEL CRITERIA			
Compared to the "Do Nothing" alternate, Alternate 2 has:			
Same number of miles of freeway in the Region			
0.5% <u>more</u> average daily trips to and from the Region			
2.6% <u>more</u> annual vehicle miles of travel in the Region			
17.4% <u>more</u> miles of state highway operating at or above level of Service C			
21.7% <u>less</u> miles of state highway operating below Level of Service C			
Same number of total annual accidents			
*The figure used for comparison represents a total for all of the major cities evaluated and includes only the cumulative 60 minute time band data. Cities include: Cadillac, Charlevoix, Gaylord, Grayling, Ludington, Manistee, Petoskey and Traverse City.			
**Figures used for comparison represent only the cumulative 60 minute time band data.			
***Includes segments of trunk line east of the Region to I-75 and south to US-10.			

ALTERNATE 3

TWO-LANE, FREE ACCESS FACILITY ON NEW LOCATION

LEGEND

-  PROPOSED US-31 & US-131 CORRIDOR
2-LANE, FREE ACCESS
-  REQUIRED MAJOR IMPROVEMENT
(CONSTRUCTION OF ADDITIONAL LANES)
-  REQUIRED MINOR IMPROVEMENT
(WIDENING OF EXISTING LANES)
-  ANTICIPATED FREEWAY CORRIDOR



Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

HIGHWAY ALTERNATE 3 COMPARISON WITH "DO NOTHING" ALTERNATE (1)





Note: All data based upon year 2000 projections for rural state trunk line highways only.
Cost estimates represent a total accumulation between the years 1970 and 2000
with costs adjusted to 1975 values.

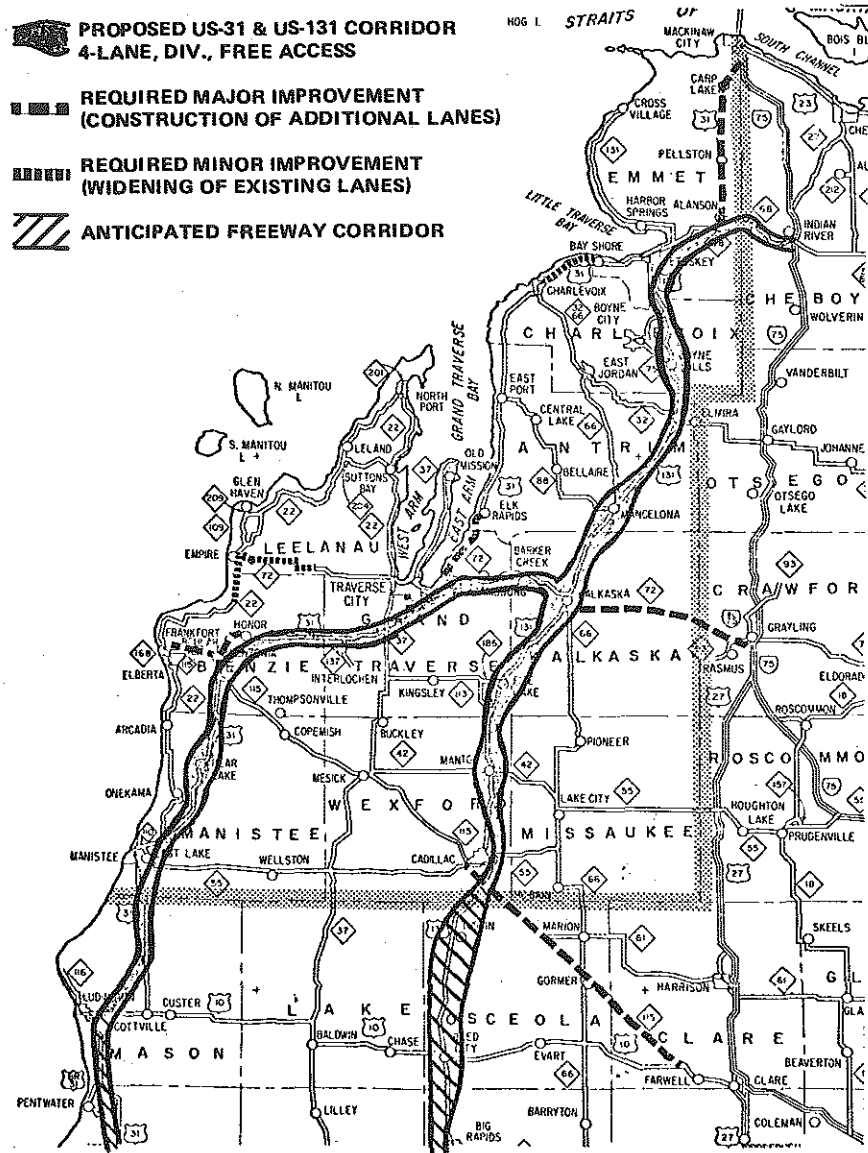
	For Comparison with other Alts. see page(s)		For Comparison with other Alts. see page
SOCIAL CRITERIA			
Compared to the "Do Nothing" alternate, Alternate 3 has:			
0.6% <u>more</u> population accessible to major cities*	44-47		
6.7% <u>more</u> population accessible to existing airports**	63		
0.6% <u>more</u> population accessible to bus stations**	89-92		
For a visual comparison of proximity to seasonal housing densities, see page 43.			
ECONOMIC CRITERIA			
Compared to the "Do Nothing" alternate, Alternate 3 has:			
\$108 million <u>more</u> for capital expenditure costs on US-31 & US-131 ***	49		
\$112 million <u>more</u> for improvements on other state trunk lines ***	49		
9.7% <u>more</u> maintenance costs	50		
15.9% <u>less</u> auto and truck running and time costs	50		
Same number of manufacturing firms ac- cessible to truck terminals**	51-53		
1.4% <u>more</u> manufacturing firms acces- sible to rail stations**	76-79		
Same number of manufacturing firms accessible to port facilities**	81-84		
For a visual comparison of proximity to areas of various assessment values, see page 48			
		ENVIRONMENTAL CRITERIA	
		For a visual comparison of proximity to primary environmental issue areas and 4(f) areas, see pages 54 and 57.	
		TRAVEL CRITERIA	
		Compared to the "Do Nothing" alternate, Alternate 3 has:	
		Same number of miles of freeway in the Region.	58
		0.5% <u>more</u> average daily trips to and from the Region	59
		2.3% <u>more</u> annual vehicle miles of travel in the Region	59
		22.0% <u>more</u> miles of state highway operating at or above Level of Service C	59
		7.0% <u>less</u> miles of state highway operating below Level of Service C	59
		8.3% <u>less</u> total annual accidents	58
		*The figure used for comparison represents a total for all of the major cities evaluated and includes only the cumu- lative 60 minute time band data. Cities include: Cadillac, Charlevoix, Gaylord, Grayling, Ludington, Manistee, Petoskey and Traverse City.	
		**Figures used for comparison represent only the cumula- tive 60 minute time band data.	
		***Includes segments of trunk line east of the Region to I-75 and south to US-10.	

ALTERNATE 4

FOUR-LANE, DIVIDED, FREE ACCESS FACILITY ON EXISTING LOCATION WITH URBAN BY-PASSES

LEGEND

-  PROPOSED US-31 & US-131 CORRIDOR
4-LANE, DIV., FREE ACCESS
-  REQUIRED MAJOR IMPROVEMENT
(CONSTRUCTION OF ADDITIONAL LANES)
-  REQUIRED MINOR IMPROVEMENT
(WIDENING OF EXISTING LANES)
-  ANTICIPATED FREEWAY CORRIDOR



Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

HIGHWAY ALTERNATE 4 COMPARISON WITH "DO NOTHING" ALTERNATE (1)




Note: All data based upon year 2000 projections for rural state trunk line highways only.
Cost estimates represent a total accumulation between the years 1970 and 2000
with costs adjusted to 1975 values.

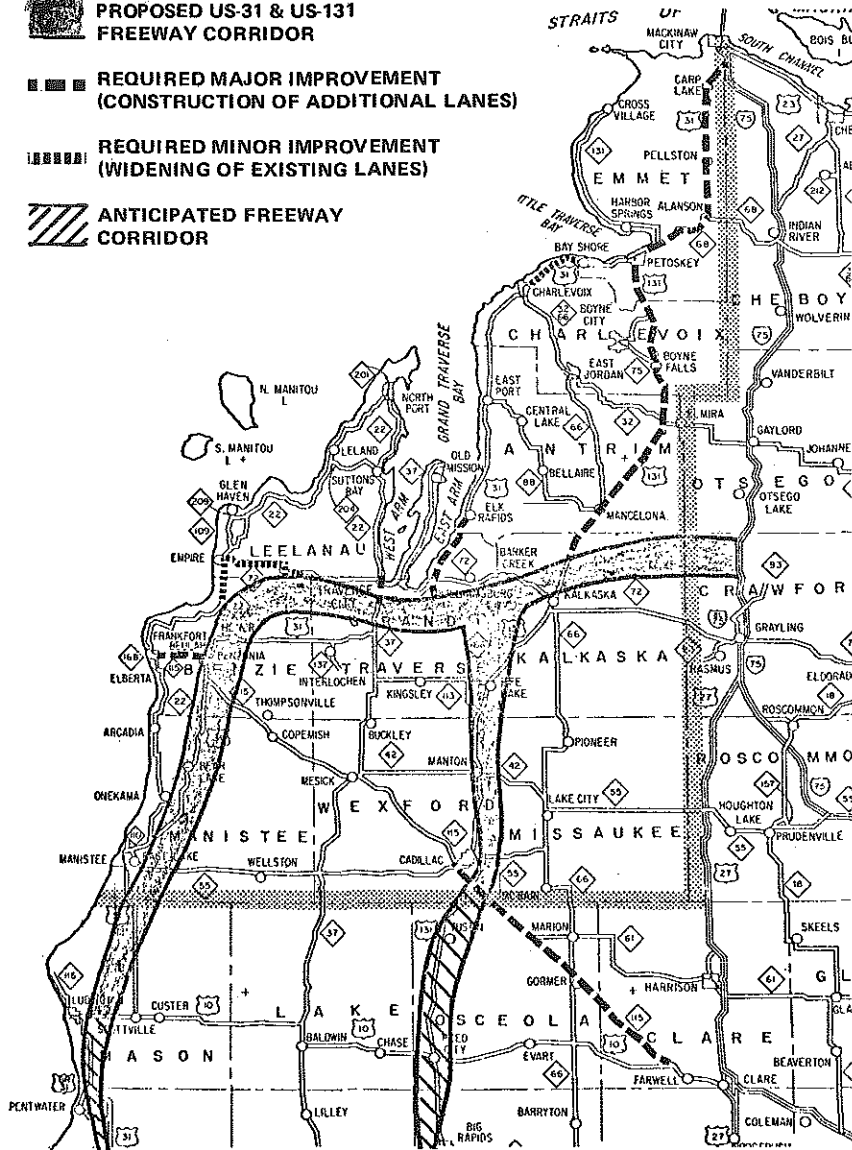
SOCIAL CRITERIA	For Comparison with other Alts. see page(s)	ENVIRONMENTAL CRITERIA	For Comparison with other Alts. see page	
Compared to the "Do Nothing" alternate, Alternate 4 has:		For a visual comparison of proximity to primary environmental issue areas and 4(f) areas, see pages 54 and 57.		
2.0% more population accessible to major cities*	44-47	<u>TRAVEL CRITERIA</u>		
10.8% more population accessible to existing airports**	63	Compared to the "Do Nothing" alternate, Alternate 4 has:		
2.5% more population accessible to bus stations**	89-92	Same number of miles of freeway in the Region	58	
For a visual comparison of proximity to seasonal housing densities, see page 43.		7.2% more average daily trips to and from the Region	59	
<u>ECONOMIC CRITERIA</u>		8.6% more annual vehicle miles of travel in the Region	59	
Compared to the "Do-Nothing" alternate, Alternate 4 has:		63.4% more miles of state highway operating at or above Level of Service C	59	
\$236 million more for capital expenditure costs on US-31 & US-131***	49	51.3% less miles of state highway operating below Level of Service C	59	
\$ 62 million more for improvements on other state trunk lines***	49	10.9% less total annual accidents	58	
25.2% more maintenance costs	50			
24.6% less auto and truck running and time costs	50			
2.0% more manufacturing firms accessible to truck terminals**	51-53	*The figure used for comparison represents a total for all of the major cities evaluated and includes only the cumulative 60 minute time band data. Cities include: Cadillac, Charlevoix, Gaylord, Grayling, Ludington, Manistee, Petoskey and Traverse City.		
0.4% more manufacturing firms accessible to rail stations**	76-79		**Figures used for comparison represent only the cumulative 60 minute time band data.	
2.8% more manufacturing firms accessible to port facilities**	81-84			
For a visual comparison of proximity to areas of various assessment values, see page 48.		***Includes segments of trunk line east of the Region to I-75 and south to US-10.		

ALTERNATE 5

FREWAY FACILITY ON NEW LOCATION

LEGEND

-  PROPOSED US-31 & US-131 FREEWAY CORRIDOR
-  REQUIRED MAJOR IMPROVEMENT (CONSTRUCTION OF ADDITIONAL LANES)
-  REQUIRED MINOR IMPROVEMENT (WIDENING OF EXISTING LANES)
-  ANTICIPATED FREEWAY CORRIDOR



Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

HIGHWAY ALTERNATE 5 COMPARISON WITH "DO NOTHING" ALTERNATE (1)





Note: All data based upon year 2000 projections for rural state trunk line highways only. Cost estimates represent a total accumulation between the years 1970 and 2000 with costs adjusted to 1975 values.

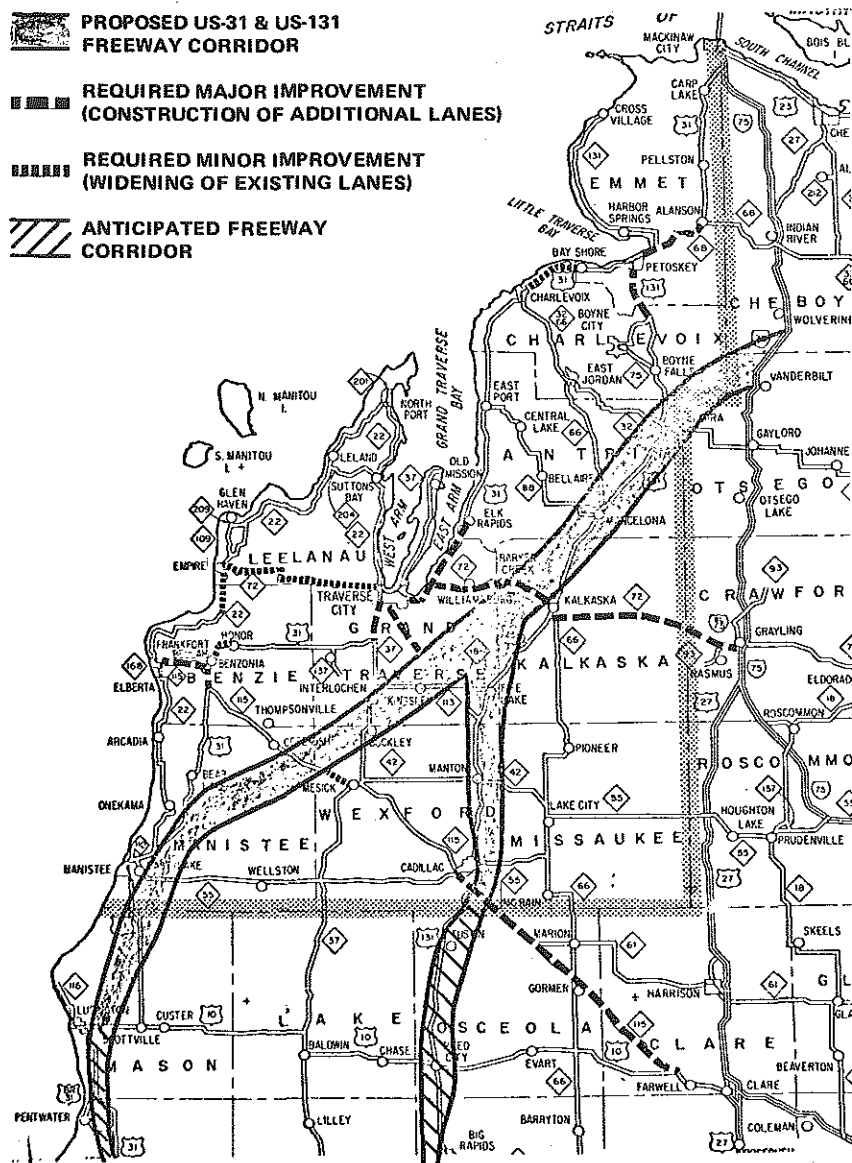
SOCIAL CRITERIA	For Comparison with other Alts. see page(s)	ENVIRONMENTAL CRITERIA	For Comparison with other Alts. see page
Compared to the "Do Nothing" alternate, Alternate 5 has:		For a visual comparison of proximity to primary environmental issue areas and 4(f) areas, see pages 54 and 57.	
2.9% more population accessible to major cities *	44-47	<u>TRAVEL CRITERIA</u>	
21.1% more population accessible to existing airports **	63	Compared to the "Do Nothing" alternate, Alternate 5 has:	
2.9% more population accessible to bus stations **	89-92	139 more miles of freeway in the Region	58
For visual comparison of proximity to seasonal housing densities, see page 43.		6.2% more average daily trips to and from the Region	59
<u>ECONOMIC CRITERIA</u>		14.3% more annual vehicle miles of travel in the Region	59
Compared to the "Do Nothing" alternate, Alternate 5 has:		52.4% more miles of state highway operating at or above Level of Service C	59
\$ 202 million more for capital expenditure costs on US-31 & US-131***	49	45.2% less miles of state highway operating below Level of Service C	59
\$ 83 million more for improvements on other state trunk lines***	49	22.2% less total annual accidents	58
18.7% more maintenance costs	50		
20.4% less auto and trunk running and time costs	50		
2.8% more manufacturing firms accessible to truck terminals **	51-53		
2.0% more manufacturing firms accessible to rail stations**	76-79		
3.1% more manufacturing firms accessible to port facilities**	81-84		
For a visual comparison of proximity to areas of various assessment values, see page 48.		*The figure used for comparison represents a total for all of the major cities evaluated and includes only the cumulative 60 minute time band data. Cities include: Cadillac, Charlevoix, Gaylord, Grayling, Ludington, Manistee, Petoskey and Traverse City.	
		**Figures used for comparison represent only the cumulative 60 minute time band data.	
		***Includes segments of trunk line east of the Region to I-75 and south to US-10.	

ALTERNATE 6

FREeway FACILITY ON NEW LOCATION

LEGEND

-  PROPOSED US-31 & US-131 FREEWAY CORRIDOR
-  REQUIRED MAJOR IMPROVEMENT (CONSTRUCTION OF ADDITIONAL LANES)
-  REQUIRED MINOR IMPROVEMENT (WIDENING OF EXISTING LANES)
-  ANTICIPATED FREEWAY CORRIDOR



Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

HIGHWAY ALTERNATE 6 COMPARISON WITH "DO NOTHING" ALTERNATE (1)





Note: All data based upon year 2000 projections for rural state trunk line highways only. Cost estimates represent a total accumulation between the years 1970 and 2000 with costs adjusted to 1975 values.

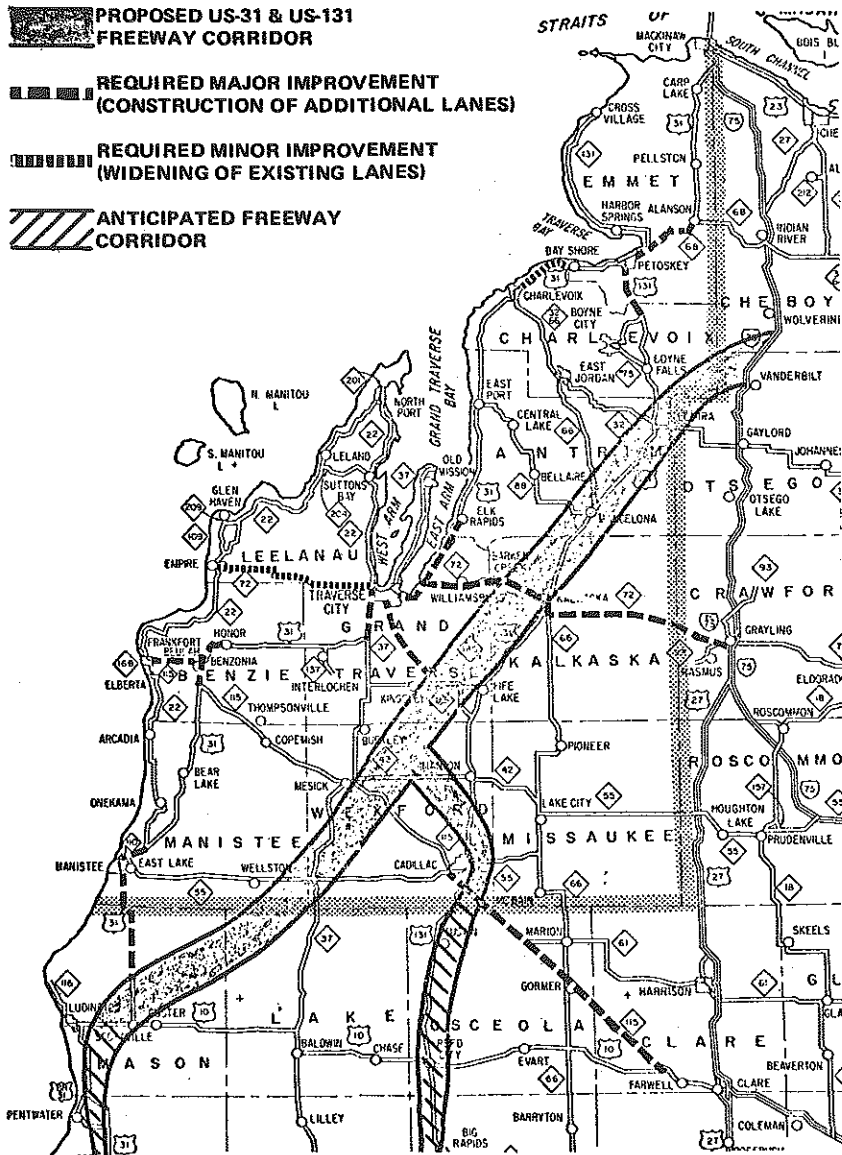
SOCIAL CRITERIA	For Comparison with other Alts. see page(s)	ENVIRONMENTAL CRITERIA	For Comparison with other Alts. see page
Compared to the "Do Nothing" alternate, Alternate 6 has:		For a visual comparison of proximity to primary environmental issue areas and 4(f) areas, see pages 54 and 57.	
4.0% more population assessible to major cities*	44-47	TRAVEL CRITERIA	
8.8% more population assessible to existing airports**	63	Compared to the "Do Nothing" alternate, Alternate 6 has:	
4.0% more population assessible to bus stations**	89-92	136 more miles of freeway in the Region	58
For visual comparison of proximity to seasonal housing densities, see page 43.		12.7% more average daily trips to and from the Region	59
ECONOMIC CRITERIA		10.5% more annual vehicle miles of travel in the Region	59
Compared to the "Do Nothing" alternate, Alternate 6 has:		62.9% more miles of state highway operating at or above Level of Service C	59
\$199 million more for capital expenditure costs on US-31 & US-131***	49	45.2% less miles of state highway operating below Level of Service C	59
\$ 95 million more for improvements on other state trunk lines ***	49	19.4% less total annual accidents	58
24.5% more maintenance costs	50		
17.9% less auto and truck running and time costs	50		
2.5% more manufacturing firms assessible to truck terminals**	51-53	*The figure used for comparison represents a total for all of the major cities evaluated and includes only the cumulative 60 minute time band data. Cities include: Cadillac, Charlevoix, Gaylord, Grayling, Ludington, Manistee, Petoskey and Traverse City. **Figures used for comparison represent only the cumulative 60 minute time band data. ***Includes segments of trunk line east of the Region to I-75 and south to US-10.	
1.8% more manufacturing firms assessible to rail stations**	76-79		
3.4% more manufacturing firms assessible to port facilities**	81-84		
For a visual comparison of proximity to areas of various assessment values, see page 48.			

ALTERNATE 7

FREQUENCY FACILITY ON NEW LOCATION

LEGEND

-  PROPOSED US-31 & US-131 FREQUENCY CORRIDOR
-  REQUIRED MAJOR IMPROVEMENT (CONSTRUCTION OF ADDITIONAL LANES)
-  REQUIRED MINOR IMPROVEMENT (WIDENING OF EXISTING LANES)
-  ANTICIPATED FREQUENCY CORRIDOR



Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

HIGHWAY ALTERNATE 7 COMPARISON WITH "DO NOTHING" ALTERNATE (1)





Note: All data based upon year 2000 projections for rural state trunk line highways only. Cost estimates represent a total accumulation between the years 1970 and 2000 with costs adjusted to 1975 values.

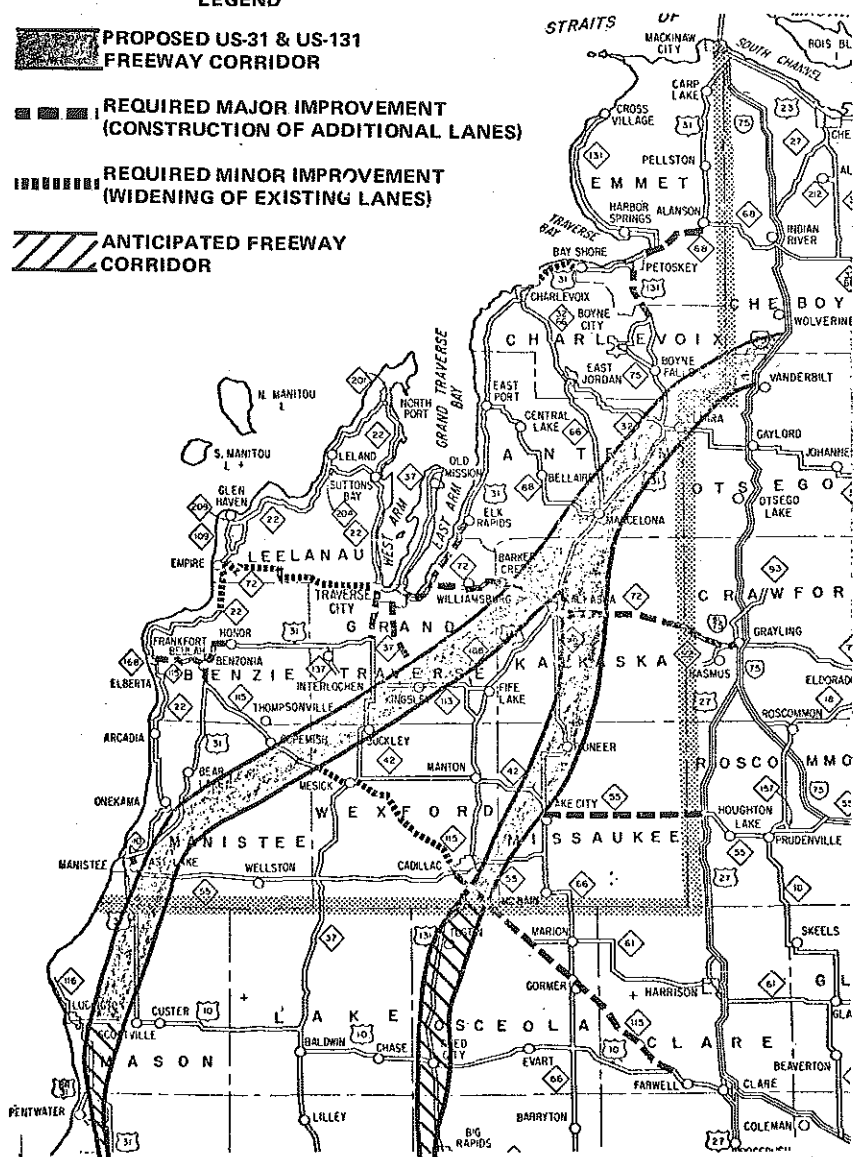
SOCIAL CRITERIA	For Comparison with other Alts. see page(s)	ENVIRONMENTAL CRITERIA	For Comparison with other Alts. see page
Compared to the "Do Nothing" alternate, Alternate 7 has:		For a visual comparison of proximity to primary environmental issue areas and 4(f) areas, see pages 54 and 57.	
7.9% more population accessible to major cities*	44-47		
6.2% more population accessible to existing airports**	63		
8.0% more population accessible to bus stations**	89-92	113 more miles of freeway in the Region	58
For a visual comparison of proximity to seasonal housing densities, see page 43.		10.7% more average daily trips to and from the Region	59
<u>ECONOMIC CRITERIA</u>		11.5% more annual vehicle miles of travel in the Region	59
Compared to the "Do Nothing" alternate Alternate 7 has:		63.6% more miles of state highway operating at or above Level of Service C	59
\$173 million more for capital expenditure costs on US-31 & US-131***	49	44.3% less miles of state highway operating below Level of Service C	59
113 million more for improvements on other state trunk lines***	49	17.7% less total annual accidents	58
23.9% more maintenance costs	50		
15.5% less auto and truck running and time costs	50		
9.8% more manufacturing firms accessible to truck terminals**	51-53		
12.7% more manufacturing firms accessible to rail stations**	76-79	*The figure used for comparison represents a total for all of the major cities evaluated and includes only the cumulative 60 minute time band data. Cities include: Cadillac, Charlevoix, Gaylord, Grayling, Ludington, Manistee, Petoskey and Traverse City.	
10.9% more manufacturing firms accessible to port facilities**	81-84	**Figures used for comparison represent only the cumulative 60 minute time band data.	
For a visual comparison of proximity to areas of various assessment values, see page 48		***Includes segments of trunk line east of the Region to I-75 and south to US-10.	

ALTERNATE 8

FREWAY FACILITY ON NEW LOCATION

LEGEND

-  PROPOSED US-31 & US-131
FREWAY CORRIDOR
-  REQUIRED MAJOR IMPROVEMENT
(CONSTRUCTION OF ADDITIONAL LANES)
-  REQUIRED MINOR IMPROVEMENT
(WIDENING OF EXISTING LANES)
-  ANTICIPATED FREWAY
CORRIDOR



Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

HIGHWAY ALTERNATE 8

COMPARISON WITH "DO NOTHING" ALTERNATE (1)

Note: All data based upon year 2000 projections for rural state trunk line highways only.
Cost estimates represent a total accumulation between the years 1970 and 2000
with costs adjusted to 1975 values.

SOCIAL CRITERIA

Compared to the "Do Nothing" alternate,
Alternate 8 has:

- 4.4% more population accessible to
major cities* 44-47
- 8.8% more population accessible to
existing airports** 63
- 4.5% more population accessible to
bus stations** 89-92

For a visual comparison of proximity to
seasonal housing densities, see page 43.

ECONOMIC CRITERIA

Compared to the "Do Nothing" alternate,
Alternate 8 has:

- \$227 million more for capital expendi-
ture costs on US-31 & US-131*** 49
- \$106 million more for improvements on
other state trunk lines*** 49
- 29.0% more maintenance costs 50
- 13.9% less auto and truck running and
time costs 50
- 4.8% more manufacturing firms acces-
sible to truck terminals** 51-53
- 3.3% more manufacturing firms acces-
sible to rail stations** 76-79
- 3.4% more manufacturing firms acces-
sible to port facilities** 81-84

For a visual comparison of proximity to areas
of various assessment values, see page 48.

For Comparison
with other Alts.
see page(s)

ENVIRONMENTAL CRITERIA

For a visual comparison of proximity to
primary environmental issue areas and
4(f) areas, see pages 54 and 57.

TRAVEL CRITERIA

Compared to the "Do Nothing" alter-
nate, Alternate 8 has:

- 158 more miles of freeway in the
Region 58
- 16.7% more average daily trips to and
from the Region 59
- 14.3% more annual vehicle miles of
travel in the Region 59
- 65.7% more miles of state highway
operating at or above Level of
Service C 59
- 40.3% less miles of state highway
operating below Level of
Service C 59
- 16.4% less total annual accidents 58

For Comparison
with other Alts.
see page

*The figure used for comparison represents a total for all
of the major cities evaluated and includes only the cumu-
lative 60 minute time band data. Cities include: Cadillac,
Charlevoix, Gaylord, Grayling, Ludington, Manistee,
Petoskey and Traverse City.





**Figures used for comparison represent only the cumula-
tive 60 minute time band data.

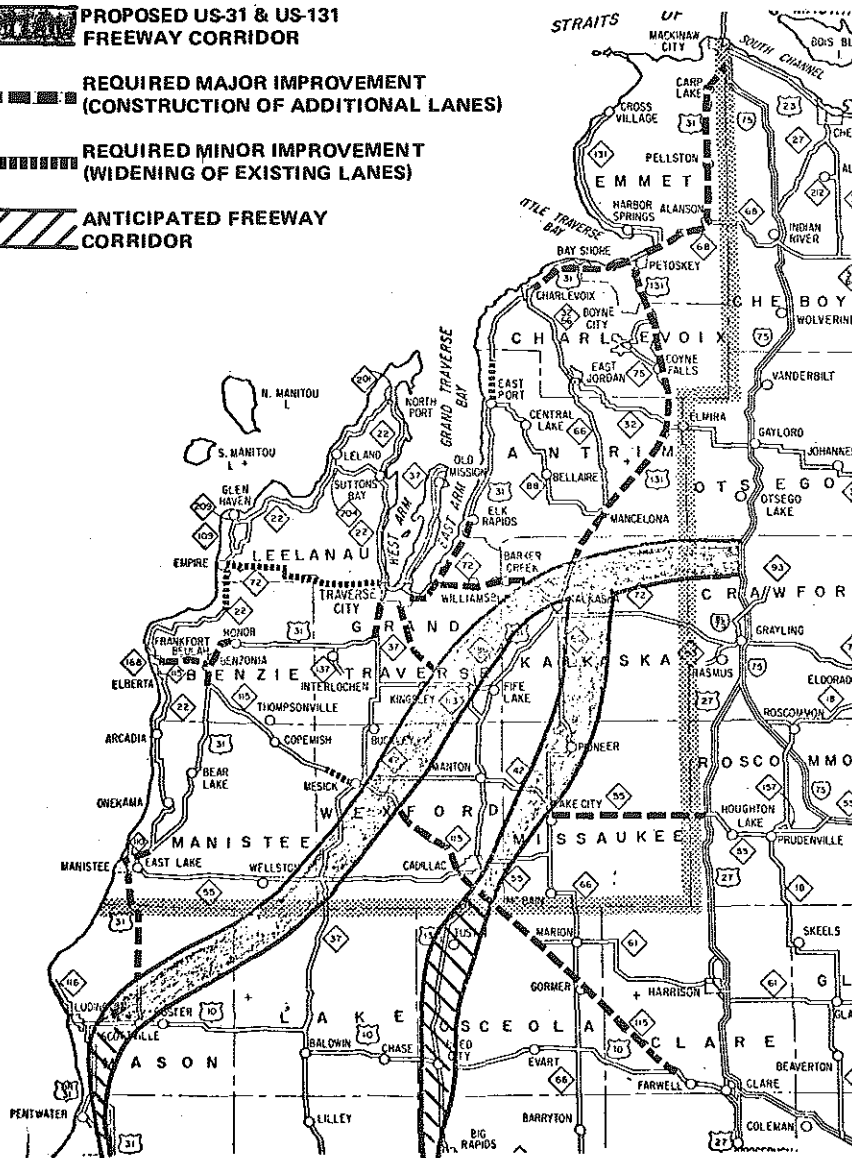
***Includes segments of trunk line east of the Region to
I-75 and south to US-10.

ALTERNATE 9

FREWAY FACILITY ON NEW LOCATION

LEGEND

-  PROPOSED US-31 & US-131
FREWAY CORRIDOR
-  REQUIRED MAJOR IMPROVEMENT
(CONSTRUCTION OF ADDITIONAL LANES)
-  REQUIRED MINOR IMPROVEMENT
(WIDENING OF EXISTING LANES)
-  ANTICIPATED FREWAY
CORRIDOR



HIGHWAY ALTERNATE 9 COMPARISON WITH "DO NOTHING" ALTERNATE (1)

Note: All data based upon year 2000 projections for rural state trunk line highways only. Cost estimates represent a total accumulation between the years 1970 and 2000 with costs adjusted to 1975 values.

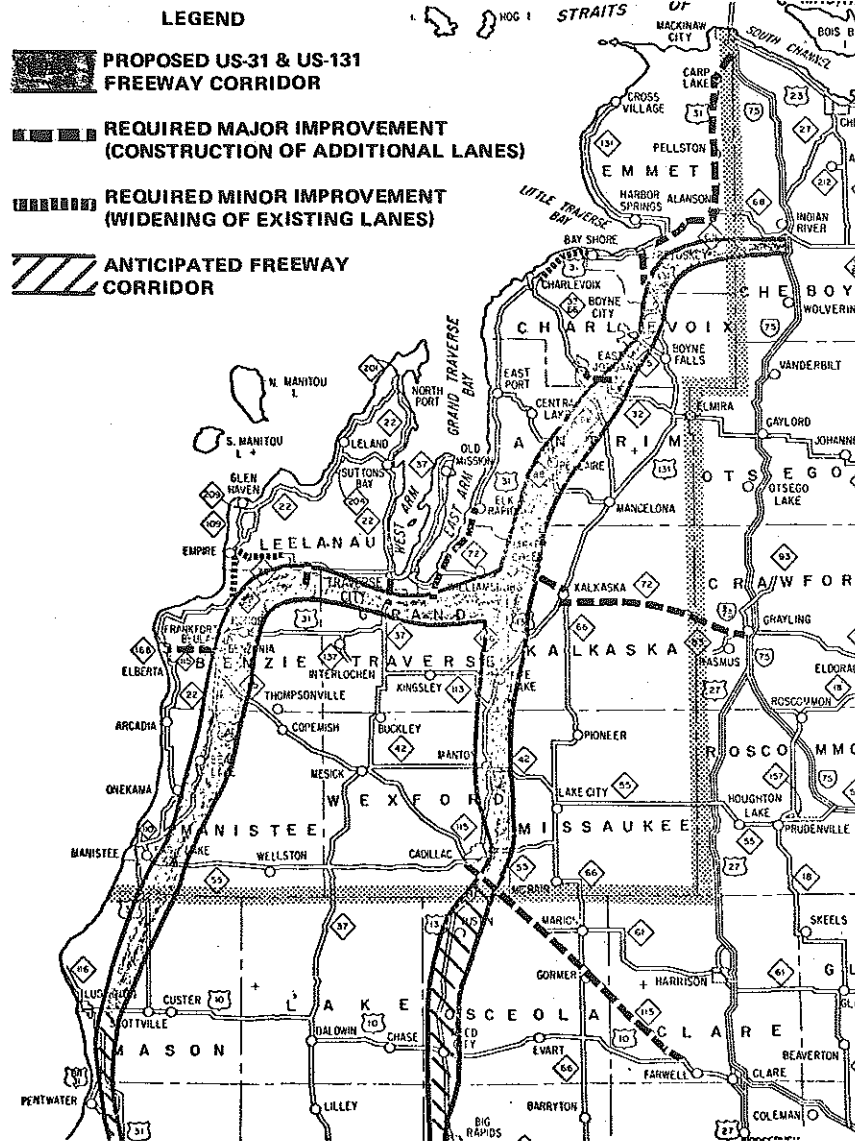
SOCIAL CRITERIA	For Comparison with other Alts. see page(s)	ENVIRONMENTAL CRITERIA	For Comparison with other Alts. see page
Compared to the "Do Nothing" alternate, Alternate 9 has:		For a visual comparison of proximity to primary environmental issue areas and 4(f) areas, see pages 54 and 57.	
1.1% more population accessible to major cities*	44-47	<u>TRAVEL CRITERIA</u>	
1.0% more population accessible to existing airports**	63	Compared to the "Do Nothing" alternate, Alternate 9 has:	
2.1% more population accessible to bus stations**	89-92	128 more miles of freeway in the Region	58
For a visual comparison of proximity to seasonal housing densities, see page 43.		9.8% more average daily trips to and from the Region	59
<u>ECONOMIC CRITERIA</u>		15.8% more annual vehicle miles of travel in the Region	59
Compared to the "Do Nothing" alternate Alternate 9 has:		40.5% more miles of state highway operating at or above Level of Service C	59
\$193 million more for capital expenditure costs on US-31 & US-131 ***	49	22.9% less miles of state highway operating below Level of Service C	59
\$148 million more for improvements on other state trunk lines ***	49	10.1% less total annual accidents	58
21.3% more maintenance costs	50		
10.7% less auto and truck running and time costs	50		
1.7% more manufacturing firms accessible to truck terminals**	51-53		
1.2% more manufacturing firms accessible to rail stations**	76-79		
Same number of manufacturing firms accessible to port facilities**	81-84		
For a visual comparison of proximity to areas of various assessment values, see page 48		*The figure used for comparison represents a total for all of the major cities evaluated and includes only the cumulative 60 minute time band data. Cities include: Cadillac, Charlevoix, Gaylord, Grayling, Ludington, Manistee, Petoskey and Traverse City.	
		**Figures used for comparison represent only the cumulative 60 minute time band data.	
		***Includes segments of trunk line east of the Region to I-75 and south to US-10.	

ALTERNATE 10

FREEWAY FACILITY ON NEW LOCATION

HIGHWAY ALTERNATE 10 COMPARISON WITH "DO NOTHING" ALTERNATE (1)

Note: All data based upon year 2000 projections for rural state trunk line highways only.
Cost estimates represent a total accumulation between the years 1970 and 2000
with costs adjusted to 1975 values.







Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

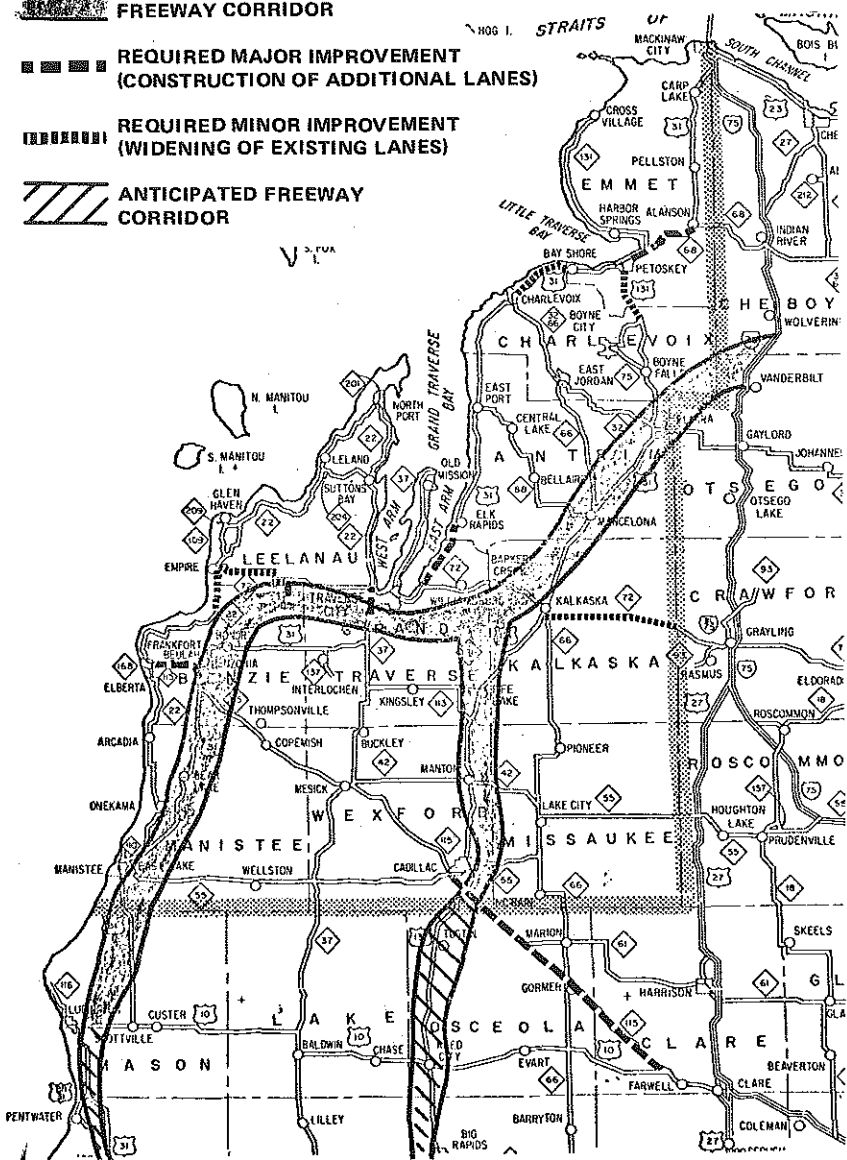
SOCIAL CRITERIA	For Comparison with other Alts. see page(s)	ENVIRONMENTAL CRITERIA	For Comparison with other Alts. see page
Compared to the "Do Nothing" alternate, Alternate 10 has:		For a visual comparison of proximity to primary environmental issue areas and 4(f) areas, see pages 54 and 57.	
3.8% more population accessible to major cities*	44-47	TRAVEL CRITERIA	
23.5% more population accessible to existing airports**	63	Compared to the "Do Nothing" alternate, Alternate 10 has:	
4.4% more population accessible to bus stations**	89-92	170 more miles of freeway in the Region	58
For a visual comparison of proximity to seasonal housing densities, see page 43.		13.1% more average daily trips to and from the Region	59
ECONOMIC CRITERIA		24.9% more annual vehicle miles of travel in the Region	59
Compared to the "Do Nothing" alternate, Alternate 10 has:		67.7% more miles of state highway operating at or above Level of Service C	59
\$246 million more for capital expenditure costs on US-31 & US-131***	49	47.8% less miles of state highway operating below Level of Service C	59
\$ 79 million more for improvements on other state trunk lines***	49	29.3% less total annual accidents	58
28.4% more maintenance costs	50	*The figure used for comparison represents a total for all of the major cities evaluated and includes only the cumulative 60 minute time band data. Cities include: Cadillac, Charlevoix, Gaylord, Grayling, Ludington, Manistee, Petoskey and Traverse City. **Figures used for comparison represent only the cumulative 60 minute time band data. ***Includes segments of trunk line east of the Region to I-75 and south to US-10.	
22.8% less auto and truck running and time costs	50		
4.2% more manufacturing firms accessible to truck terminals**	51-53		
2.0% more manufacturing firms accessible to rail stations**	76-79		
5.3% more manufacturing firms accessible to port facilities**	81-84		
For a visual comparison of proximity to areas of various assessment values, see page 48.			

ALTERNATE 11

FREeway FACILITY ON NEW LOCATION

LEGEND

-  PROPOSED US-31 & US-131 FREEWAY CORRIDOR
-  REQUIRED MAJOR IMPROVEMENT (CONSTRUCTION OF ADDITIONAL LANES)
-  REQUIRED MINOR IMPROVEMENT (WIDENING OF EXISTING LANES)
-  ANTICIPATED FREEWAY CORRIDOR



HIGHWAY ALTERNATE 11 COMPARISON WITH "DO NOTHING" ALTERNATE (1)

Note: All data based upon year 2000 projections for rural state trunk line highways only. Cost estimates represent a total accumulation between the years 1970 and 2000 with costs adjusted to 1975 values.

SOCIAL CRITERIA

Compared to the "Do Nothing" alternate, Alternate 11 has:

- 4.9% more population accessible to major cities*
- 15.5% more population accessible to existing airports**
- 4.9% more population accessible to bus stations**

For a visual comparison of proximity to seasonal housing densities, see page 43.

ECONOMIC CRITERIA

Compared to the "Do Nothing" alternate, Alternate 11 has:

- \$215 million more for capital expenditure costs on US-31 & US-131***
- \$ 57 million more for improvements on other state trunk lines***
- 28.4% more maintenance costs
- 27.9% less auto and truck running and time costs
- 3.4% more manufacturing firms accessible to truck terminals**
- 2.3% more manufacturing firms accessible to rail stations**
- 3.1% more manufacturing firms accessible to port facilities**

For a visual comparison of proximity to areas of various assessment values, see page 48.

For Comparison with other Alts. see page(s)

44-47
63
89-92

ENVIRONMENTAL CRITERIA

For a visual comparison of proximity to primary environmental issue areas and 4(f) areas, see pages 54 and 57.

TRAVEL CRITERIA

Compared to the "Do Nothing" alternate, Alternate 11 has:

- 143 more miles of freeway in the Region 58
- 16.1% more average daily trips to and from the Region 59
- 10.5% more annual vehicle miles of travel in the Region 59
- 74.8% more miles of state highway operating at or above Level of Service C 59
- 52.8% less miles of state highway operating below Level of Service C 59
- 19.9% less total annual accidents 58

For Comparison with other Alts. see page

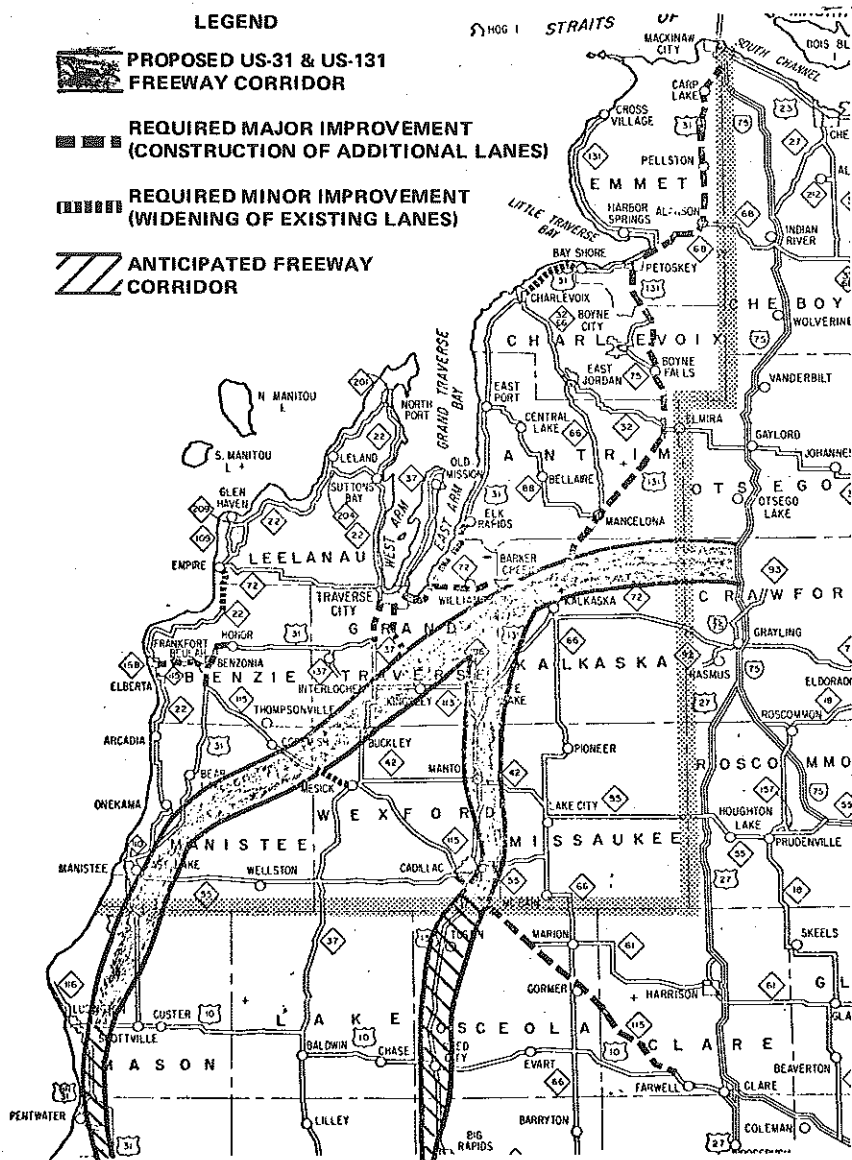
*The figure used for comparison represents a total for all of the major cities evaluated and includes only the cumulative 60 minute time band data. Cities include: Cadillac, Charlevoix, Gaylord, Grayling, Ludington, Manistee, Petoskey and Traverse City.

**Figures used for comparison represent only the cumulative 60 minute time band data.

***Includes segments of trunk line east of the Region to I-75 and south to US-10.

ALTERNATE 12

FREEWAY FACILITY ON NEW LOCATION



Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

HIGHWAY ALTERNATE 12 COMPARISON WITH "DO NOTHING ALTERNATE (1)





Note: All data based upon year 2000 projections for rural state trunk line highways only. Cost estimates represent a total accumulation between the years 1970 and 2000 with costs adjusted to 1975 values.

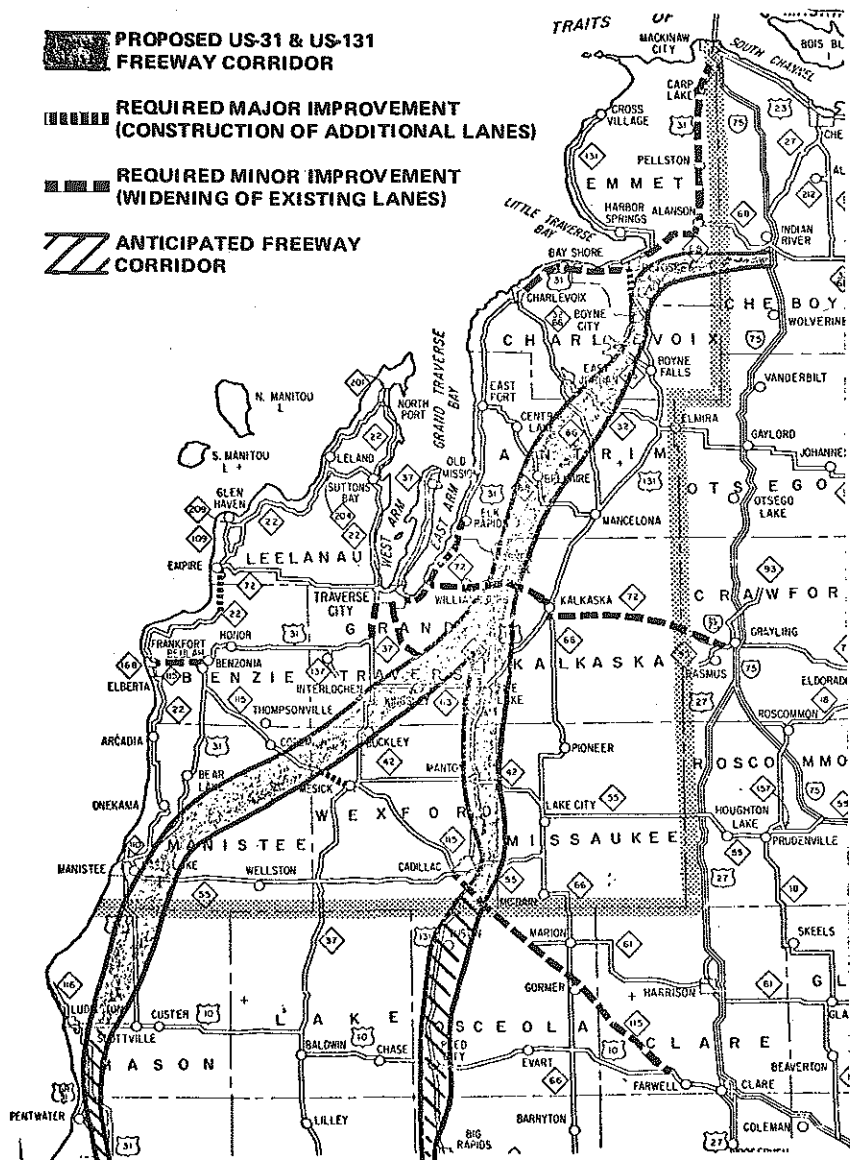
SOCIAL CRITERIA	For Comparison with other Alts. see page(s)	ENVIRONMENTAL CRITERIA	For Comparison with other Alts. see page
Compared to the "Do Nothing" alternate, Alternate 12 has:		For a visual comparison of proximity to primary environmental issue areas and 4(f) areas, see pages 54 and 57.	
6.3% <u>more</u> population accessible to major cities*	44-47	TRAVEL CRITERIA	
19.6% <u>more</u> population accessible to existing airports**	63	Compared to the "Do Nothing" alternate, Alternate 12 has:	
6.4% <u>more</u> population accessible to bus stations**	89-92	128 <u>more</u> miles of freeway in the Region	58
For a visual comparison of proximity to seasonal housing densities, see page 43.		9.6% <u>more</u> average daily trips to and from the Region	59
ECONOMIC CRITERIA		10.6% <u>more</u> annual vehicle miles of travel in the Region	59
Compared to the "Do Nothing" alternate, Alternate 12 has:		60.0% <u>more</u> miles of state highway operating at or above Level of Service C	59
\$197 million <u>more</u> for capital expenditure costs on US-31 & US-131***	49	39.7% <u>less</u> miles of state highway operating below Level of Service C	59
\$114 million <u>more</u> for improvements on other state trunk lines***	49	15.4% <u>less</u> total annual accidents	58
24.5% <u>more</u> maintenance costs	50	*The figure used for comparison represents a total for all of the major cities evaluated and includes only the cumulative 60 minute time band data. Cities include: Cadillac, Charlevoix, Gaylord, Grayling, Ludington, Manistee, Petoskey and Traverse City. **Figures used for comparison represent only the cumulative 60 minute time band data. ***Includes segments of trunk line east of the Region to I-75 and south to US-10.	
17.2% <u>less</u> auto and truck running and time costs	50		
3.1% <u>more</u> manufacturing firms accessible to truck terminals**	51-53		
2.2% <u>more</u> manufacturing firms accessible to rail stations**	76-79		
2.8% <u>more</u> manufacturing firms accessible to port facilities**	81-84		
For a visual comparison of proximity to areas of various assessment values, see page 48.			

ALTERNATE 13

FREEWAY FACILITY ON NEW LOCATION

LEGEND

-  PROPOSED US-31 & US-131
FREEWAY CORRIDOR
-  REQUIRED MAJOR IMPROVEMENT
(CONSTRUCTION OF ADDITIONAL LANES)
-  REQUIRED MINOR IMPROVEMENT
(WIDENING OF EXISTING LANES)
-  ANTICIPATED FREEWAY
CORRIDOR



HIGHWAY ALTERNATE 13 COMPARISON WITH "DO NOTHING" ALTERNATE (1)

Note: All data based upon year 2000 projections for rural state trunk line highways only.
Cost estimates represent a total accumulation between the years 1970 and 2000
with costs adjusted to 1975 values.

SOCIAL CRITERIA

Compared to the "Do Nothing" alternate,
Alternate 13 has:

- 7.1% more population accessible to major cities* 44-47
- 21.6% more population accessible to existing airports** 63
- 7.1% more population accessible to bus stations** 89-92

For a visual comparison of proximity to seasonal housing densities, see page 43.

ECONOMIC CRITERIA

Compared to the "Do Nothing" alternate,
Alternate 13 has:

- \$277 million more for capital expenditure costs on US-31 & US-131*** 49
- \$ 96 million more for improvements on other state trunk lines*** 49
- 31.6% more maintenance costs 50
- 21.9% less auto and truck running and time costs 50
- 3.1% more manufacturing firms accessible to truck terminals** 51-53
- 2.5% more manufacturing firms accessible to rail stations** 76-79
- 3.4% more manufacturing firms accessible to port facilities** 81-84

For a visual comparison of proximity to areas of various assessment values, see page 48.

For Comparison with other Alts. see page(s)

ENVIRONMENTAL CRITERIA

For a visual comparison of proximity to primary environmental issue areas and 4(f) areas, see pages 54 and 57.

TRAVEL CRITERIA

Compared to the "Do Nothing" alternate,
Alternate 13 has:

- 164 more miles of freeway in the Region 58
- 15.4% more average daily trips to and from the Region 59
- 18.6% more annual vehicle miles of travel in the Region 59
- 71.9% more miles of state highway operating at or above Level of Service C 59
- 44.3% less miles of state highway operating below Level of Service C 59
- 22.2% less total annual accidents 58

For Comparison with other Alts. see page

*The figure used for comparison represents a total for all of the major cities evaluated and includes only the cumulative 60 minute time band data. Cities include: Cadillac, Charlevoix, Gaylord, Grayling, Ludington, Manistee, Petoskey and Traverse City.

**Figures used for comparison represent only the cumulative 60 minute time band data.

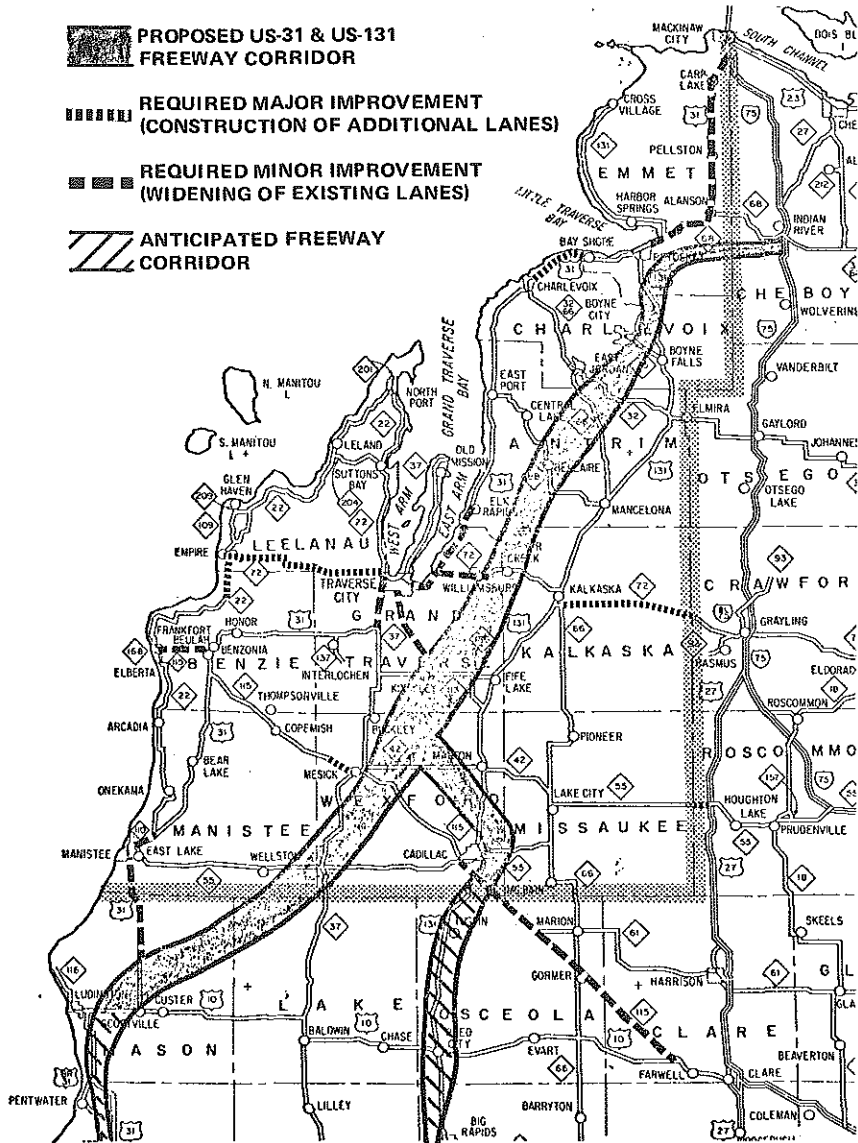
***Includes segments of trunk line east of the Region to I-75 and south to US-10.

ALTERNATE 14

FREEWAY FACILITY ON NEW LOCATION

LEGEND

- PROPOSED US-31 & US-131
FREEWAY CORRIDOR
- REQUIRED MAJOR IMPROVEMENT
(CONSTRUCTION OF ADDITIONAL LANES)
- REQUIRED MINOR IMPROVEMENT
(WIDENING OF EXISTING LANES)
- ANTICIPATED FREEWAY
CORRIDOR



Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

HIGHWAY ALTERNATE 14 COMPARISON WITH "DO NOTHING" ALTERNATE (1)

Note: All data based upon year 2000 projections for rural state trunk line highways only.
Cost estimates represent a total accumulation between the years 1970 and 2000
with costs adjusted to 1975 values.

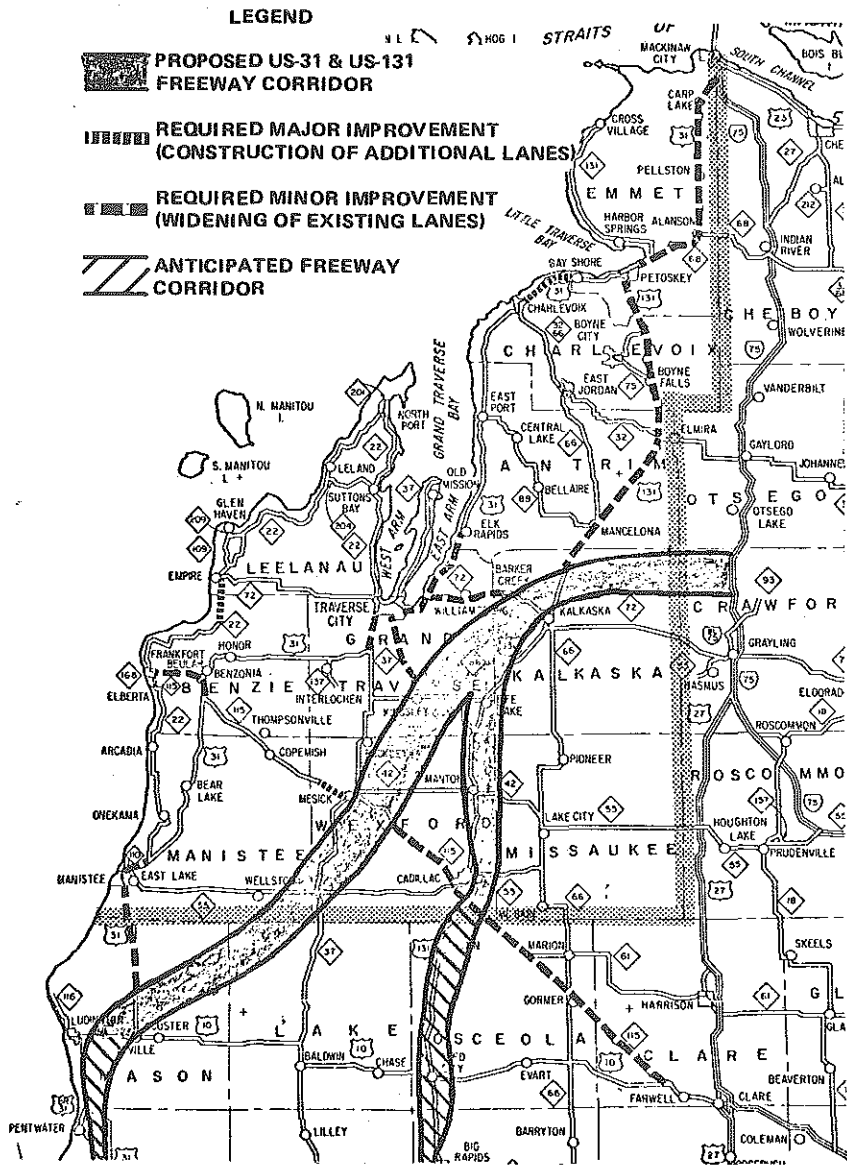
	For Comparison with other Alts. see page(s)		For Comparison with other Alts. see page
SOCIAL CRITERIA			
Compared to the "Do Nothing" alternate, Alternate 14 has:			
9.5% more population accessible to major cities*	44-47		
12.4% more population accessible to existing airports**	63		
5.6% more population accessible to bus stations**	89-92		
For a visual comparison of proximity to seasonal housing densities, see page 43.			
ECONOMIC CRITERIA			
Compared to the "Do Nothing" alternate, Alternate 14 has:			
\$208 million more for capital expenditure costs on US-31 & US-131 ***	49		
\$ 92 million more for improvements on other state trunk lines ***	49		
29.7% more maintenance costs	50		
21.7% less auto and truck running and time costs	50		
18.3% more manufacturing firms accessible to truck terminals**	51-53		
14.5% more manufacturing firms accessible to rail stations**	76-79		
11.5% more manufacturing firms accessible to port facilities**	81-84		
For a visual comparison of proximity to areas of various assessment values see page 48.			
ENVIRONMENTAL CRITERIA			
For a visual comparison of proximity to primary environmental issue areas and 4(f) areas, see pages 54 and 57.			
TRAVEL CRITERIA			
Compared to the "Do Nothing" alternate, Alternate 14 has:			
142 more miles of freeway in the Region		58	
9.3% more average daily trips to and from the Region		59	
22.4% more annual vehicle miles of travel in the Region		59	
66.4% more miles of state highway operating at or above Level of Service C		59	
39.1% less miles of state highway operating below Level of Service C		59	
19.7% less total annual accidents		58	
*The figure used for comparison represents a total for all of the major cities evaluated and includes only the cumulative 60 minute time band data. Cities include: Cadillac, Charlevoix, Gaylord, Grayling, Ludington, Manistee, Petoskey and Traverse City.			
**Figures used for comparison represent only the cumulative 60 minute time band data.			
***Includes segments of trunk line east of the Region to I-75 and south to US-10.			

ALTERNATE 15

FREeway FACILITY ON NEW LOCATION

HIGHWAY ALTERNATE 15 COMPARISON WITH "DO NOTHING" ALTERNATE (1)

Note: All data based upon year 2000 projections for rural state trunk line highways only. Cost estimates represent a total accumulation between the years 1970 and 2000 with costs adjusted to 1975 values.



LEGEND

- PROPOSED US-31 & US-131 FREEWAY CORRIDOR**
- REQUIRED MAJOR IMPROVEMENT (CONSTRUCTION OF ADDITIONAL LANES)**
- REQUIRED MINOR IMPROVEMENT (WIDENING OF EXISTING LANES)**
- ANTICIPATED FREEWAY CORRIDOR**

SOCIAL CRITERIA

Compared to the "Do Nothing" alternate, Alternate 15 has:

- 9.0% more population accessible to major cities* 44-47
- 5.7% more population accessible to existing airports** 63
- 10.0% more population accessible to bus stations** 89-92

For a visual comparison of proximity to seasonal housing densities, see page 43.

ECONOMIC CRITERIA

Compared to the "Do Nothing" alternate, Alternate 15 has:

- \$196 million more for capital expenditure costs on US-31 & US-131*** 49
- \$123 million more for improvements on other state trunk lines*** 49
- 23.2% more maintenance costs 50
- 17.5% less auto and truck running and time costs 50
- 0.6% more manufacturing firms accessible to truck terminals** 51-53
- 14.5% more manufacturing firms accessible to rail stations** 76-79
- Same number of manufacturing firms accessible to port facilities** 81-84

For a visual comparison of proximity to areas of various assessment values, see page 48.

For Comparison with other Alts. see page(s)

ENVIRONMENTAL CRITERIA

For a visual comparison of proximity to primary environmental issue areas and 4(f) areas, see pages 54 and 57.

TRAVEL CRITERIA

Compared to the "Do Nothing" alternate, Alternate 15 has:

- 117 more miles of freeway in the Region 58
- 5.2% more average daily trips to and from the Region 59
- 12.1% more annual vehicle miles of travel in the Region 59
- 57.0% more miles of state highway operating at or above Level of Service C 59
- 37.7% less miles of state highway operating below Level of Service C 59
- 14.1% less total annual accidents 58

For Comparison with other Alts. see page

*The figure used for comparison represents a total for all of the major cities evaluated and includes only the cumulative 60 minute time band data. Cities include: Cadillac, Charlevoix, Gaylord, Grayling, Ludington, Manistee, Petoskey and Traverse City.

**Figures used for comparison represent only the cumulative 60 minute time band data.

***Includes segments of trunk line east of the Region to I-75 and south to US-10.

POTENTIAL IMPACTS

The Department of State Highways and Transportation has gathered considerable information that indicates how the various highway alternatives will affect the social, economic and natural environments in the Northwest Region. This information is presented in the following graphs and maps. It is hoped that concerned citizens will evaluate the alternatives by using this and other information they may have to determine which alternatives best meet the transportation, land use and other goals of the Region.

SOCIAL

Seasonal Housing

The following map depicts the relationship between the percentage of seasonal houses in each township or major city and potential highway corridors. For the purpose of this study it was assumed that any area which had 20 percent or more of the houses classified as "Vacant Seasonal Housing" by the 1970 Census was considered to be a primary recreation area.

This information is presented to stimulate thought about how the various corridors serve the major recreation and non-recreation areas in the Region. Each corridor can be interpreted as having both positive and negative impacts. Those corridors which provide the most accessible routes to the areas of high seasonal housing densities will provide reduced travel times and maximum travel convenience to the owners of the housing in these areas. However, by providing increased accessibility, people who normally do not visit these areas may be encouraged to do so. If such a situation did occur it could produce increased noise levels, increased congestion on local streets, and induce development pressures in these areas.

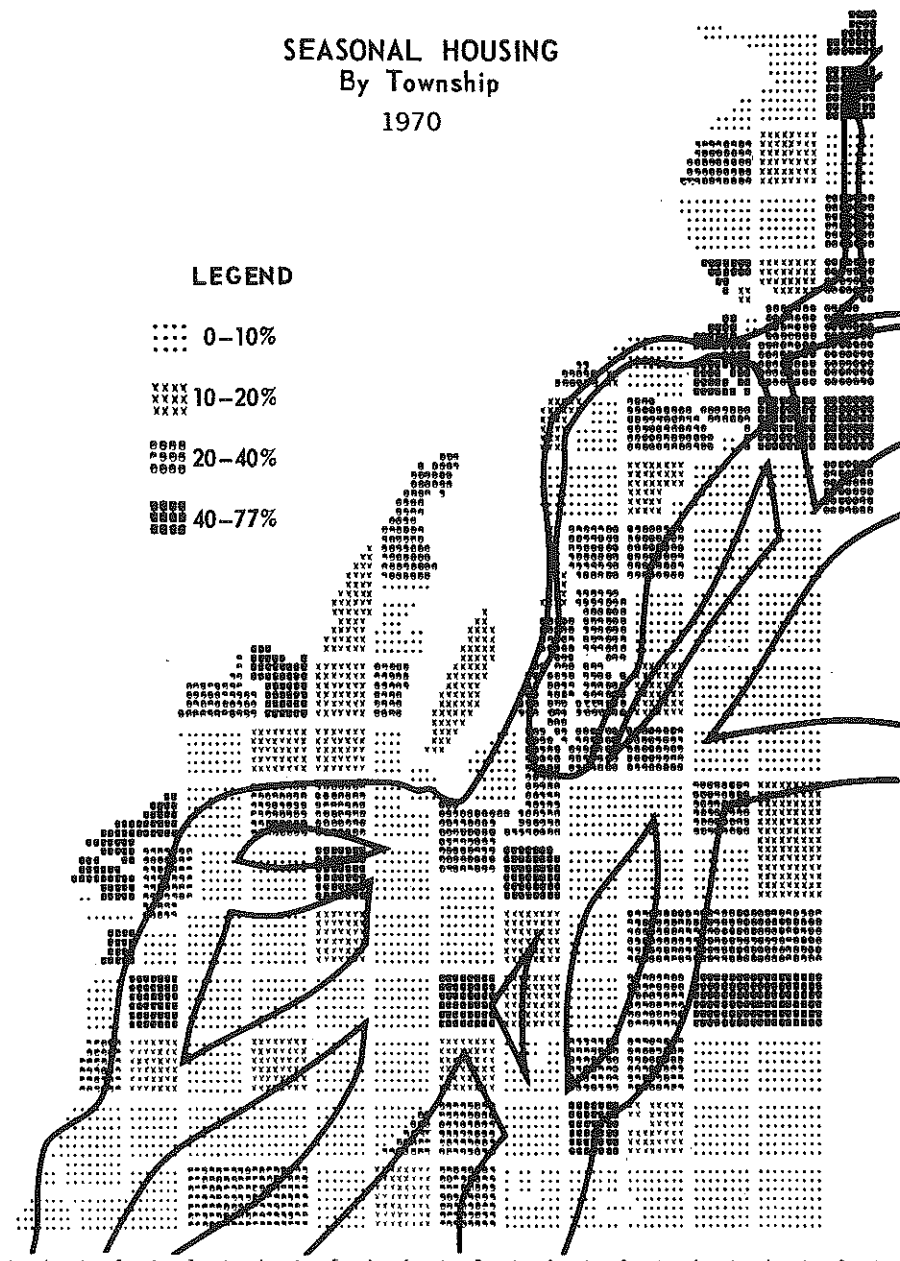
Conversely, those corridors that lie in areas of lowest recreational housing densities will serve areas containing higher percentages of year-round dwellers, thereby decreasing travel times for them and increasing ease of travel. However, those corridors could cause increases in tourist traffic on roads which previously carried primarily local traffic.

It is not possible at the regional systems level of planning when dealing with potential corridors that are 6 to 10 miles wide, to provide precise numerical estimates of all potential impacts. Some impact evaluations must await more detailed project level planning. Nevertheless, as many issues as possible should be addressed in the initial stages of planning. Therefore, this map of seasonal housing densities is presented to make citizens aware of another issue of possible significance and to provide them with basic information on which to form preliminary opinions.

SEASONAL HOUSING By Township 1970

LEGEND

- 0-10%
- XXXX 10-20%
- XXXX 20-40%
- XXXX 40-77%

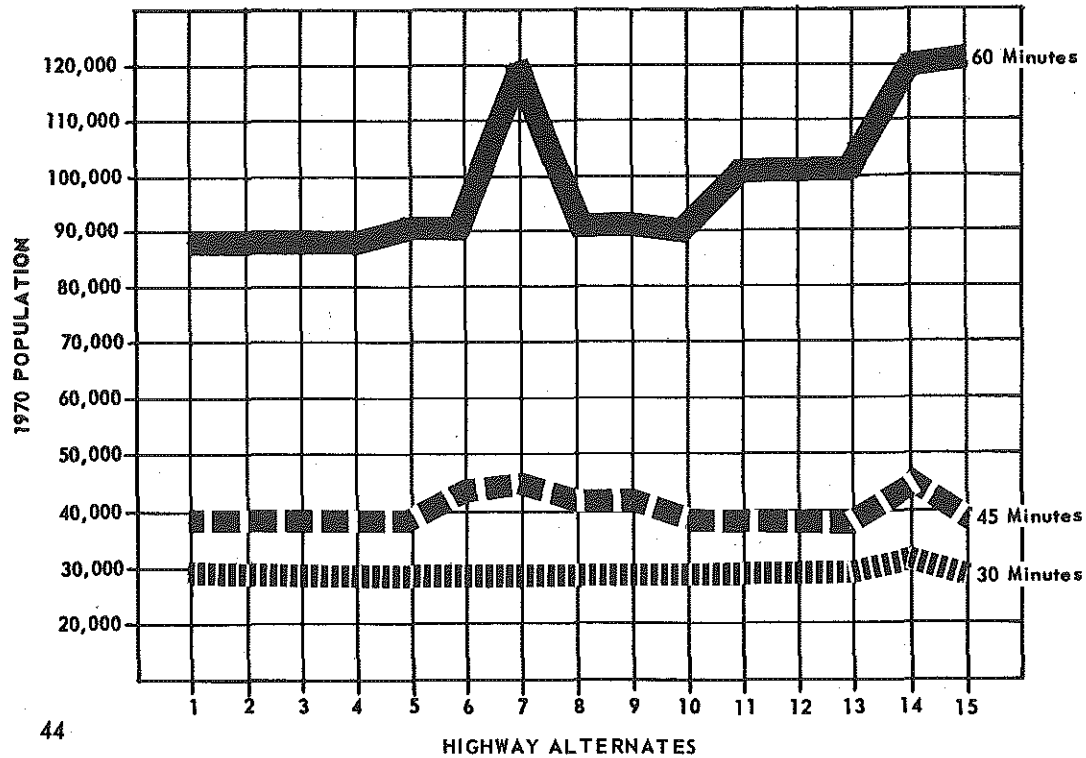


Source: U.S. Bureau of the Census, United States Census of Housing: 1970, General Housing Characteristics, Michigan, HC (1) - A-24.

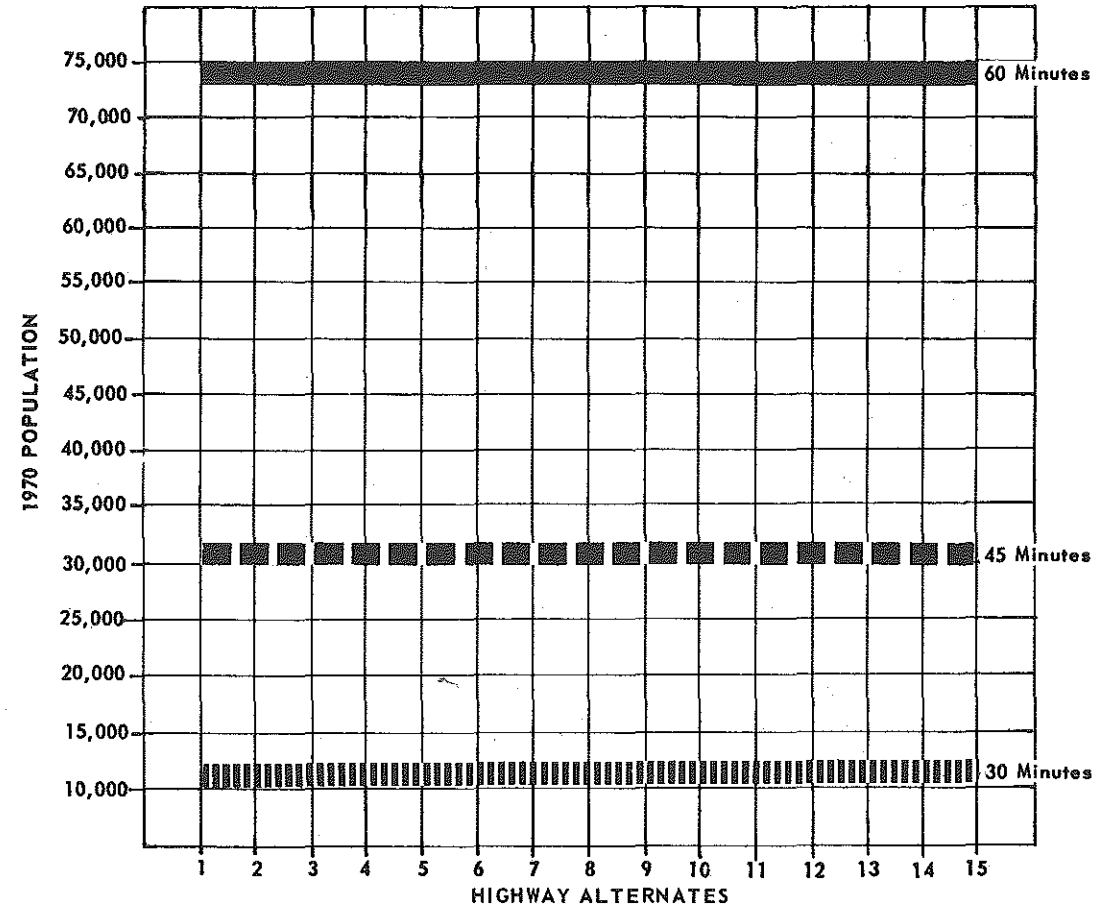
Population Accessible to Major Cities

The following graphs show the number of people within 30, 45, and 60 minutes driving time of each major city by each alternate. These graphs are helpful for two reasons. First, they show the potential number of customers, within a relatively short driving time, for businesses in these cities. Presumably an alternate that provides businesses with additional potential customers will promote the economic well-being of the city. Second, these graphs show the potential number of people who may at some time avail themselves of the social and economic services available in that city. Such services may include health care, employment offices, parks and recreation facilities, and others. This information can be valuable for decision makers in the city who are responsible for providing adequate facilities and services. The population figures are from the 1970 Census.

POPULATION ACCESSIBLE TO CADILLAC

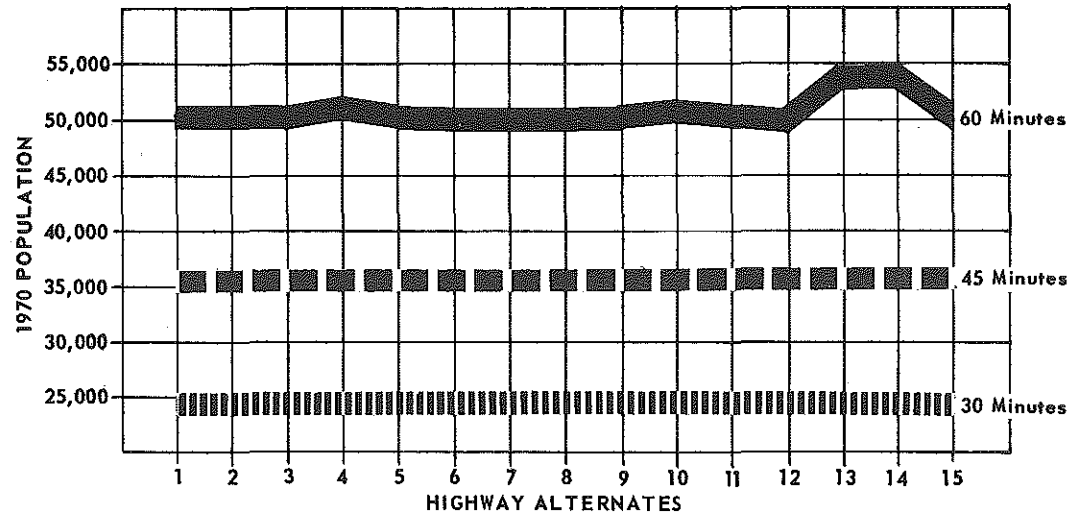


POPULATION ACCESSIBLE TO GAYLORD

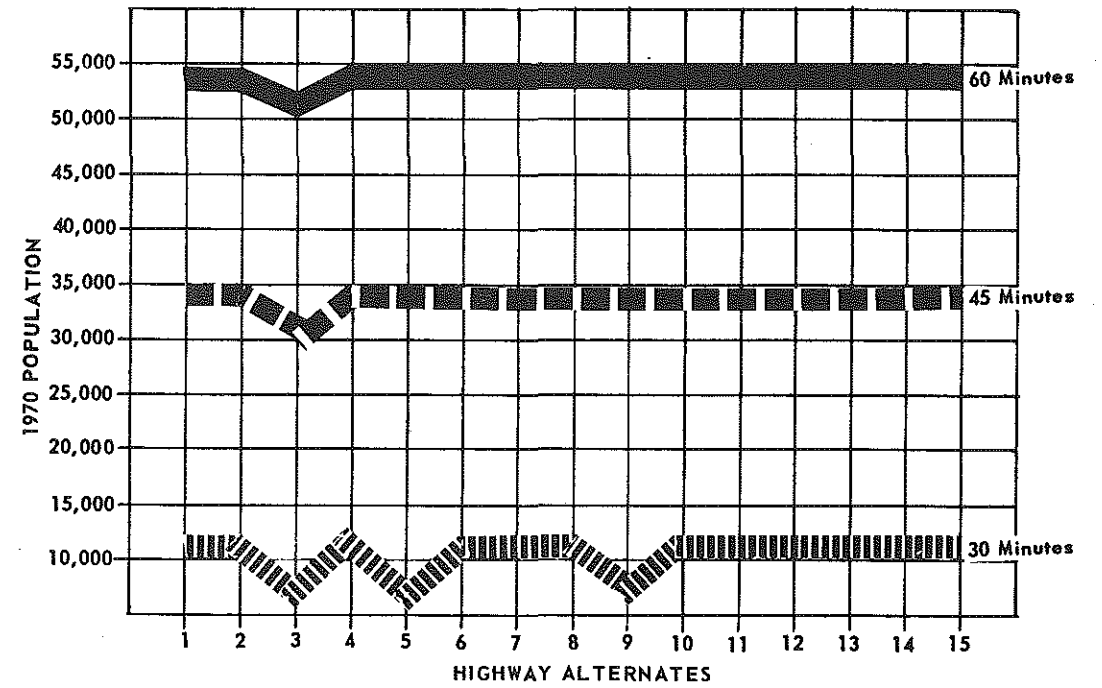


Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

POPULATION ACCESSIBLE TO CHARLEVOIX

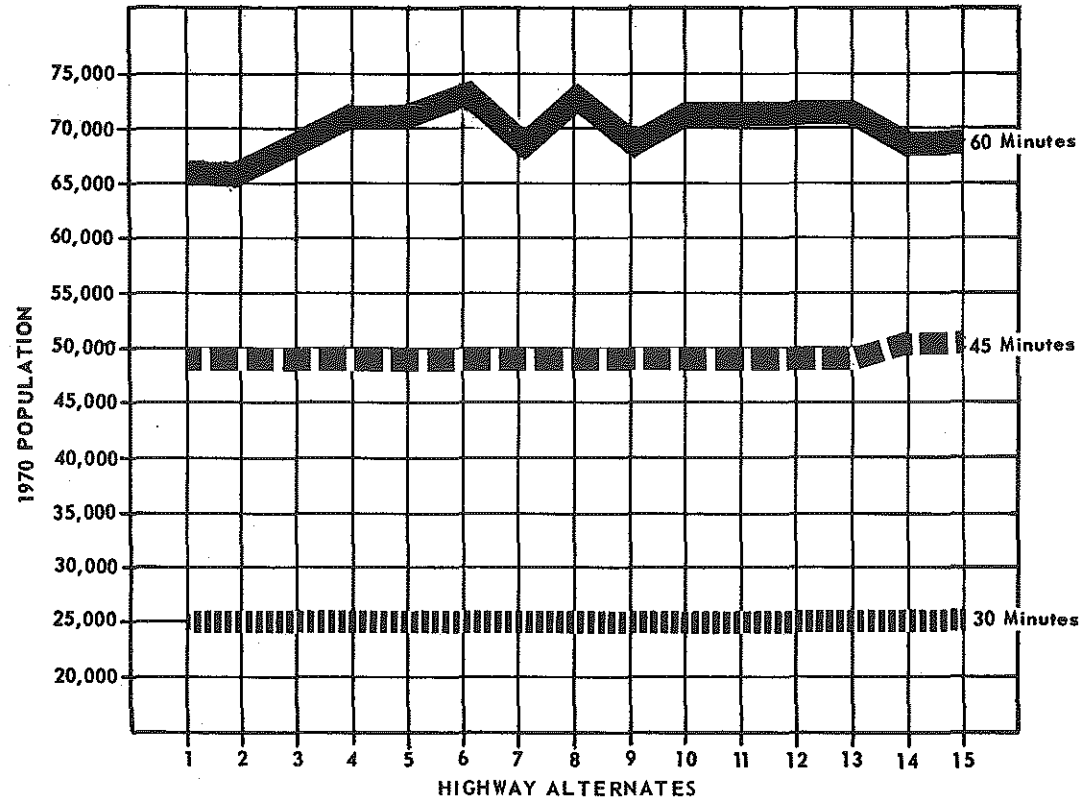


POPULATION ACCESSIBLE TO GRAYLING

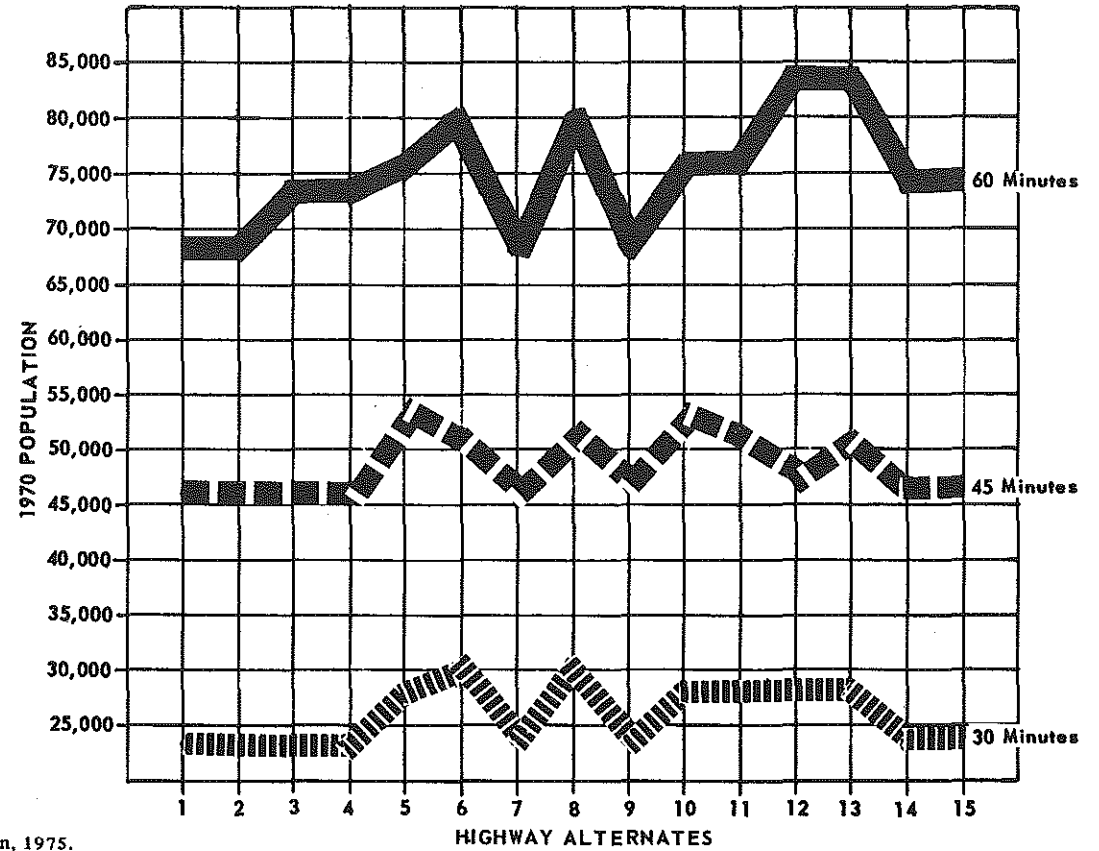


Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

POPULATION ACCESSIBLE TO LUDINGTON

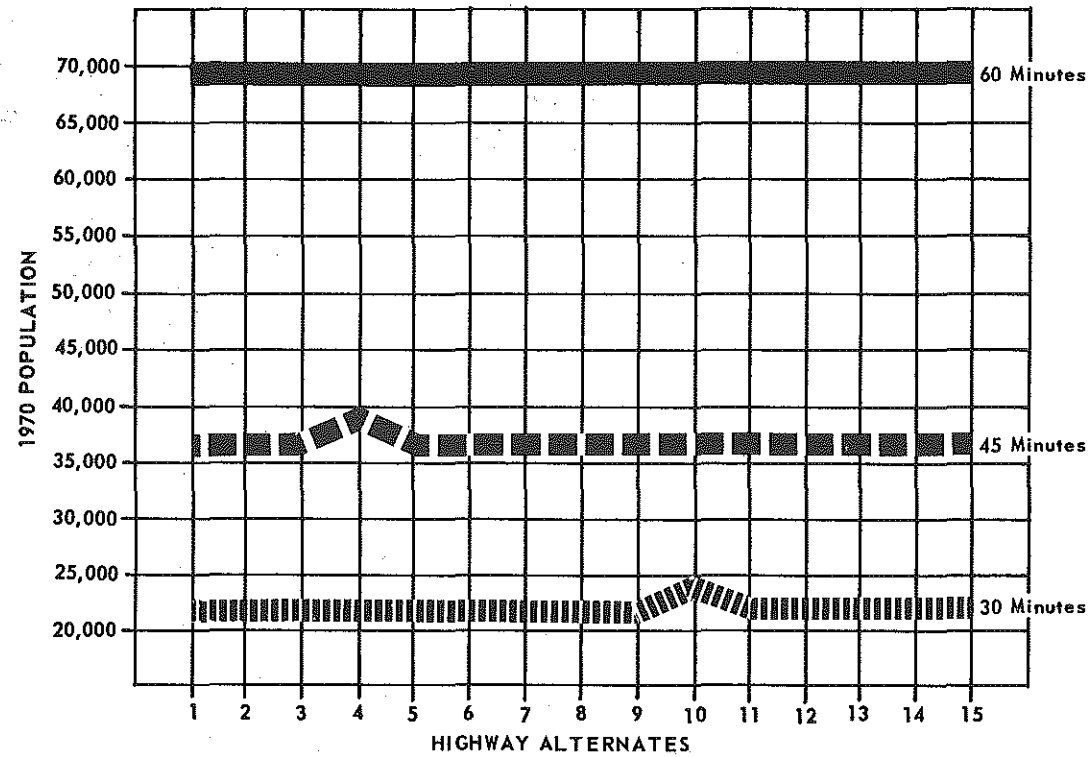


POPULATION ACCESSIBLE TO MANISTEE

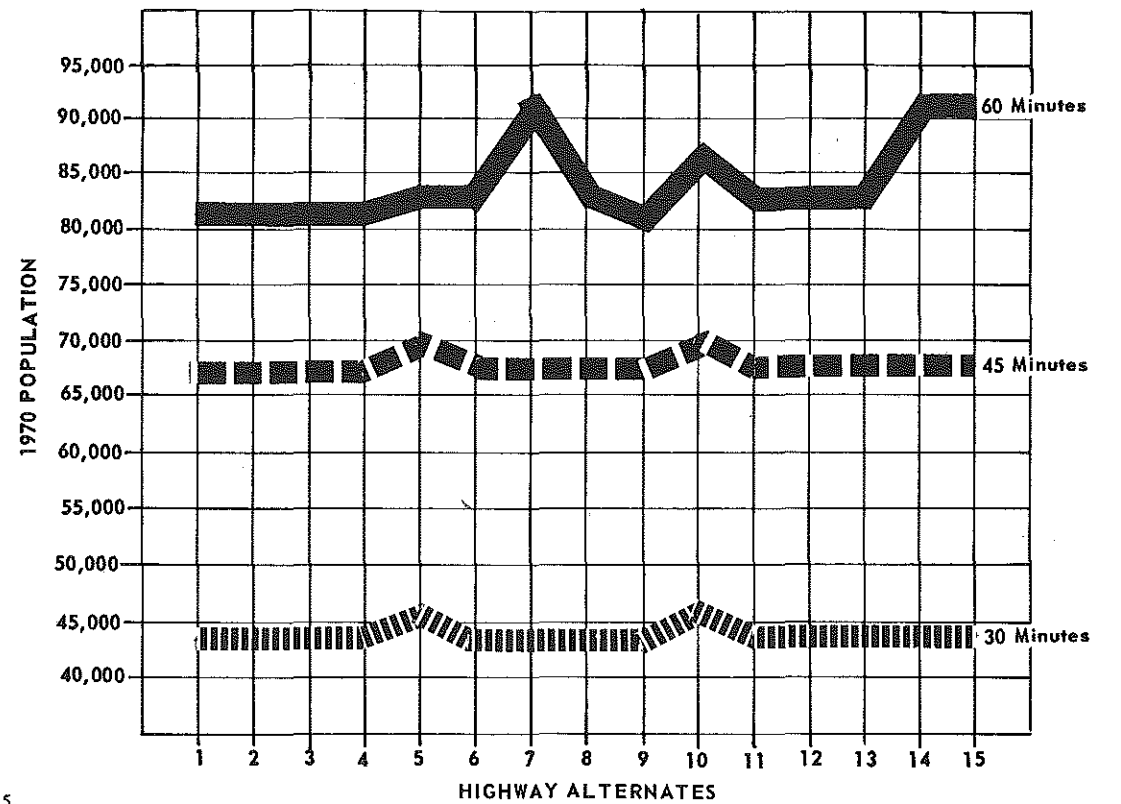


Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

POPULATION ACCESSIBLE TO PETOSKEY



POPULATION ACCESSIBLE TO TRAVERSE CITY



Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

ECONOMIC

State Equalized Assessed Valuation

The following map depicts the relationship between the Equalized Assessed Valuation for each township or major city and potential highway corridors. This map shows areas of extensive development in the Region. If it is known locally that an area is not extensively developed, yet the map shows that area as having a high valuation in relation to other areas of the Region, then one can assume that the area has development which is of an expensive nature. An example of such an area might be the northern portions of Leelanau County. The figures used for this map are 1974 tax figures provided by the State Tax Commission, Michigan Department of Treasury.

Land Values and Usage

A major determinant of both the value of land and the extent to which it is used is its accessibility. When a piece of land becomes easier to reach its value generally goes up because the number of ways in which it can be used increases. When property is acquired for transportation improvements, the taxes from this land are lost to the jurisdiction in which it is located. This can mean a temporary decrease in revenues. However, as land values rise and changes in usage occur, the assessed valuation will tend to rise. These increases should eventually offset the original losses of taxable property.

Major intersections are often focal points for development. The ease with which motorists can access land located at these intersections makes them natural growth areas. However, unless the development is controlled by the proper authorities, an uncoordinated, undesirable land use pattern can occur. Controlled development and sound planning, with environmental awareness, on the other hand, can provide the area with economic development and still maintain the aesthetic quality of the environment.

STATE EQUALIZED ASSESSED VALUATION By Township 1974

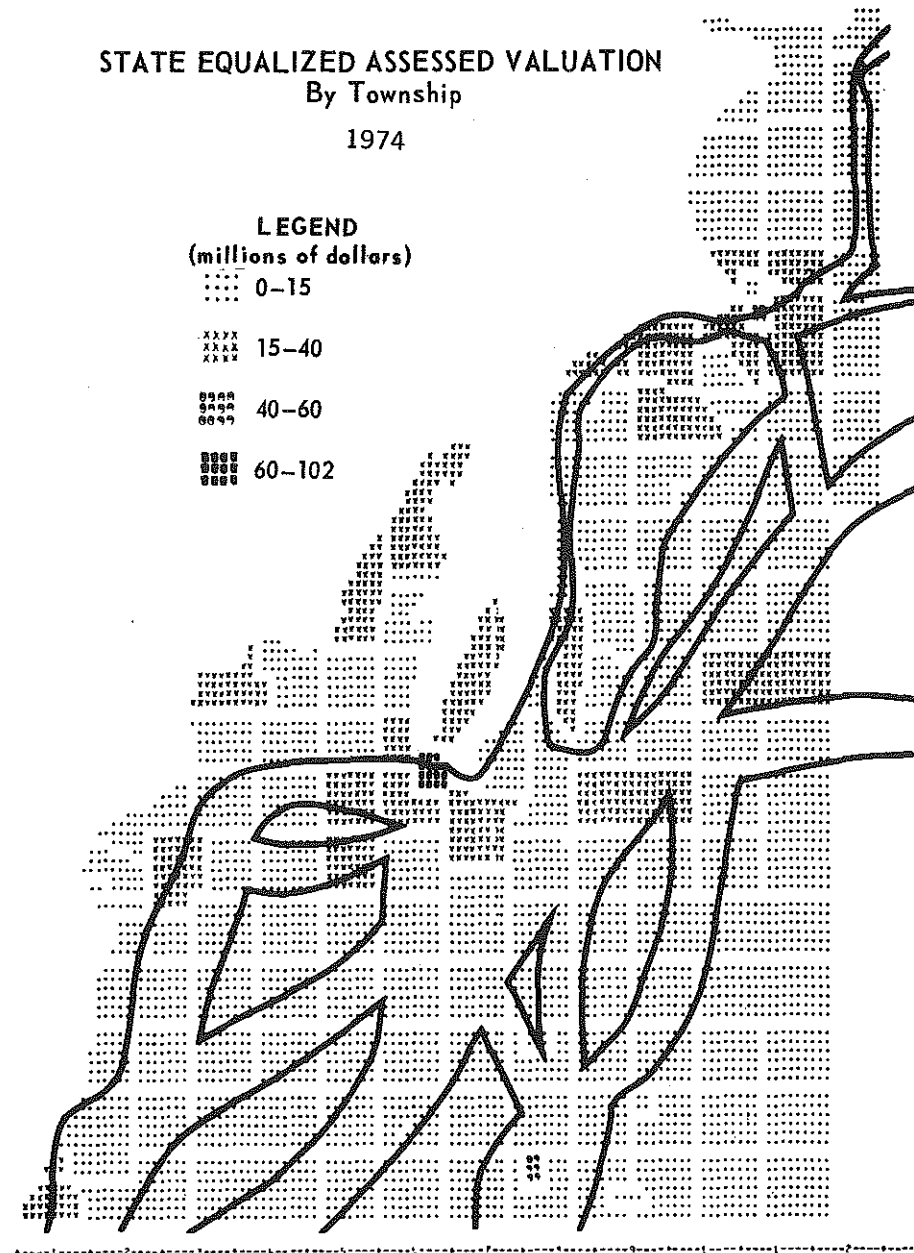
LEGEND (millions of dollars)

..... 0-15

xxxx 15-40

oooo 40-60

oooo 60-102



Source: 1974 State Equalized Valuations Average Tax Rate, State Tax Commission, Michigan Department of Treasury.

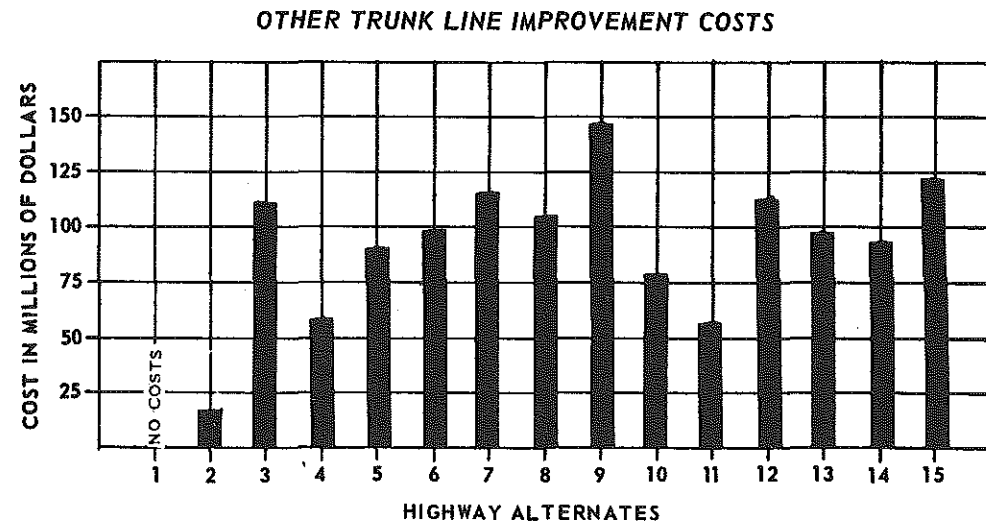
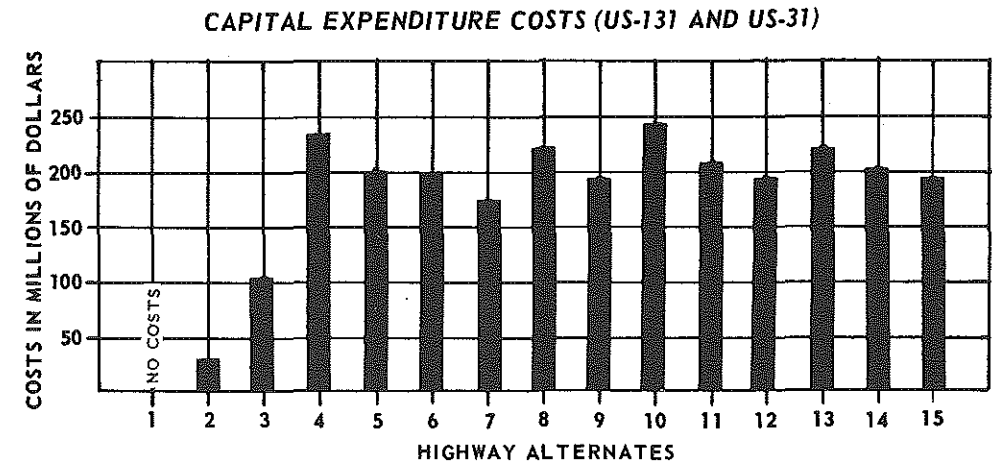
Costs

The accompanying graphs show projected costs for each of the highway alternates. In all instances except maintenance, costs figures represent a 30 year accumulation between the years 1970 and 2000.

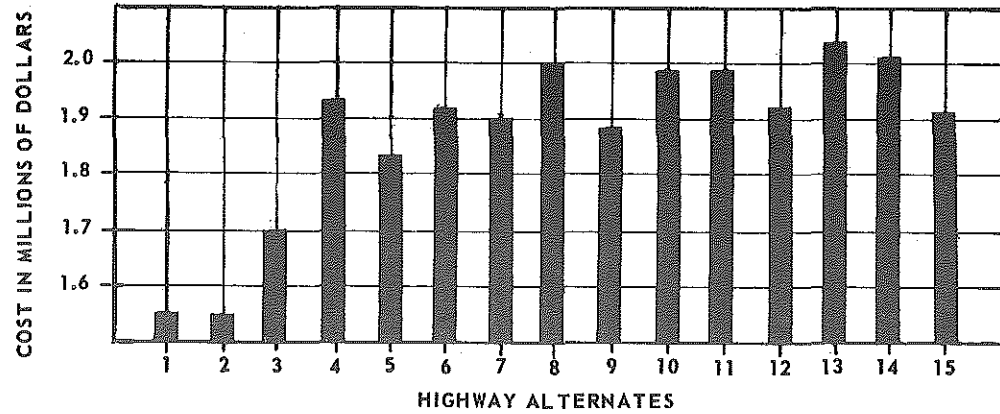
“Capital Expenditure Costs” refer to the expenditures that will be necessary to construct new segments or improve old segments of US-31 and US-131 in their proposed corridors.

“Other Trunk Line Improvement Costs” refer to the outlays that will be necessary to improve state trunk lines in the Region outside the proposed US-31 and US-131 corridors. These costs will be incurred to upgrade trunk lines to carry traffic projected for the year 2000.

Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.



ANNUAL MAINTENANCE COSTS

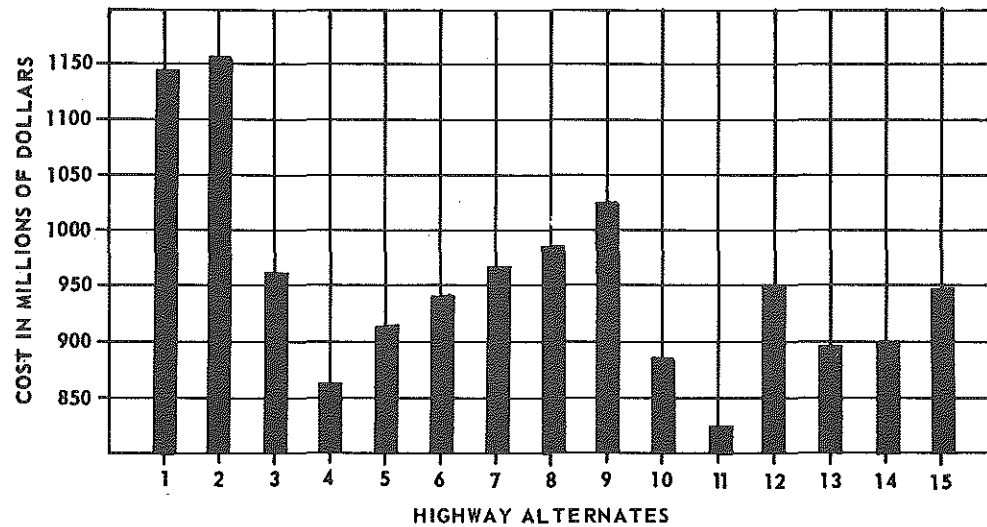


“Annual Maintenance Costs” are those expenditures that will have to be made to maintain the entire trunk line system once it has been built.

“Auto and Truck Running and Time Costs” refer to the expenditures needed to maintain and operate the total number of vehicles which can be expected to travel on any one alternate. The costs have been computed from information on operating, maintenance, and time costs provided in Economic Analysis For Highways (Robley Winfrey, International Textbook Company, 1969).

A more detailed description of these various costs was provided on page 16.

AUTO AND TRUCK RUNNING AND TIME COSTS

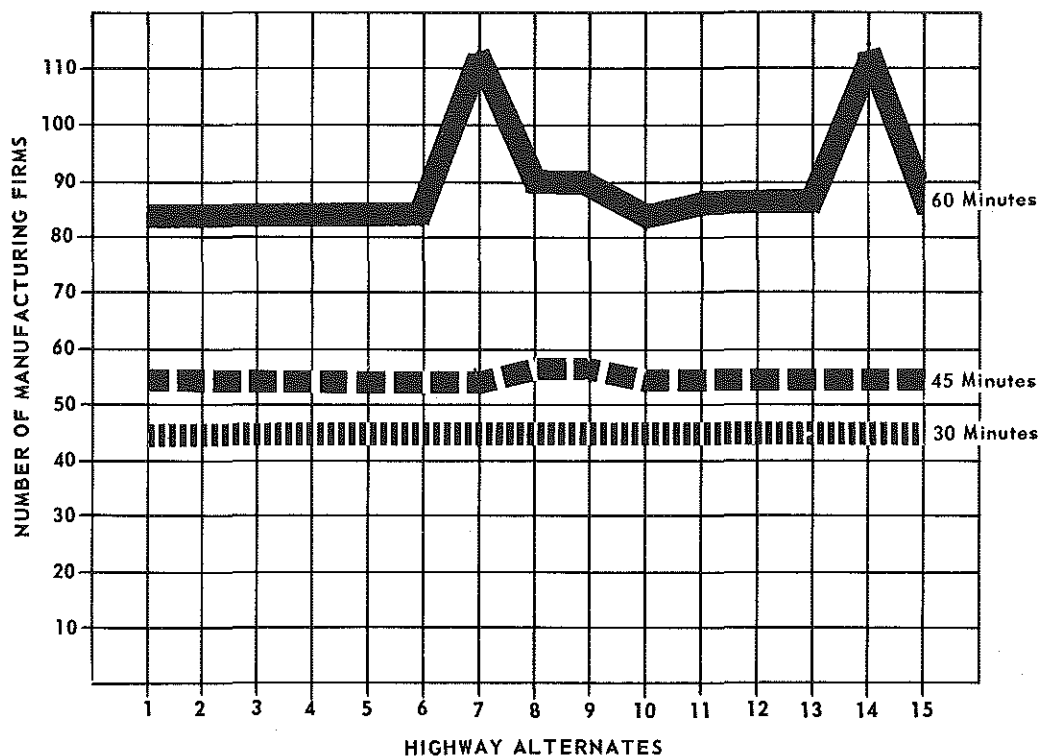


Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

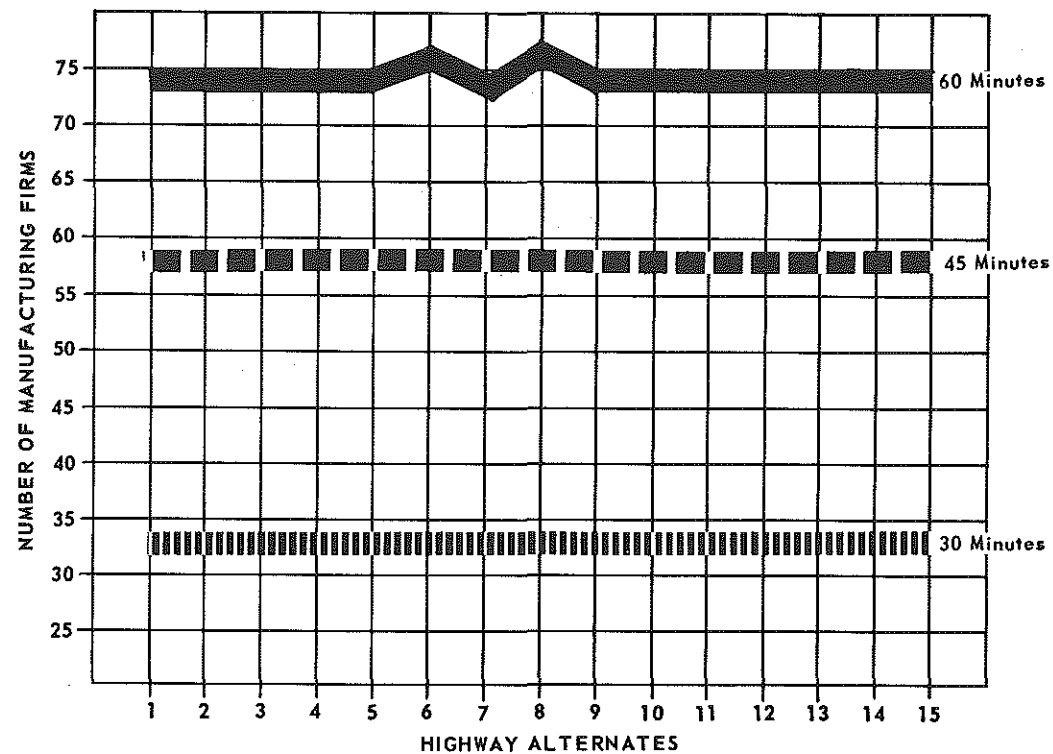
Accessibility of Manufacturing Firms to Truck Terminals

The following displays show the number of manufacturing firms within 30, 45 and 60 minutes driving time of each major city in the Region. It should be noted that, according to our sources, there are no truck terminals located in Charlevoix, Gaylord or Grayling. The sources used for this study were The Directory of Michigan Manufactures 1971 and the National Highway and Airway Carriers and Fall Routes 1972.

**ACCESSIBILITY OF MANUFACTURING FIRMS
TO TRUCK TERMINALS IN CADILLAC**

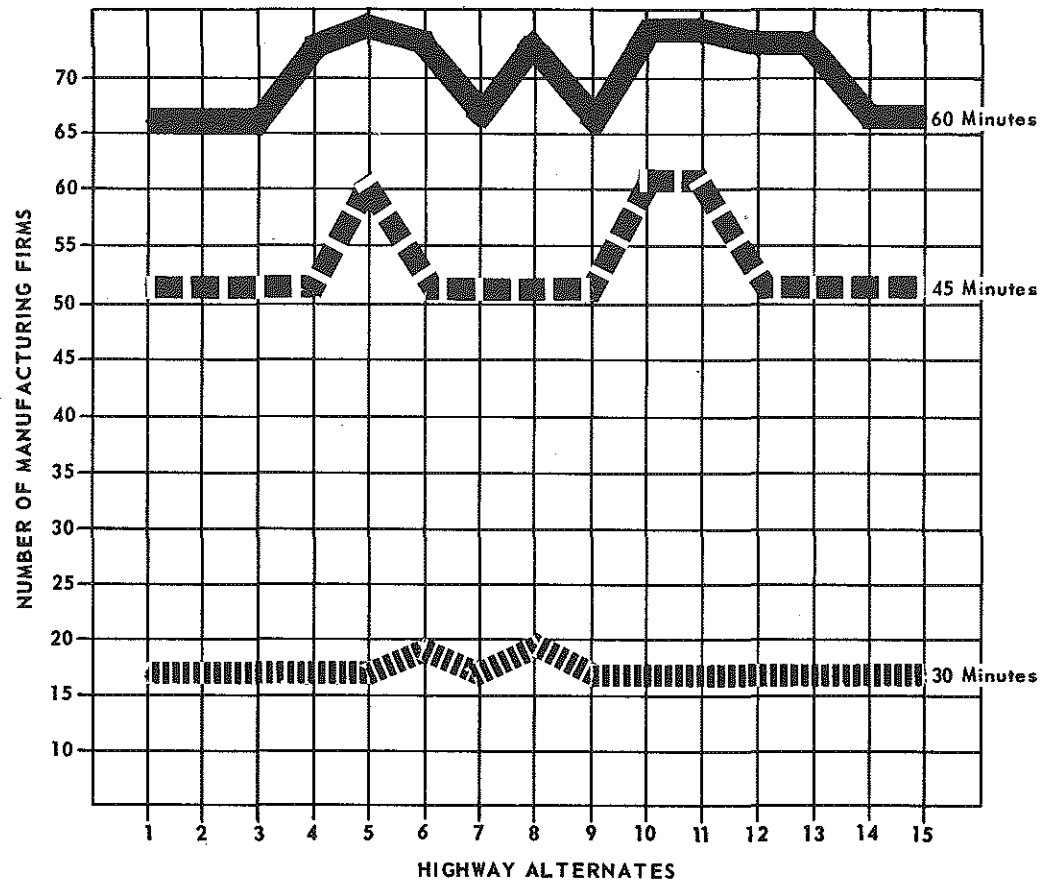


**ACCESSIBILITY OF MANUFACTURING FIRMS
TO TRUCK TERMINALS IN LUDINGTON**

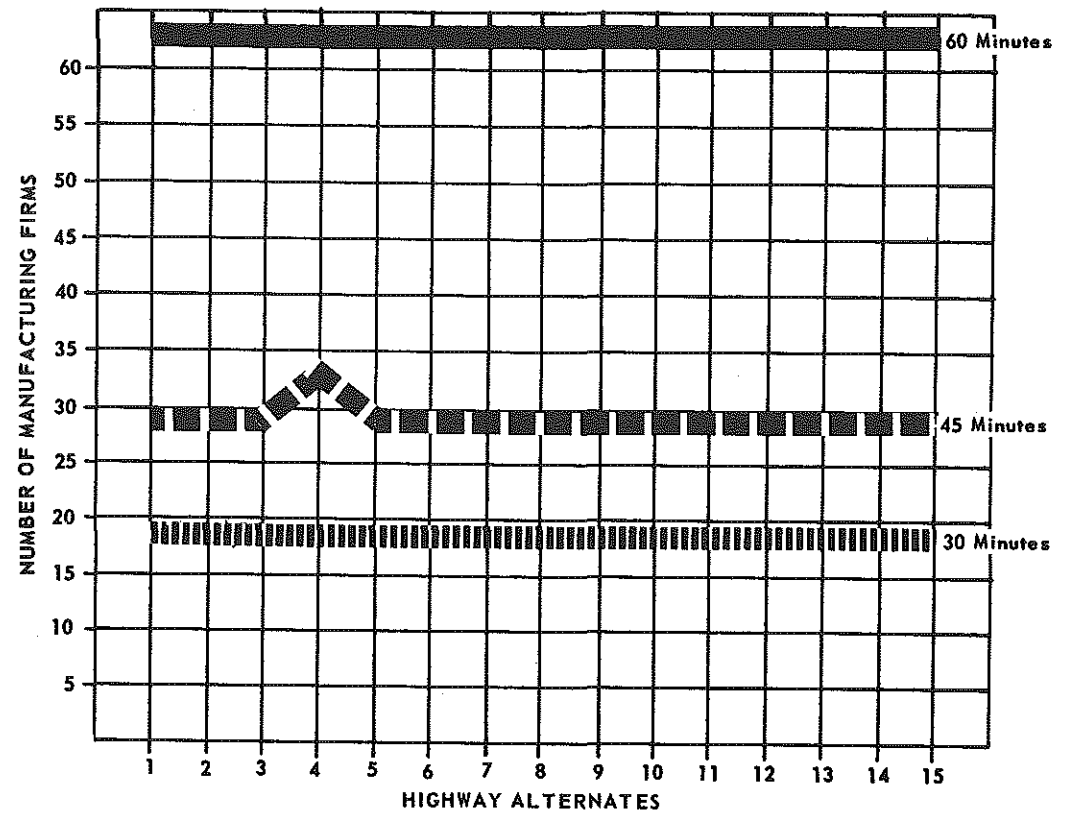


Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

**ACCESSIBILITY OF MANUFACTURING FIRMS
TO TRUCK TERMINALS IN MANISTEE**

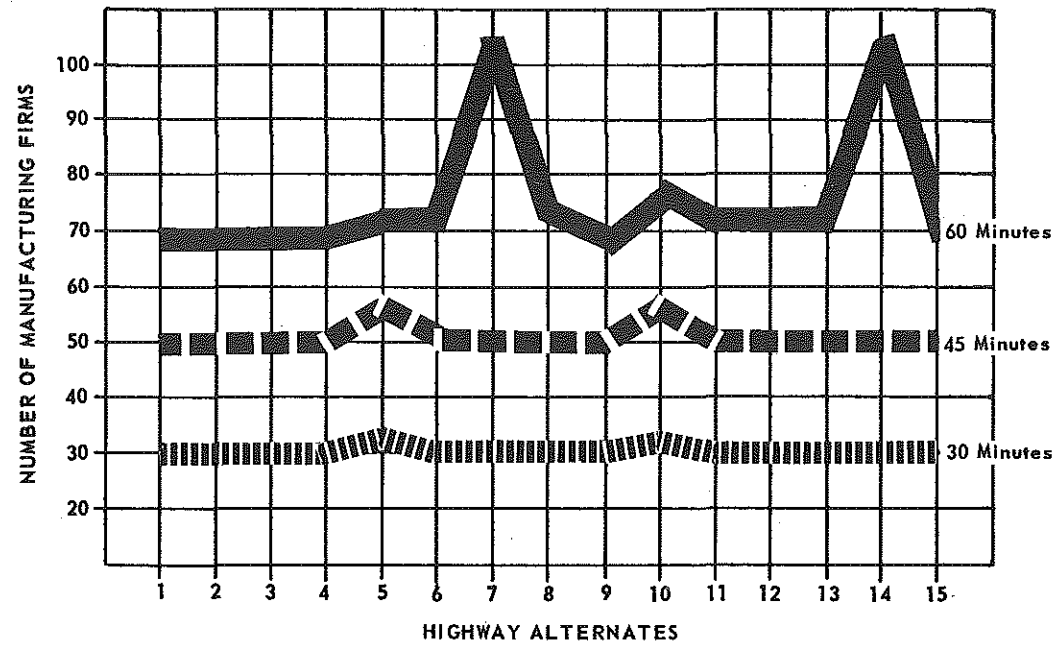


**ACCESSIBILITY OF MANUFACTURING FIRMS
TO TRUCK TERMINALS IN PETOSKEY**




Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

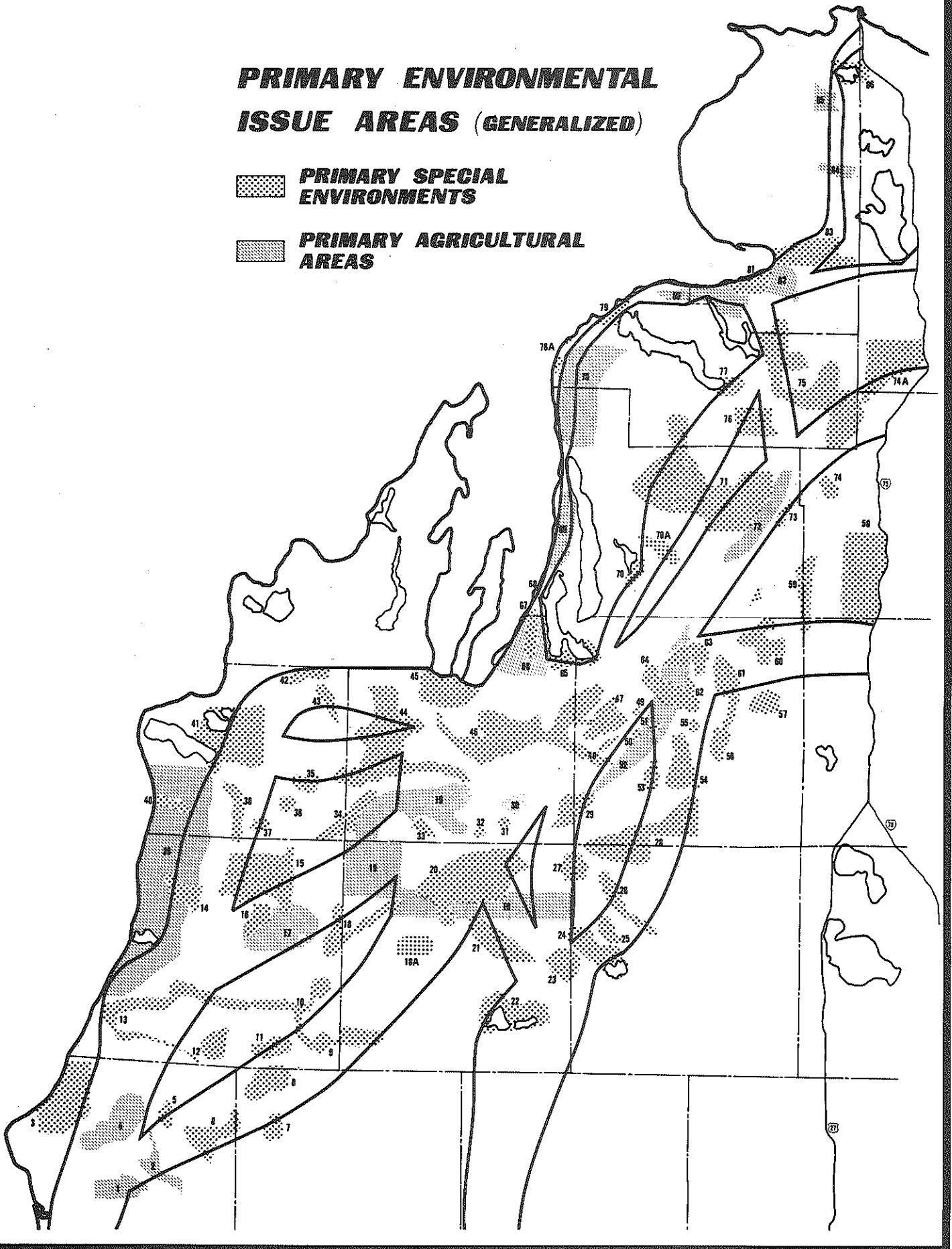
ACCESSIBILITY OF MANUFACTURING FIRMS
TO TRUCK TERMINALS IN TRAVERSE CITY



PRIMARY ENVIRONMENTAL ISSUE AREAS (GENERALIZED)

 **PRIMARY SPECIAL
ENVIRONMENTS**

 **PRIMARY AGRICULTURAL
AREAS**



ENVIRONMENTAL

Primary Environmental Issue Areas

The preceding map depicts the areas in the Northwest Region which have been identified as Primary Agricultural Areas and Primary Special Environments. As described earlier on page 14, Primary Agriculture Areas are those that are either the best existing or potential production areas in the Region and Primary Special Environments are those that have historic significance, unusual aesthetic quality, or ecological character of particular importance or fragility.

Each area shown on the map is accompanied by a number. These correspond to the following list which briefly describes the individual feature.

Also shown on the map are a series of lines which represent a composite outline of all of the highway alternates. This is useful in providing a visual assessment of the various corridors relative to the primary issue areas.

1. Prime agricultural land
2. Prime agricultural land
3. Wetlands and roadless natural areas in the Manistee National Forest
4. Prime agricultural land
5. Steep topography and Gun Lake development
6. Developed lake district and wetlands
7. Developed lake district
8. Developed lake district
9. Pine River environs, steep topography, wetlands, and Pine River Experimental Forest
10. Tippy Dam impoundment and Bald Eagle nesting areas
11. Pine Lake and wetlands
12. Udell Hills, steep topography, and Udell Experimental Forest
13. Manistee and Little Manistee Rivers, Manistee Lake, wetlands, steep topography, urban development, and Riverview Cemetery and Bear Creek Archaeological Sites
14. Bear Lake and adjacent wetland and Village of Bear Lake
15. Wetland and wooded area interspersed with streams and Village of Copemish
16. Wetland and lakes
17. Prime agricultural land
18. Wetland, wooded, some steep topography and Hodenpyl Dam Pond on the Manistee River
- 18A. Steep topography
19. Prime agricultural land
20. Manistee River, sandy steep bluffs, wetlands and prime wildlife habitat
21. Forest district and extreme topography
22. Lake and residential district with associated wetlands
23. Forest and lake district
24. Lake and residential district

25. Cedar swamp
26. Hopkins Creek and associated wetlands
27. Manistee River tributaries
28. Manistee River environs
29. Fife Lake and residential area
30. Prime agricultural land
31. Cedar swamp
32. "Big Marsh" and swamp
33. Anderson Creek Swamp (mixed conifer-hardwood)
34. Steep topography
35. Steep topography
36. Steep topography
37. Steep topography (Buck Hills)
38. Betsie River - a Michigan Wild and Scenic River, and wooded steep topography
39. Prime agricultural land (orchard and general farming)
40. Lake and wetland area
41. Crystal, Platte, and Little Platte Lakes in conjunction with steep topography, wetlands and the Platte River; also, villages of Beulah, Benzonia, and Honor
42. Lake district
43. Lake district
44. Long, Green, Duck, Bass and Silver Lakes in conjunction with wetland and wooded areas, and the Interlochen National Music Camp Historical District
45. Urban development of Traverse City, and Traverse City and Washington Historic Districts
46. High quality recreation and natural scenic area including: Boardman River and South Branch Boardman River (under study for possible designation as a Michigan Wild and Scenic River), lake district (Spider and Arbutus Lakes), Sandy Lakes quiet area, and Fife Lake State Forest
47. Kalkaska gas and oil field
48. Taylor Creek (cedar swamp)
49. Failing Creek (cedar swamp)
50. Headwaters of Crofton Creek
51. Petroleum Cracking Plant
52. Prime agricultural land
53. Lake district
54. Manistee River tributaries and Sharon Trust Natural Area
55. White cedar and tamarack swamp
56. Valley of North Branch Manistee River
57. Lake district
58. Lake district
59. Manistee River headwaters and associated wetlands
60. Lake district
61. Lake district (Manistee Lake)
62. Lake and residential district and wetlands
63. Oil fields, headwaters of North Branch Boardman and Rapid Rivers, and wetlands

64. Oil field
65. Lakeside wetlands (cedar swamp) and Skegemog Point Archaeological Site
66. Prime orchard and general agricultural lands
67. Tobeco Creek environs (tamarack-cedar swamp)
68. Elk River and urban development of Elk Rapids
69. Prime orchard land
70. Lake-of-the-Woods, wetland area associated with Lake Bellaire and Clam Lake, Holtz Archaeological Site
- 70A. Cedar River and wetland area
71. Jordan River—A Michigan Wild and Scenic River, Intermediate River, wetlands, extremely steep topography, wooded areas, and Village of East Jordan
72. Prime potato land
73. Steep topography
74. Lake district
- 74A. West Branch of the Sturgeon River and its feeder streams
75. Southern and eastern part of area: Hoffman, Bass and Thumb Lakes, Lake Louise, steep topography (Chandler, and Hudson Hills), and large wetland areas (cedar swamps). Western and northern part of area: large wetland areas (cedar swamps), steep topography, headwaters of the Bear River, and Village of Walloon Lake
76. Large wetland areas (cedar swamps), steep topography, Village of Boyne Falls and Deer Lake
77. Village of Boyne City and Avalanche Mountain
78. Prime orchard and general agricultural land
- 78A. Pi-Wan-go-ning Prehistoric District and O'Neil Archaeological Site
79. Urban development around Charlevoix; Belvedere and Chicago Clubs Historic Districts; Mt. McSaube and Charlevoix City Park Archaeological Sites, and Pine River
80. Prime agricultural land
81. Urban development around Petoskey, and Bay View and Lake Street Historical Districts
82. Prime agricultural land
83. Crooked, Pickerel, and Round Lakes and their associated development, large wetland areas, Petoskey State Park, and Ponshewaing Point Archaeological Site.
84. Prime agricultural land
85. Prime agricultural land
86. Lake Paradise, Village of Carp Lake and its associated development, and wetland areas

Protected Areas

The Congress of the United States recognized the values of public recreation, wildlife refuges and park areas as a resource that must be protected by passing into law Section 4(f) of the Federal-Aid Highway Act of 1966. Section 4(f) requires that the Secretary of Transportation shall cooperate and consult with the Secretaries of the Interior, Housing and Urban Development, and Agriculture, and with the States in developing transportation plans and programs that include measures to maintain or enhance the natural beauty of the lands traversed.

After the effective date of the Act, the Secretary could not approve any program or project which required the use of any land from a public park, recreation area, wildlife and waterfowl refuge, or historic site unless (1) there was no feasible and prudent alternative to the use of such land, and (2) such program included all possible planning to minimize harm to such park, recreational area, wildlife and waterfowl refuge, or historic site resulting from such use.

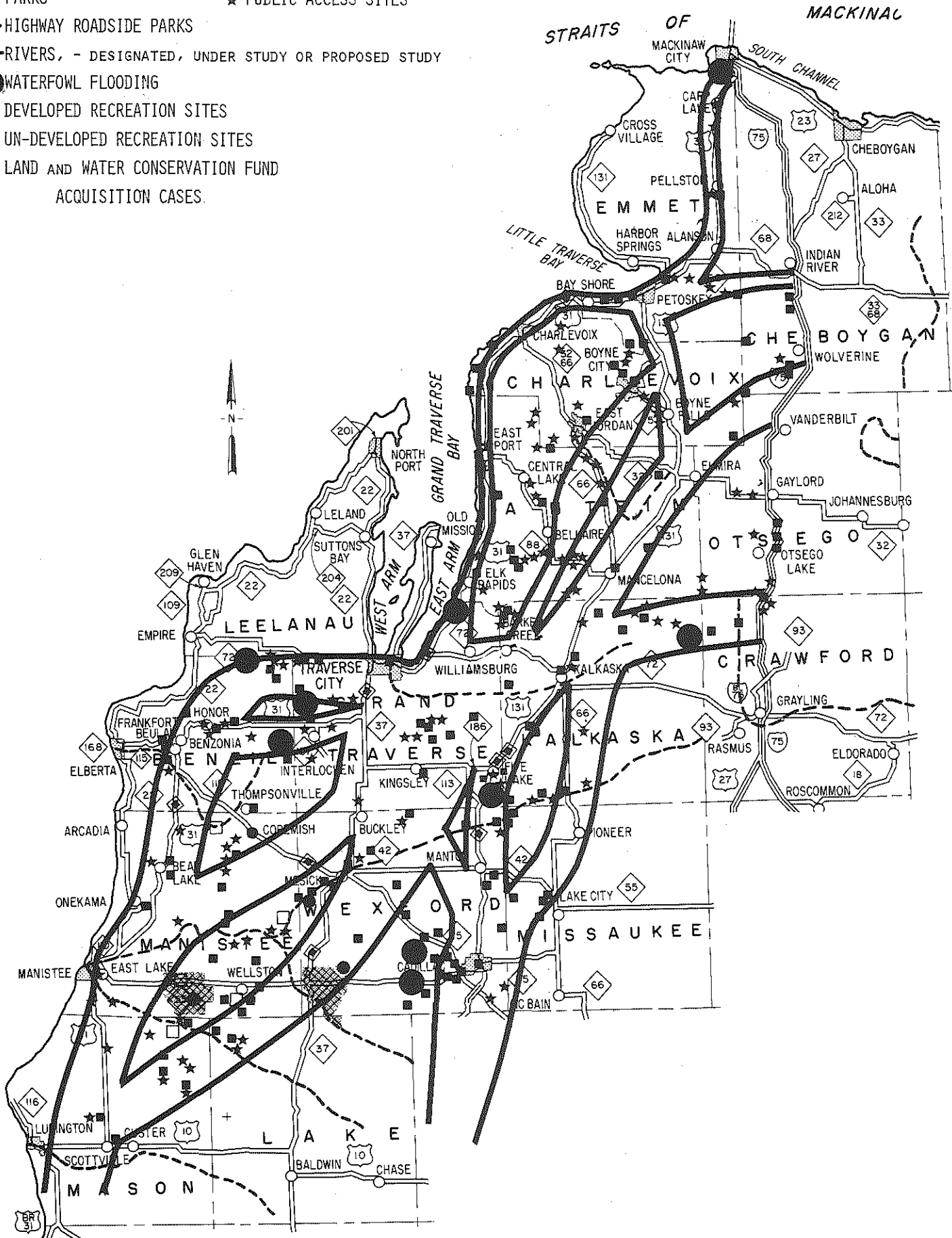
Right-of-Way representatives of the Location Team have conducted a study of the Northwest Region to identify protected areas (existing or potential 4(f) properties) as described by the 1966 Act and implemented by the Department of Transportation. This study, as shown on the following map, identifies the following Federal and State controlled areas: Federal Forest Campgrounds, recreational sites and lands acquired with land and water conservation funds; Department of Natural Resources State Parks, campgrounds, public fishing sites, and waterfowl refuge areas; the Michigan Natural River System; and the Department of State Highways and Transportation roadside parks. In addition, the study also identified all county and township parks, campgrounds, boat launch sites and other recreation areas.

The information gathered in the study was obtained through personal discussions with Federal Forest personnel, Department of Natural Resources personnel, County Road Commissions, County Planning and Recreation Committees, and Township Supervisors. Because of the generalized information provided in some cases, it is possible that some of the 4(f) areas may not be located exactly in the places shown on the map. Any discrepancies between the map and reality, however, will be rectified as more exact information becomes available.

PROTECTED AREAS

EXISTING OR POTENTIAL 4 (f) PROPERTIES

- PARKS
- ◆ HIGHWAY ROADSIDE PARKS
- RIVERS, - DESIGNATED, UNDER STUDY OR PROPOSED STUDY
- WATERFOWL FLOODING
- DEVELOPED RECREATION SITES
- UN-DEVELOPED RECREATION SITES
- ▨ LAND AND WATER CONSERVATION FUND ACQUISITION CASES.
- ★ PUBLIC ACCESS SITES



TRANSPORTATION LIBRARY
 MICHIGAN DEPT. STATE HIGHWAYS &
 TRANSPORTATION LANSING, MICH.

Northwest Regional Transportation Study,
 Michigan Department of State Highways and Transportation, 1975.

TRAVEL

Accidents

The corresponding graph indicates the number of accidents predicted for each 100 million miles of travel on each alternate. Estimates are for the year 2000.

Miles of Freeway in the Region

The accompanying graph on this page indicates the amount of freeway which would exist in the ten-county Region with each of the alternates. Although Alternates 1, 2, 3 and 4 involve no freeway construction, approximately three miles already exist on US-131 south of Cadillac which accounts for that which is shown on the graph.

Average Daily Trips To and From the Region

The graph on page 59 shows the projected amount of traffic which would enter and leave the ten-county Region on an average daily basis with each of the alternates. As shown, some alternates could be expected to generate more traffic than others. Projections are for the year 2000.

Annual Vehicle Miles of Travel in the Region

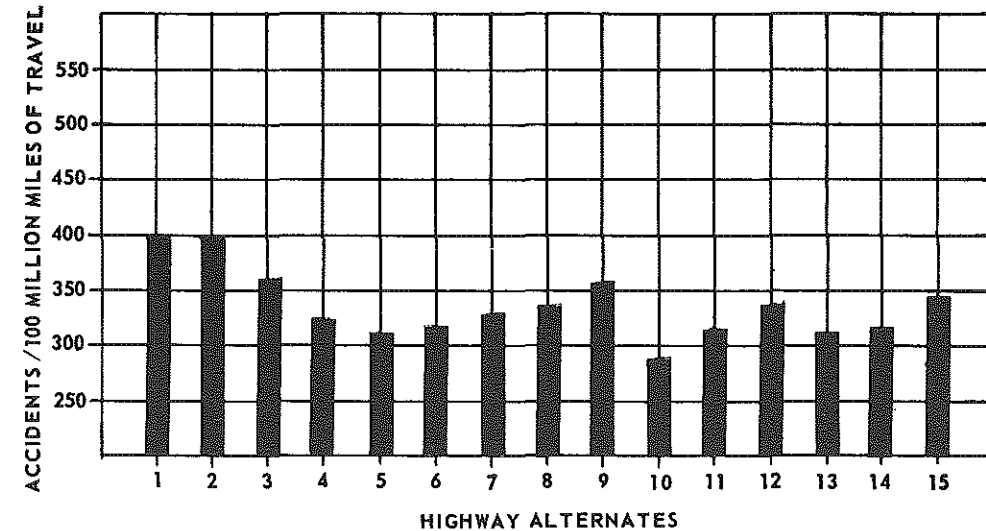
Unlike the preceding graph which indicated trips crossing the regional boundary, the accompanying graph on page 59 shows the projected annual amount of travel within the Region. Estimates are for the year 2000.

Levels of Service

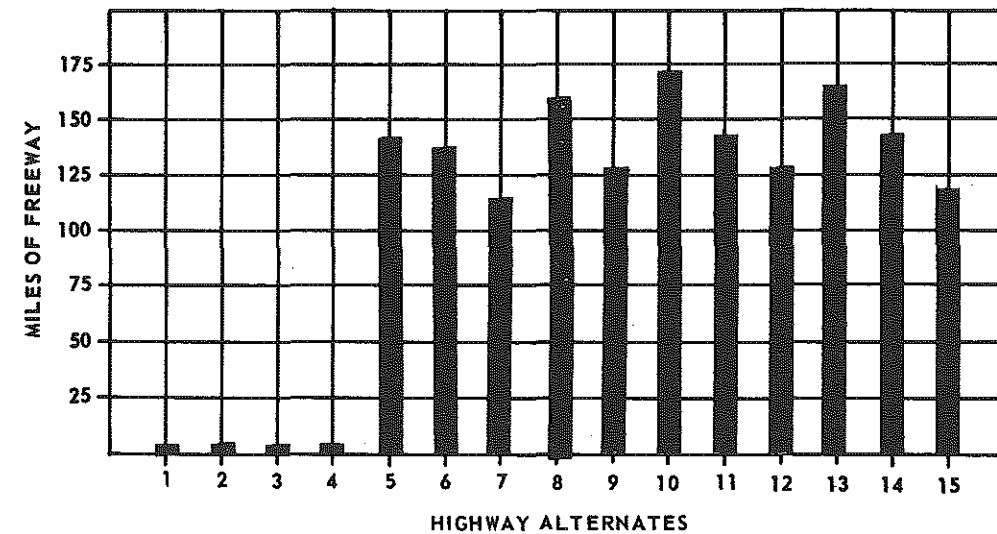
The two accompanying graphs on page 59 show how many miles of state highways in the Region are expected to function above or below a desirable level of service. These amounts vary with each alternate depending upon the type and extent of improvement proposed.

A detailed explanation of the "level of service" concept was provided earlier on page 17.

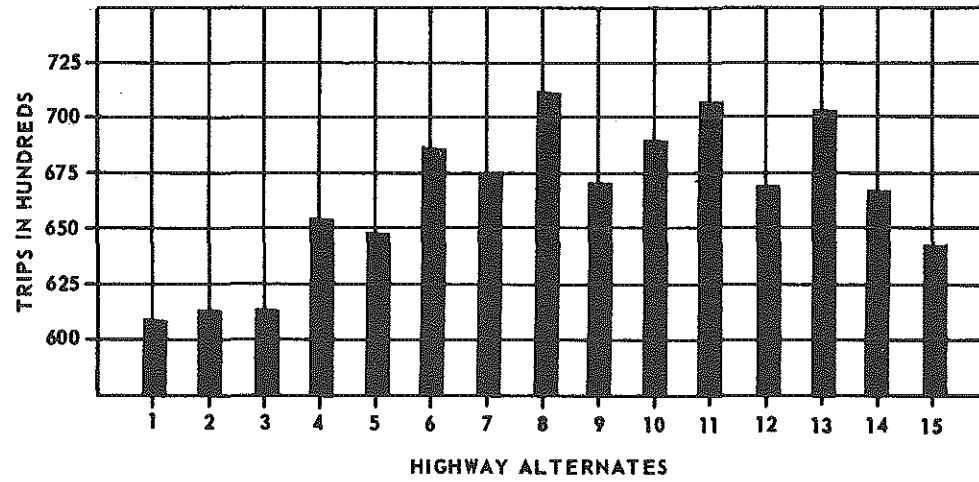
ACCIDENT COMPARISON



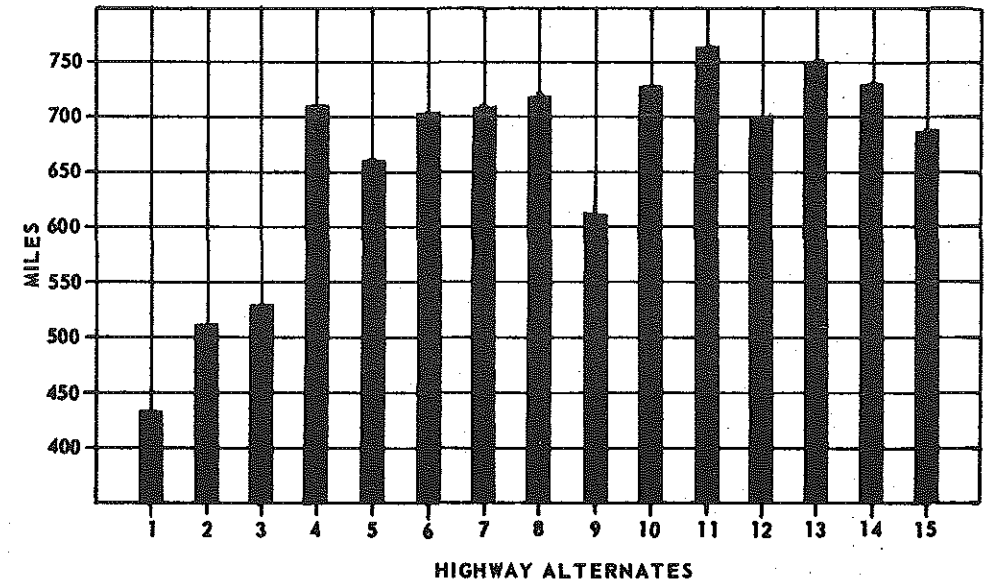
MILES OF FREEWAY IN THE REGION



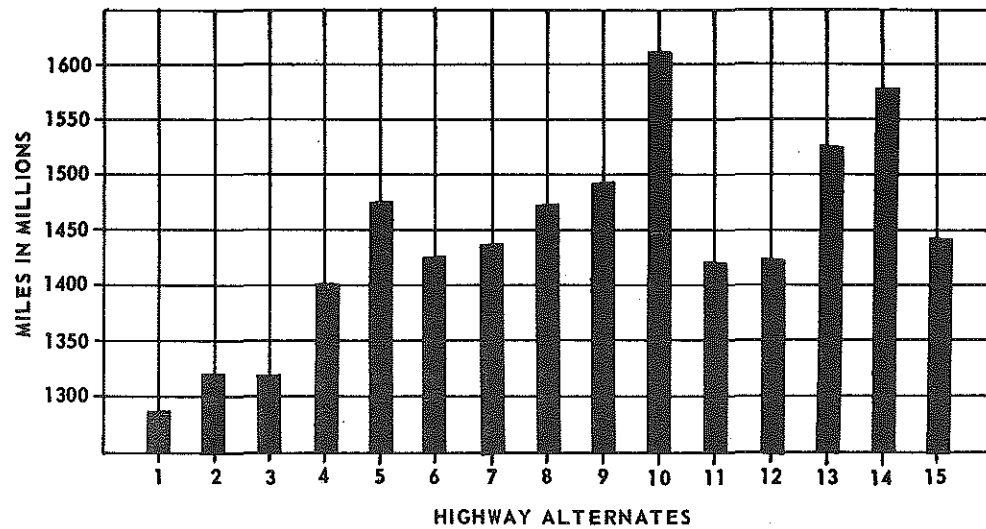
AVERAGE DAILY TRIPS TO AND FROM THE REGION



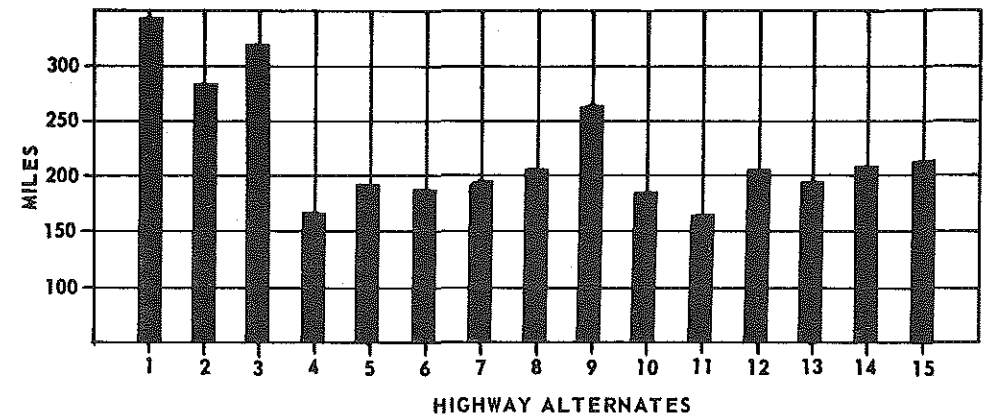
MILES OF TRUNK LINE OPERATING AT LEVEL OF SERVICE "C" AND ABOVE



ANNUAL VEHICLE MILES OF TRAVEL IN THE REGION



MILES OF TRUNK LINE OPERATING BELOW LEVEL OF SERVICE "C"



AVIATION

AIRPORT SYSTEM PLAN

The Michigan Airport System Plan (MASP) was completed in 1974 following two years of preparation. The Plan was formulated by the Michigan Aeronautics Commission and its prime contractor, Stanford Research Institute, with guidance from an Advisory Committee composed of aviation industry spokesmen and representatives from all of the State Planning and Development Regions. The purpose of the airport system plan is to provide for the orderly and timely development of a system of airports to meet Michigan's air transportation needs. The MASP will also accomplish the following important tasks:

1. Applicable portions of the plan will be integrated into the National Airport System Plan. An airport must be included in this plan to qualify for federal participation in the funding of development.
2. The plan will provide a basis for coordination of airport planning with planning by state, regional and metropolitan agencies in such areas as transportation, land use and the environment, economic development and resource utilization.
3. The plan will provide a framework to assist in the development of individual airport master plans (and airport system plans at the regional or metropolitan level, if needed).

The development of the MASP included the analysis of both the air carrier and general aviation systems in Michigan. For both systems, the forecasts of future aviation activity and recommended development are based on the following planning periods:

<u>Planning Period</u>	<u>Fiscal Years</u>	<u>Base Year for Aviation Forecasts</u>
Short Range	1973-1977	1975
Intermediate	1978-1982	1980
Long Range	1983-1992	1990

Forecasts of aviation activity for each of the planning periods are summarized for the Region in the accompanying table.

AIRPORT ACTIVITY IN THE NORTHWEST REGION

<u>Air Carrier Airports *</u>	<u>Current</u>	<u>Short Range (0-5 yrs.)</u>	<u>Intermediate (6-10 yrs.)</u>	<u>Long Range (11-20 yrs.)</u>
Based Aircraft	52	62	79	118
Operations				
Air Carrier	11,000	14,600	19,000	31,500
General Aviation	87,400	97,400	114,300	158,300
Total	98,400	112,000	133,300	189,800
Enplaned Passengers				
Air Carrier	53,000	110,000	160,000	287,000
General Aviation	56,000	64,000	75,000	106,000
Total	109,000	174,000	235,000	393,000
<u>General Aviation Airports</u>				
Based Aircraft	85	108	136	202
Operations	92,700	115,200	146,700	217,200
Enplaned Passengers	80,000	87,000	117,000	164,000
<u>Regional Total for Air Carrier and General Aviation Airports</u>				
Based Aircraft	137	170	214	320
Operations	191,100	227,200	280,000	407,000
Enplaned Passengers	189,000	261,000	352,000	557,000

* An airport being served by one of the Civil Aeronautics Board certificated, scheduled airlines which in this area is North Central Airlines. It is possible that in the future additional air carrier passengers may be served by commuter carriers such as Air Metro Airlines which now serves Traverse City.

The MASP ultimately recommends a system of 21 air carrier airports in Michigan of which three; Traverse City, Pellston and Manistee are within the Northwest Regional Planning District (see locations on page 62). The development of the air carrier system was based on the following projections of future operations, enplaned passengers and cargo.

AIR CARRIER AIRPORTS
Operational Forecasts

	<u>Current</u>	<u>Short Range</u>	<u>Inter- mediate</u>	<u>Long Range</u>
Traverse City (Cherry Capital)				
Air Carrier Operations	6,600	6,600	10,200	16,800
General Aviation Operations	52,100	60,100	71,100	100,100
Air Carrier Passengers	37,000	67,000	100,000	180,000
General Aviation Passengers	35,000	41,000	48,000	68,000
Pellston (Emmet County)				
Air Carrier Operations	3,700	7,300	7,300	16,100
General Aviation Operations	17,400	17,400	19,300	25,300
Air Carrier Passengers	15,000	39,000	55,000	100,000
General Aviation Passengers	12,000	12,000	13,000	17,000
Manistee (Manistee County-Blacker)				
Air Carrier Operations	700	700	1,500	2,200
General Aviation Operations	17,900	19,900	23,900	32,900
Air Carrier Passengers	3,000	4,000	5,000	7,000
General Aviation Passengers	9,000	11,000	14,000	21,000

See the preceding table for Regional Totals

The projections of activity at air carrier airports in this Region indicate an increase of 186% in air carrier operations by 1990 and an increase of 441% in the number of enplaned passengers.

In addition to activity projections, there was also a systematic analysis of alternative air carrier airport locations. This analysis included a study of route structure, flight frequencies and effects upon passenger service at existing airports. During this phase of the study, the possibility of consolidating the existing air carrier service in Traverse City and Pellston at a new airport in Kalkaska County was evaluated. This proposal was rejected because the study indicated that passengers currently using the Traverse City and Pellston facilities would receive lower levels of service.

The MASP recommends 162 general aviation airports of which 56 are new airports. Sixteen of the recommended general aviation airports are in the Northwest Region and three of the locations; Kaleva, Mesick and Lake City will be new airports (See locations on map). Projections of general aviation for 1990 in this Region indicate an increase of 138% in based aircraft and 134% in operations (See the table on this page). The projections of future operations and based aircraft were used to determine the operational roles of the airports for each of the planning periods. Following the establishment of operational roles, the physical development (extended runways, clear zones, etc.) required for each airport to correspond with its operational role was determined for each of three planning periods.

As stated above, the MASP is a system plan indicating the aviation facilities required to meet Michigan's immediate and future air transportation needs. The plan recommends an operational role, an approximate location and necessary general improvements for each airport. For implementation of these recommendations it is necessary for the local airport sponsors to initiate airport master planning studies. The airport master plan, one of which is currently being developed by the City of Charlevoix, outlines the detailed development necessary for a specific airport, and is a prerequisite for Federal and State funding assistance.

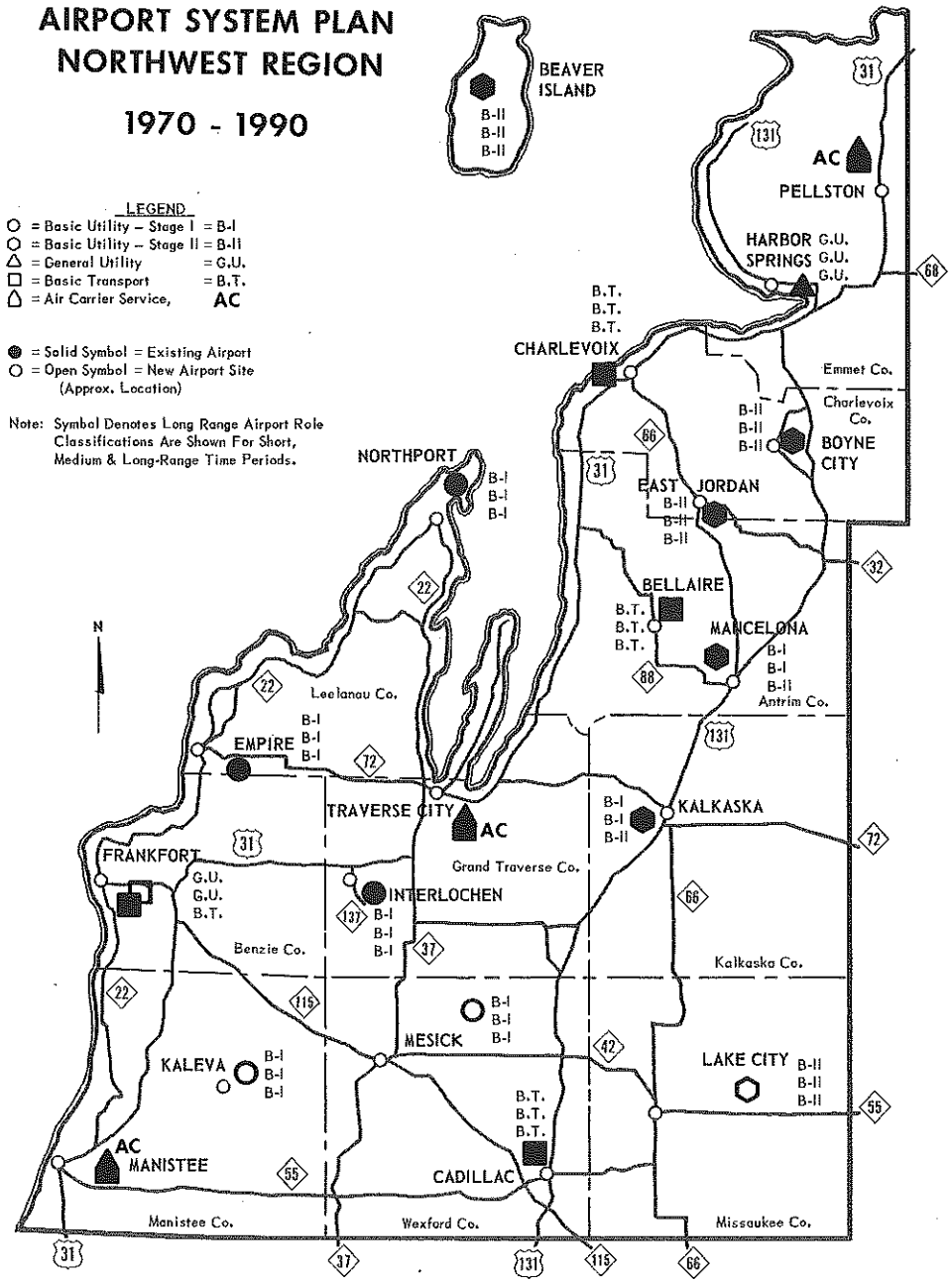
AIRPORT SYSTEM PLAN NORTHWEST REGION

1970 - 1990

- LEGEND**
- = Basic Utility - Stage I = B-I
 - = Basic Utility - Stage II = B-II
 - △ = General Utility = G.U.
 - = Basic Transport = B.T.
 - △ = Air Carrier Service, AC

- = Solid Symbol = Existing Airport
- = Open Symbol = New Airport Site (Approx. Location)

Note: Symbol Denotes Long Range Airport Role Classifications Are Shown For Short, Medium & Long-Range Time Periods.

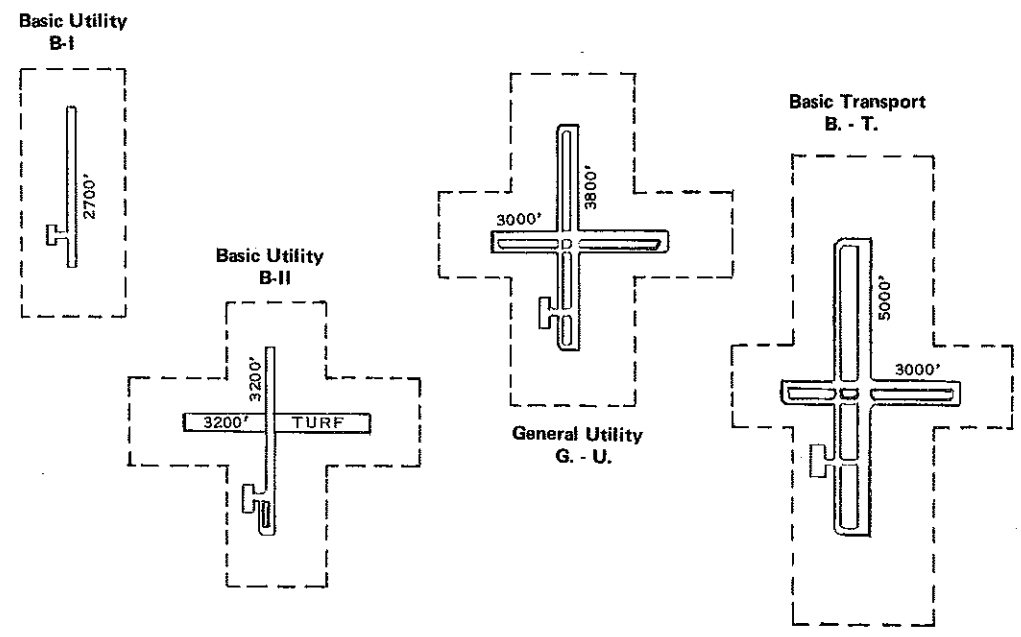


Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

Airport Operational Roles CLASSIFICATION OF AIRPORTS SERVING GENERAL AVIATION

Code for Operational Role	Examples of Largest Aircraft Accommodated	Level of Activity	Percentage of GA Fleet Accommodated	Typical Length of Longest Runway
BI-(Basic Utility) Stage I	Cessna-172 Piper Tri-pacer, etc.	Less than 10 aircraft based at airport	75%	2700'
BII-(Basic Utility) Stage II	Cessna-310 Beech Baron, etc.	More than 10 based aircraft. Less than 20,000 operations per year	95%	3200'
GU-(General Utility)	Beech King & Queen Airs, Piper Navajo, etc.	More than 20,000 operations per year or 500 operations per year by general utility type aircraft	98%	3800'
BT-(Basic Transport)	Lear Jet, Sabreliner Cessna Citation, etc.	500 or more operations per year by business jet aircraft	99+%	5000'
GT-(General Transport)	Convair 580, Boeing 727, DC-9, etc.	Substantial operations by very large general aviation aircraft (over 60,000 pounds gross weight)	100%	5000'+

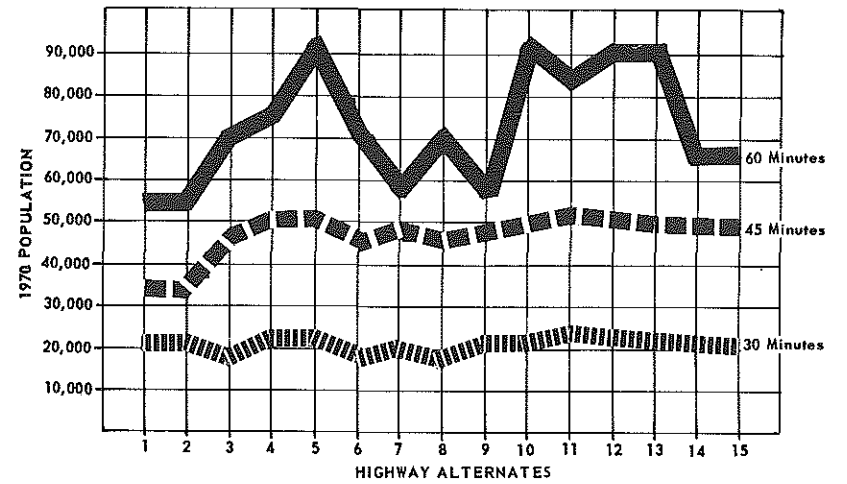
TYPICAL AIRPORT LAYOUT



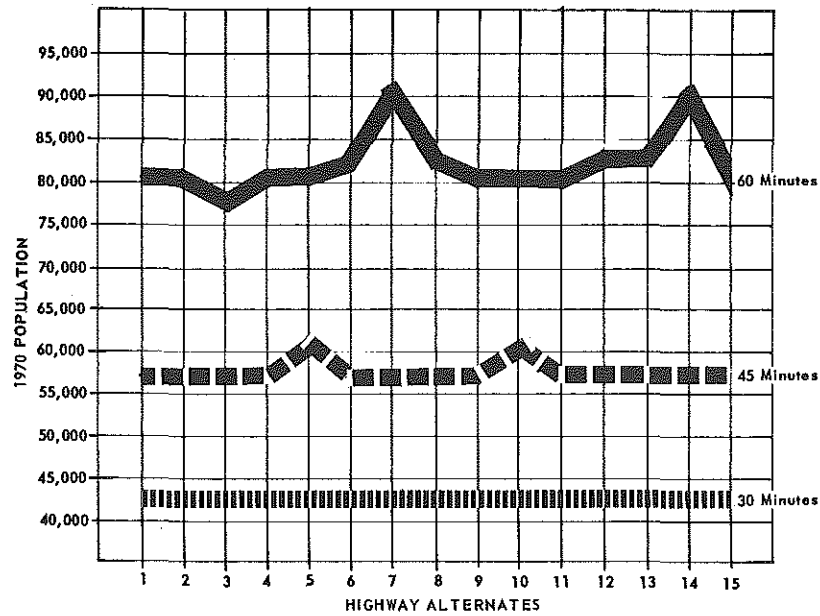
Population Accessible To Airports

The following graphs show the number of people within 30, 45 and 60 minutes driving time of the three major airports in the Region. These three airports were used in the analysis because they are the only airports in the Region which have been classified as "air carrier" airports by the Michigan State Airport System Plan thru 1990. Only these three airports are currently able to provide commercial air service to the public. All are serviced by North Central Airlines. Population figures are from the 1970 Census.

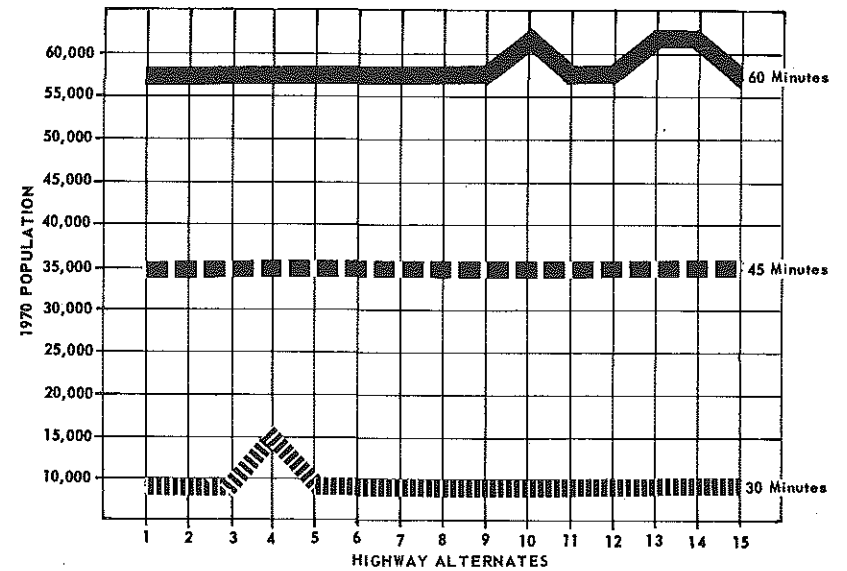
POPULATION ACCESSIBLE TO MANISTEE - COUNTY BLACKER AIRPORT (MANISTEE)



POPULATION ACCESSIBLE TO CHERRY CAPITAL AIRPORT (TRAVERSE CITY)



POPULATION ACCESSIBLE TO EMMET COUNTY AIRPORT (PELLSTON)



RAILROADS

STATUS OF RAILROADS

As indicated in the section on Railroads in the Introduction of this Report, railroad service in the Region is currently precarious. Long range decisions regarding future service will not be immediately forthcoming. At present, planning for this service is being developed on three governmental fronts. With the finalization of the federal railroad reorganization process, the development of the Michigan railroad plan, and finally the unfoldment of a regional railroad needs study, more certainty of the railroad future in the region will be revealed.

A review of the accompanying map illustrates the existing railroad service in the Region. Service has been provided by three Class I carriers -- the Chessie, Ann Arbor and the Penn Central -- and two short line operations -- the Boyne City Railroad and the Cadillac and Lake City Railroad. The Boyne City is continuing service on a seasonal basis whereas the Cadillac and Lake City is now in bankruptcy awaiting abandonment. Two of the Class I carriers -- the Ann Arbor and the Penn Central -- are also in bankruptcy and are being reorganized at the national level into a quasi-public carrier. However, none of the Ann Arbor or Penn Central trackage in this Region has been included in the final system plan for the creation of the ConRail System. The Ann Arbor Railroad operates between McBain and Frankfort with carferry routes from Frankfort to Wisconsin. The Penn Central traverses the Region north-south from Cadillac to Mackinaw City via Kalkaska and Potoskey. A Penn Central branch line extends from Walton Junction to Traverse City. The third major carrier in the Region is the Chessie System, a solvent carrier operating a light density branch line from Manistee to Petoskey via Traverse City. The Chessie made application for abandonment with the Interstate Commerce Commission in March of 1975 for this whole line including appending branches to Suttons Bay and Elk Rapids. Service to Manistee would not be affected by these applications.

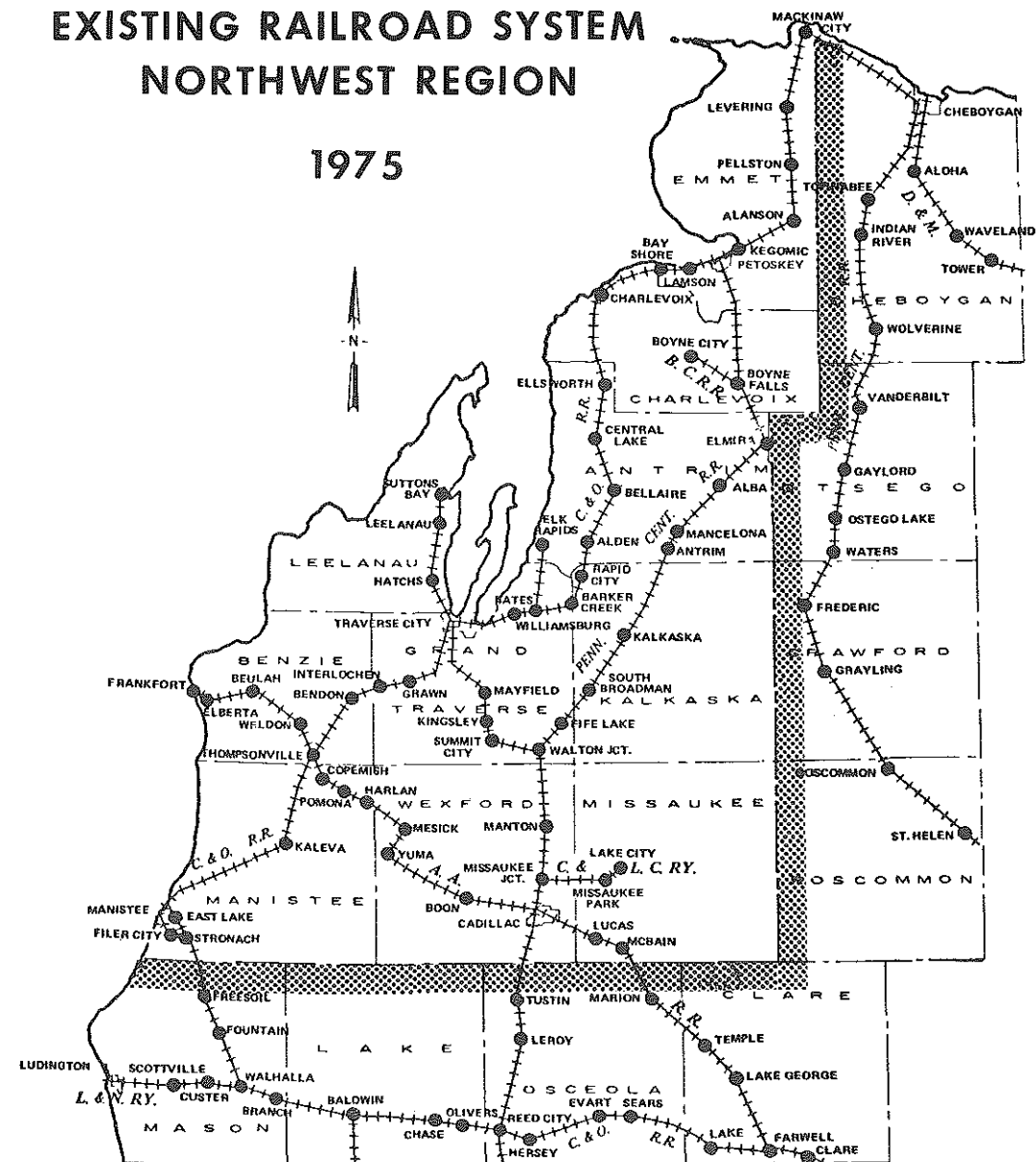
The continuation of railroad service on almost all of the tracks in the Region will require subsidy programs, changes in ownership, and other innovative solutions. Despite these efforts, limited abandonment may occur. In any case, additional, in-depth analyses will have to be made to determine how to provide adequate rail service in the Region.

STUDY OBJECTIVES

The objectives of this study, in consonance with the Michigan State Railroad Planning Goals, are to ascertain:

1. Which facilities should be retained?
2. Which facilities should be upgraded?
3. What types of service should be provided to meet the present and anticipated rail transport needs of the Region?
4. What would be the initial costs of proposed actions?

EXISTING RAILROAD SYSTEM NORTHWEST REGION



Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

The information presented in this report does not provide complete answers to these questions; more analyses will have to be performed as the study continues. Nevertheless, the data presented herein should provide a partial basis upon which to judge the relative merits of the proposed alternatives. It is hoped that readers of this report will comment on the nature of the data, the study procedures, and possible methods or topics for future analysis.

STUDY PROCEDURES

With the railroad situation in such a state of flux regarding short and long range plans, two approaches have been undertaken for evaluating transportation system needs in the Region.

First, a long range approach is used involving a number of possible system alternatives. The configurations of these alternatives range from retention of the current network to provision of service only to major activity centers. Intermediate configurations represent abandonments that may occur as a result of federal decisions, or abandonments that might be possible with minimal impact on the social and economic systems of the Region. Each of the alternatives is displayed on pages 66 to 70 and is accompanied by a brief description.

Second, a short range approach was undertaken to measure the interdependence of the railroad network and the highway network. An analysis method was developed which, through the inclusion of highway and railroad data, contributes to the determination of the multi-modal capabilities of the transportation systems in the Region.

LONG RANGE APPROACH

The area chosen for analysis includes the railroad network in the ten-county Northwest Region. The system subjected to analysis was made up of the following segments or subsystems:

1. The Ann Arbor line from Clare to Frankfort.
2. The Penn Central line from Reed City to Mackinaw City including the Walton Junction branch to Traverse City.
3. The Chessie line from Clare to Ludington.
4. The Chessie line from Walhalla to Petoskey via Manistee and Traverse City, with branch lines to Northport and Elk Rapids.
5. The Cadillac and Lake City system.
6. The Boyne City Railroad.

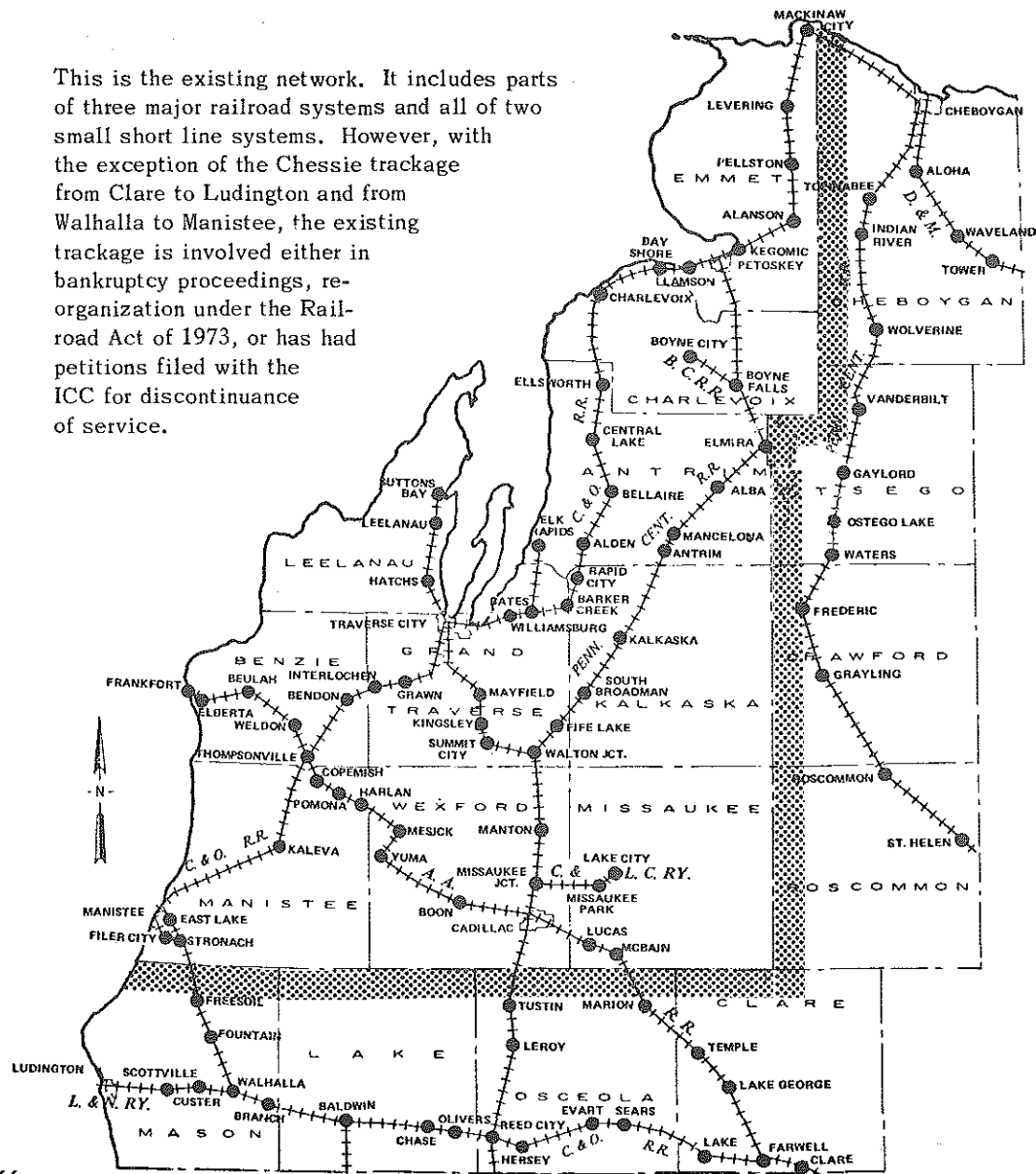
Network Alternatives

A systematic analysis requires that a number of possible alternatives be generated so that positive and negative aspects of each can be weighed against one another; therefore, nine alternative rail networks have been formulated. These are shown on the following maps.

RAIL ALTERNATE 1

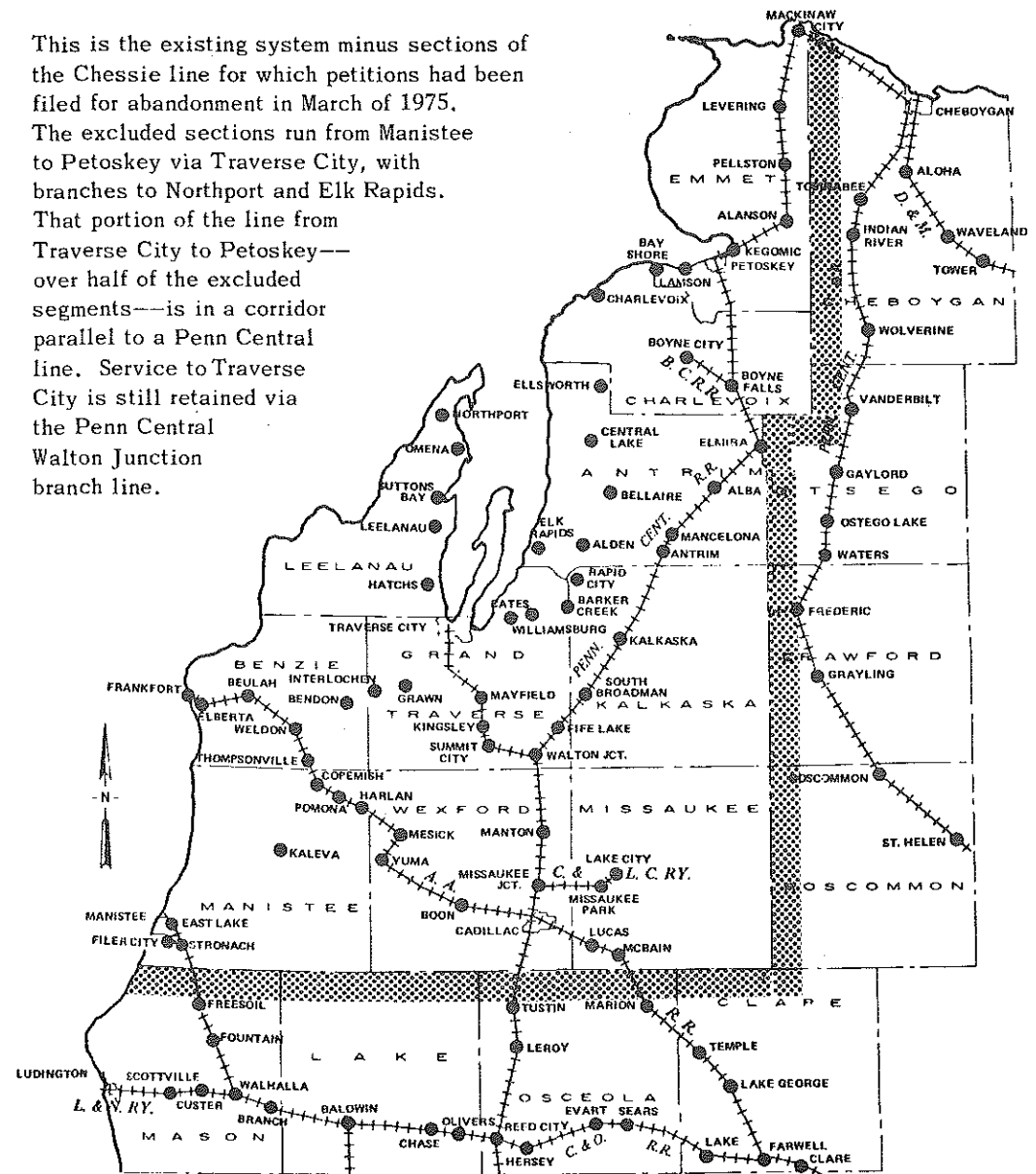
EXISTING SYSTEM

This is the existing network. It includes parts of three major railroad systems and all of two small short line systems. However, with the exception of the Chessie trackage from Clare to Ludington and from Walhalla to Manistee, the existing trackage is involved either in bankruptcy proceedings, reorganization under the Railroad Act of 1973, or has had petitions filed with the ICC for discontinuance of service.



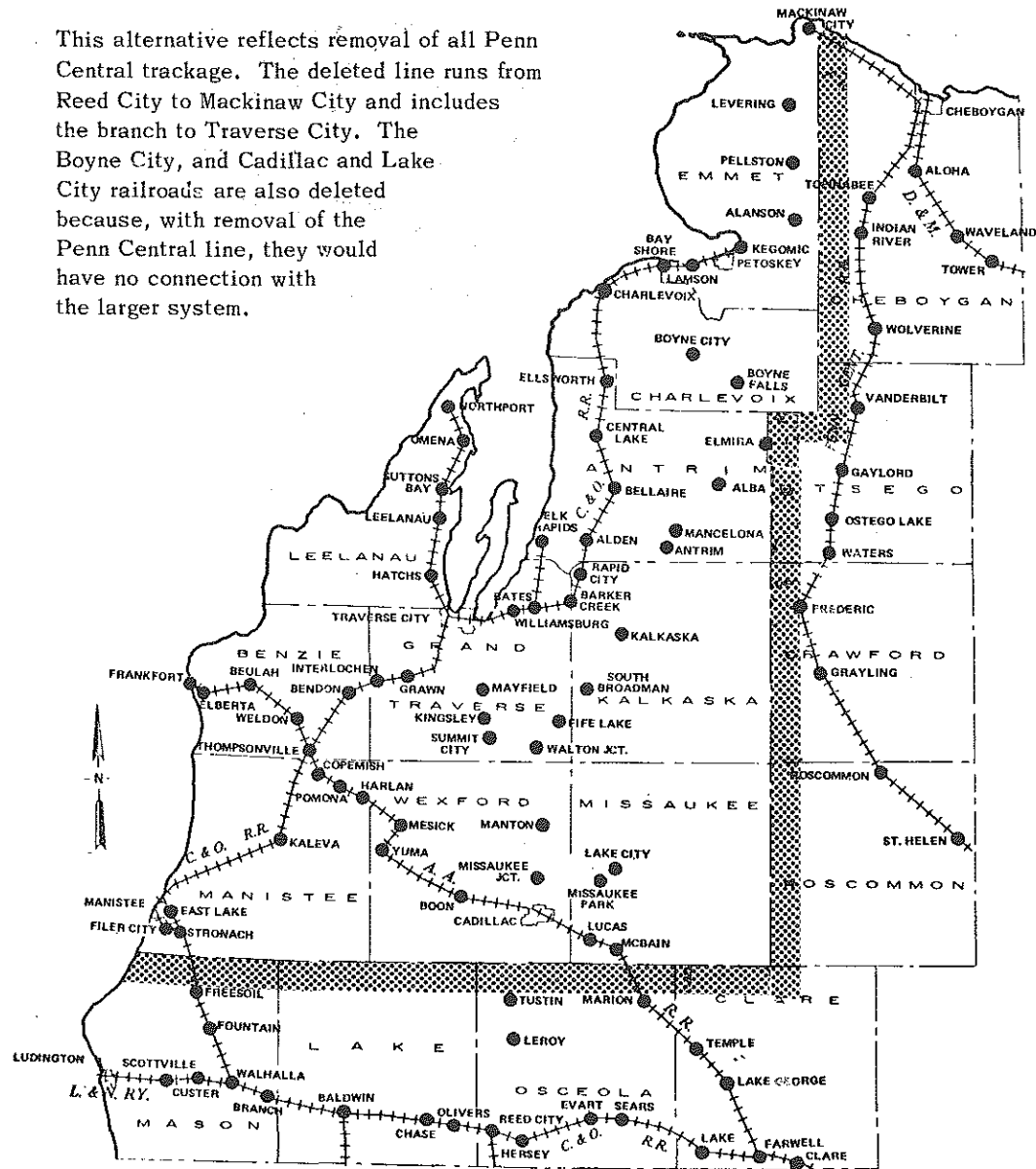
RAIL ALTERNATE 2

This is the existing system minus sections of the Chessie line for which petitions had been filed for abandonment in March of 1975. The excluded sections run from Manistee to Petoskey via Traverse City, with branches to Northport and Elk Rapids. That portion of the line from Traverse City to Petoskey—over half of the excluded segments—is in a corridor parallel to a Penn Central line. Service to Traverse City is still retained via the Penn Central Walton Junction branch line.



RAIL ALTERNATE 3

This alternative reflects removal of all Penn Central trackage. The deleted line runs from Reed City to Mackinaw City and includes the branch to Traverse City. The Boyne City, and Cadillac and Lake City railroads are also deleted because, with removal of the Penn Central line, they would have no connection with the larger system.



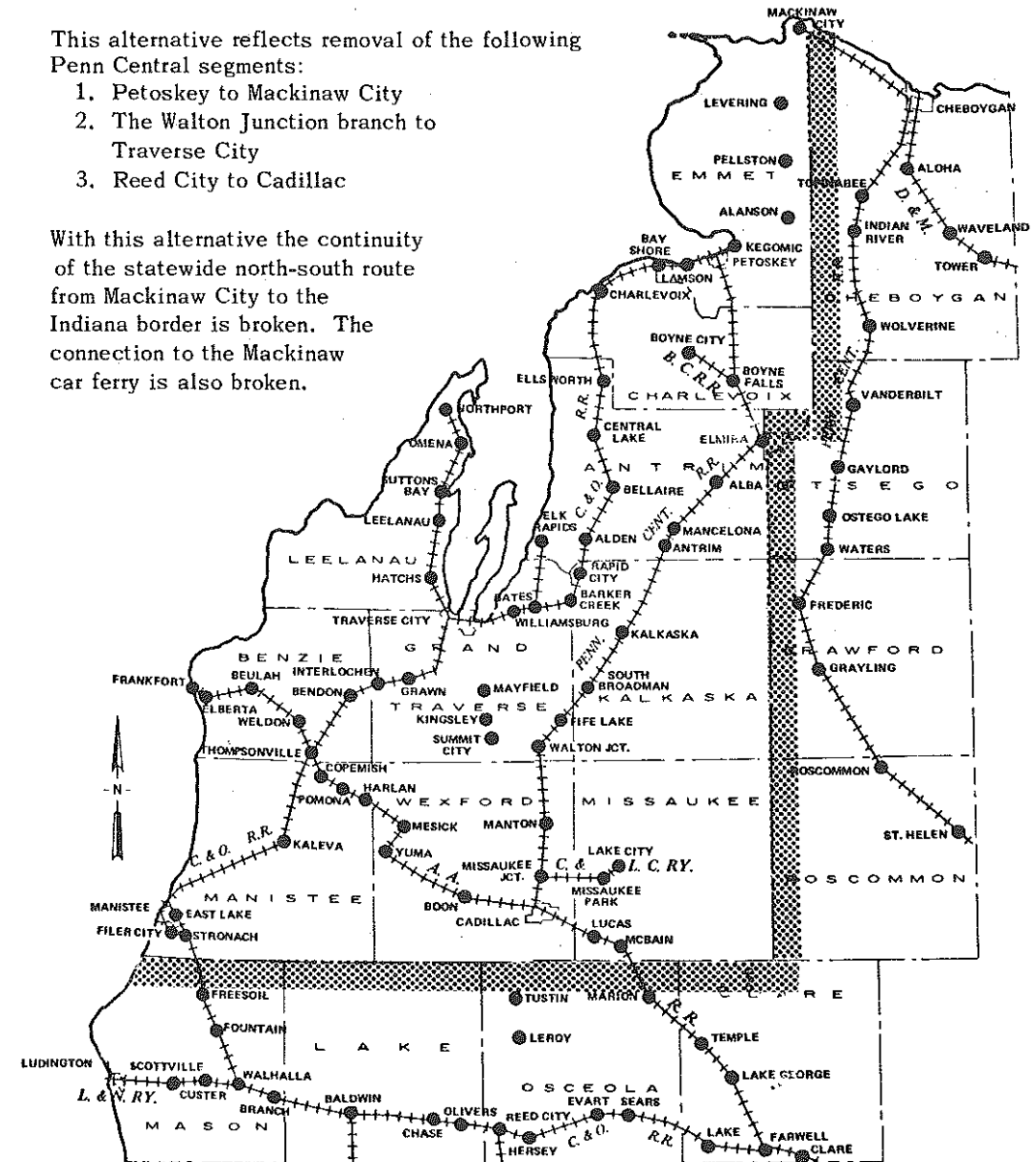
Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

RAIL ALTERNATE 4

This alternative reflects removal of the following Penn Central segments:

1. Petoskey to Mackinaw City
2. The Walton Junction branch to Traverse City
3. Reed City to Cadillac

With this alternative the continuity of the statewide north-south route from Mackinaw City to the Indiana border is broken. The connection to the Mackinaw car ferry is also broken.

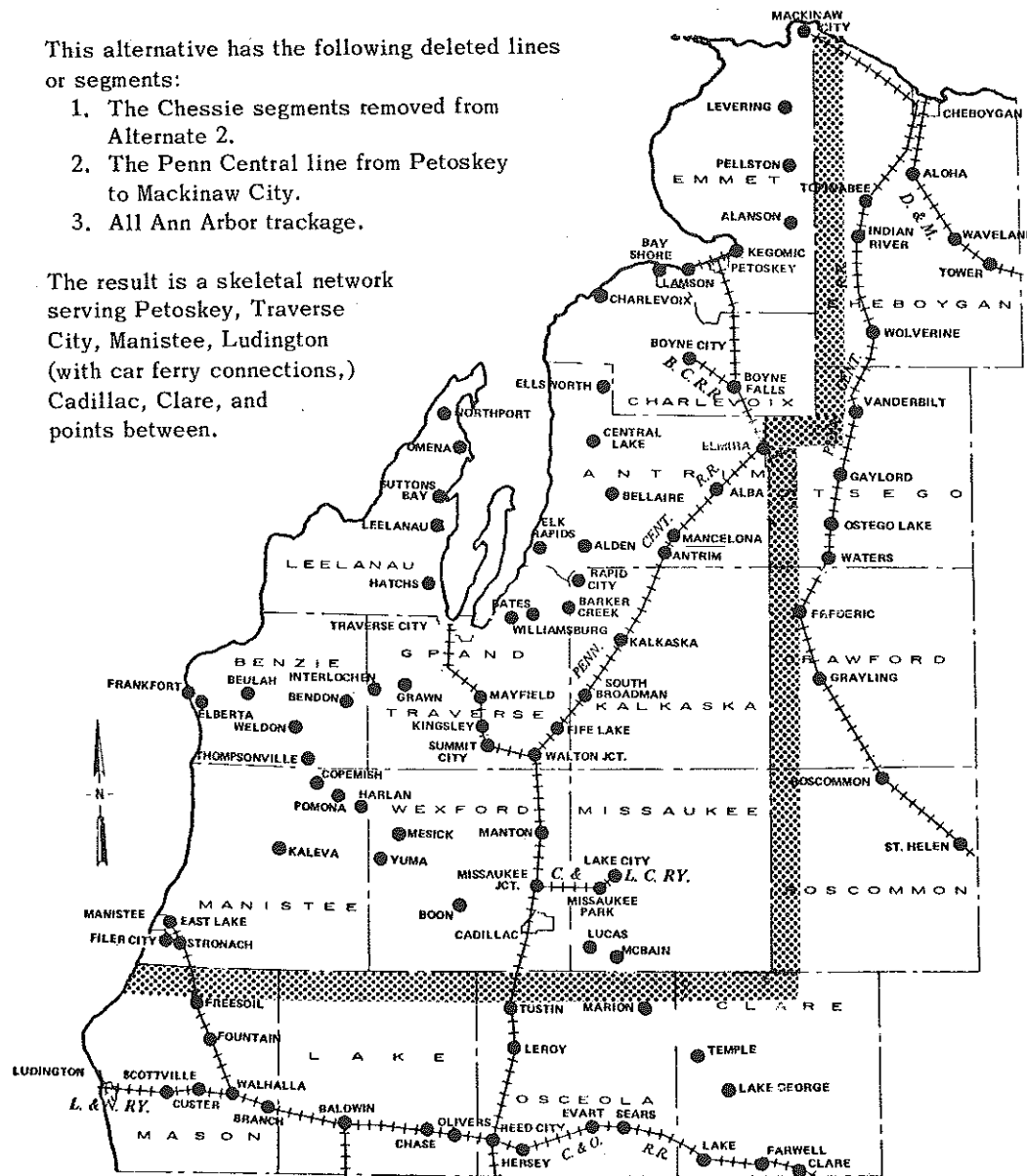


RAIL ALTERNATE 5

This alternative has the following deleted lines or segments:

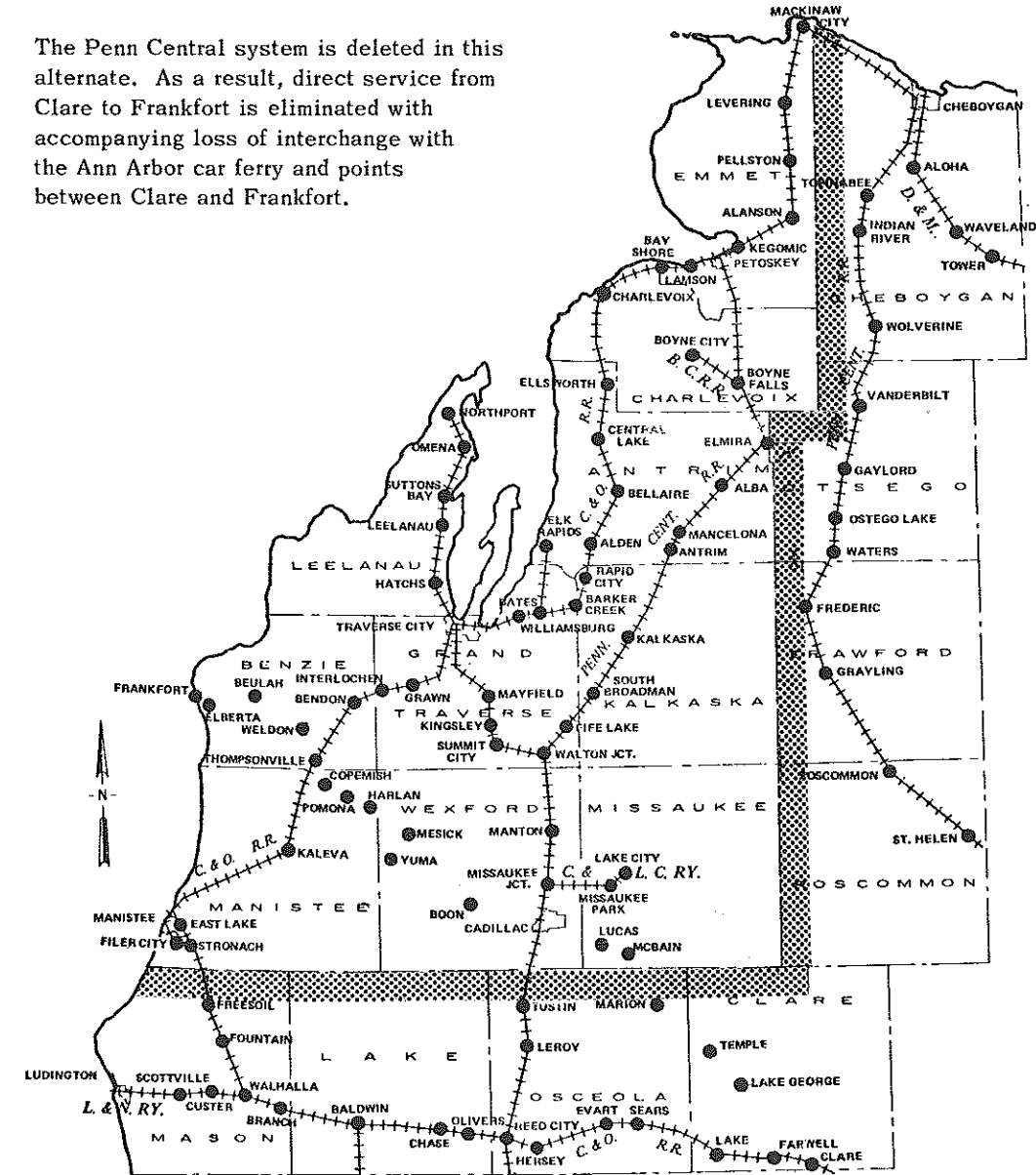
1. The Chessie segments removed from Alternate 2.
2. The Penn Central line from Petoskey to Mackinaw City.
3. All Ann Arbor trackage.

The result is a skeletal network serving Petoskey, Traverse City, Manistee, Ludington (with car ferry connections,) Cadillac, Clare, and points between.



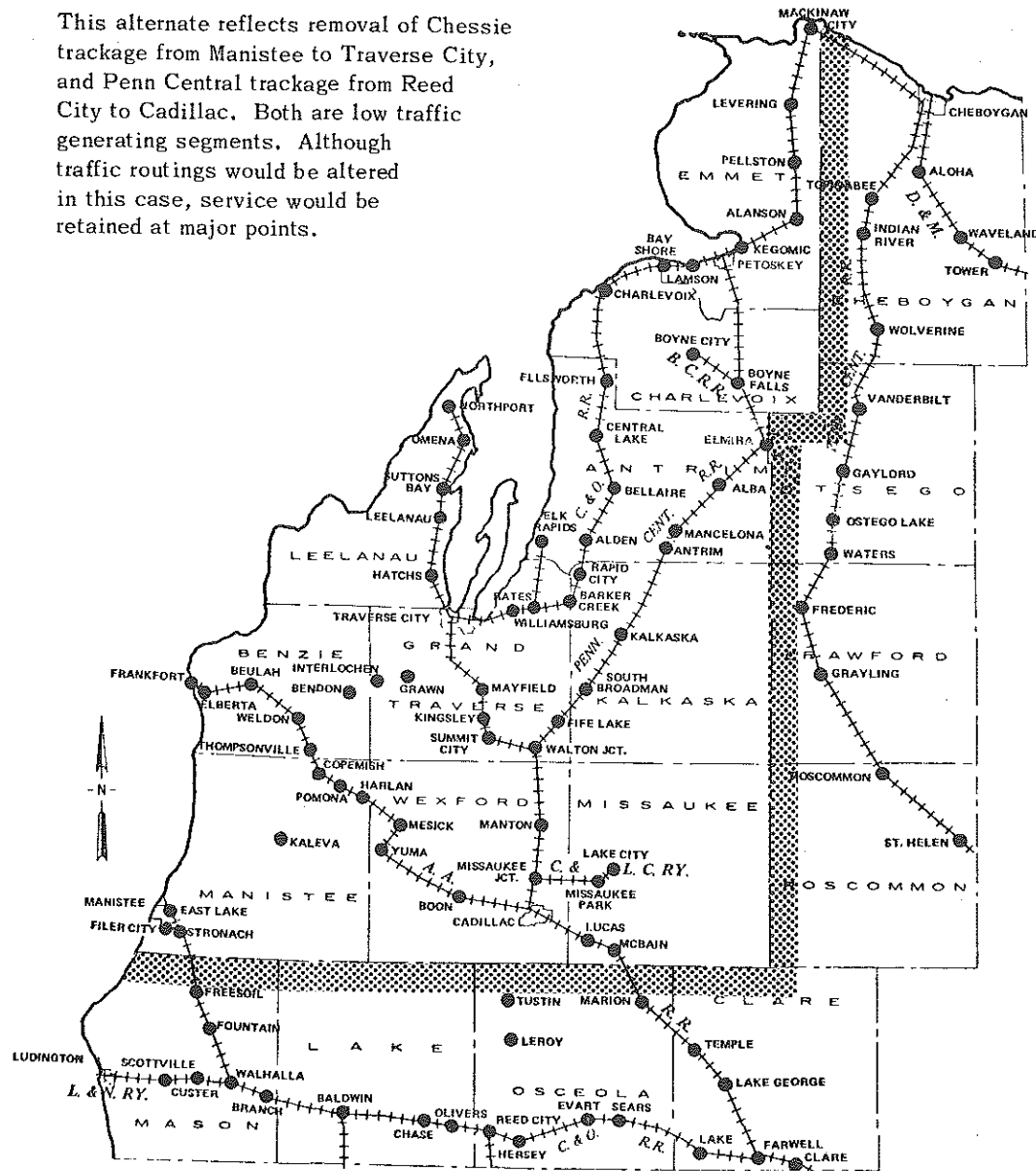
RAIL ALTERNATE 6

The Penn Central system is deleted in this alternate. As a result, direct service from Clare to Frankfort is eliminated with accompanying loss of interchange with the Ann Arbor car ferry and points between Clare and Frankfort.



RAIL ALTERNATE 7

This alternate reflects removal of Chessie trackage from Manistee to Traverse City, and Penn Central trackage from Reed City to Cadillac. Both are low traffic generating segments. Although traffic routings would be altered in this case, service would be retained at major points.



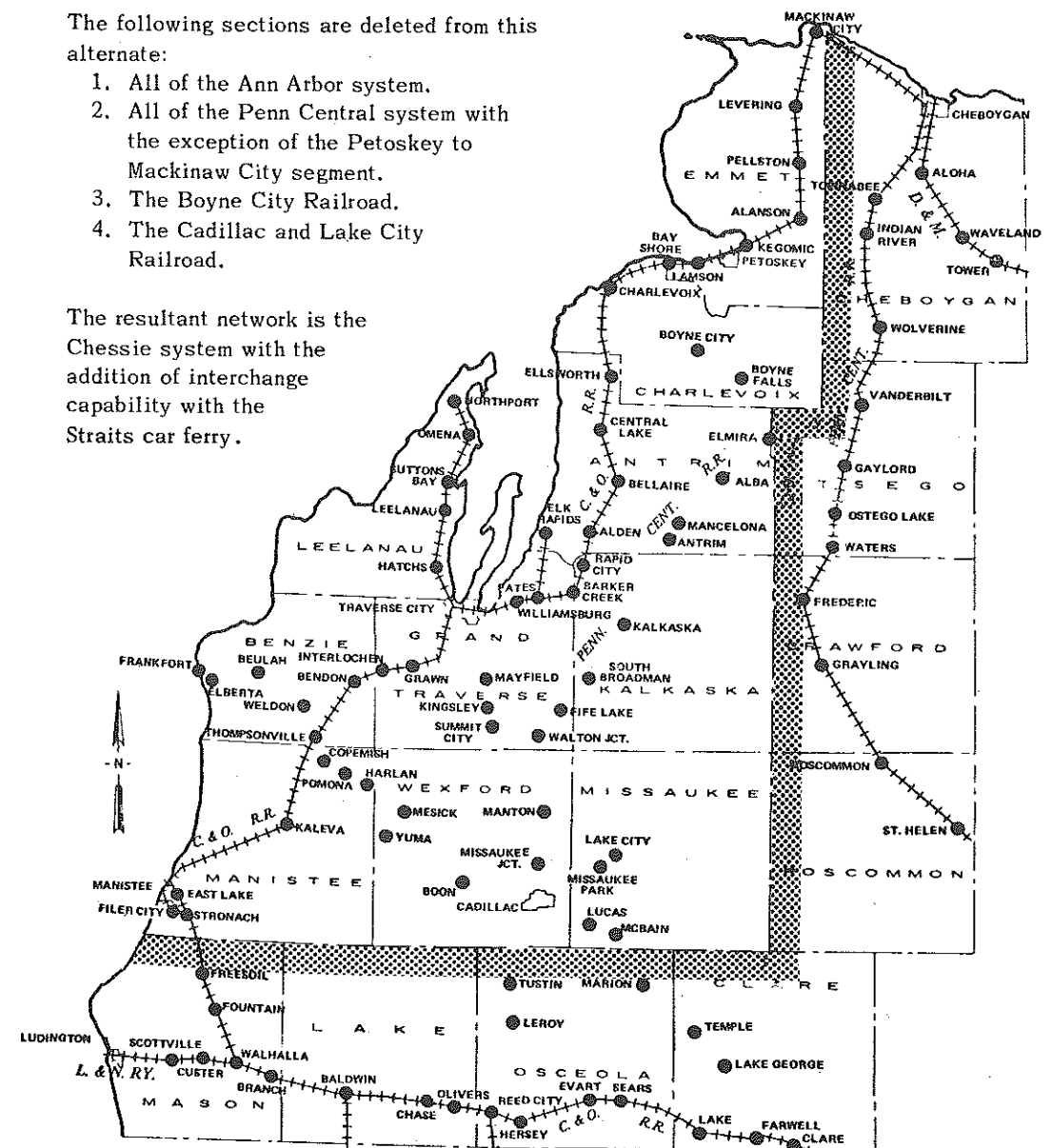
Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

RAIL ALTERNATE 8

The following sections are deleted from this alternate:

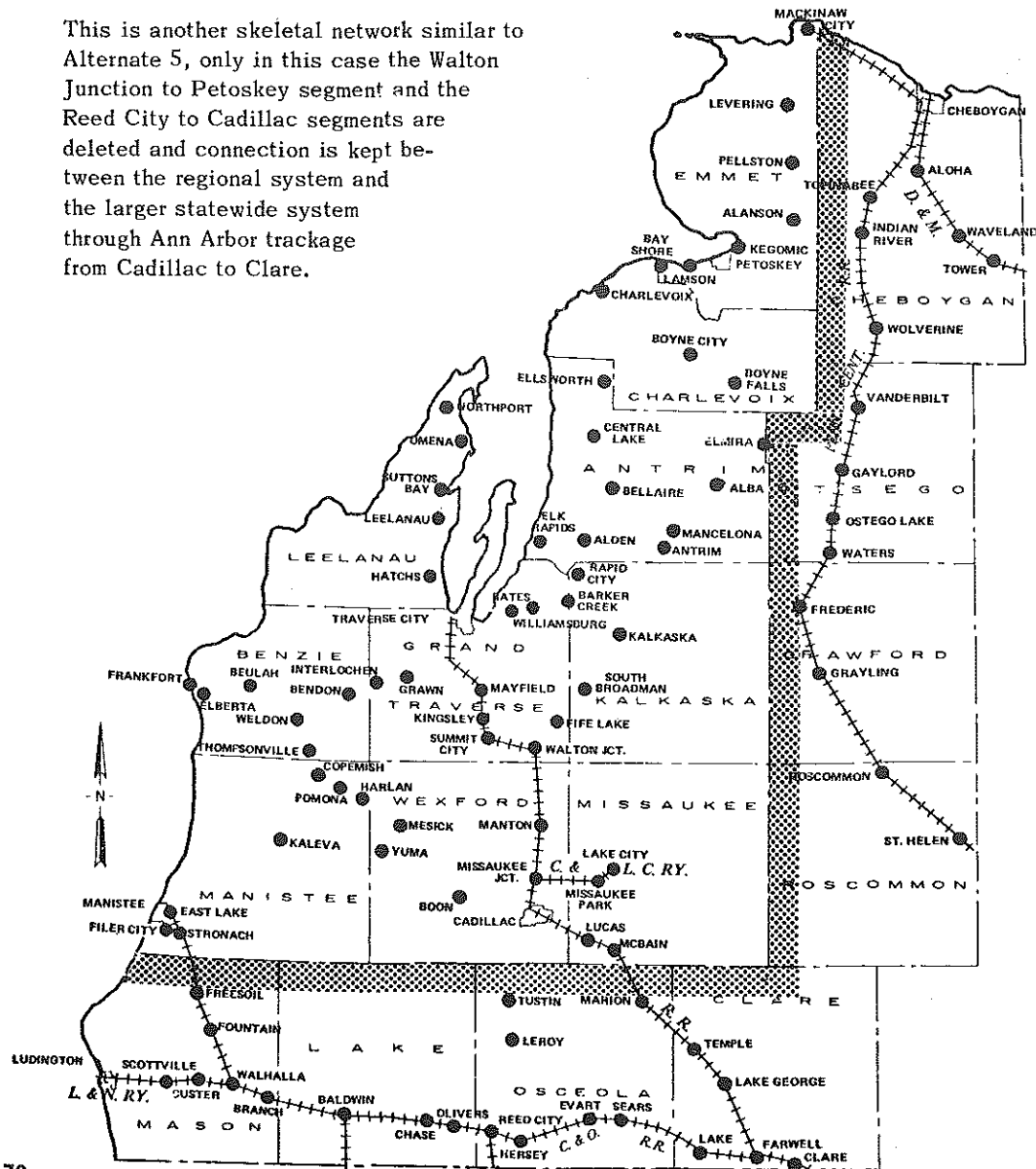
1. All of the Ann Arbor system.
2. All of the Penn Central system with the exception of the Petoskey to Mackinaw City segment.
3. The Boyne City Railroad.
4. The Cadillac and Lake City Railroad.

The resultant network is the Chessie system with the addition of interchange capability with the Straits car ferry.



RAIL ALTERNATE 9

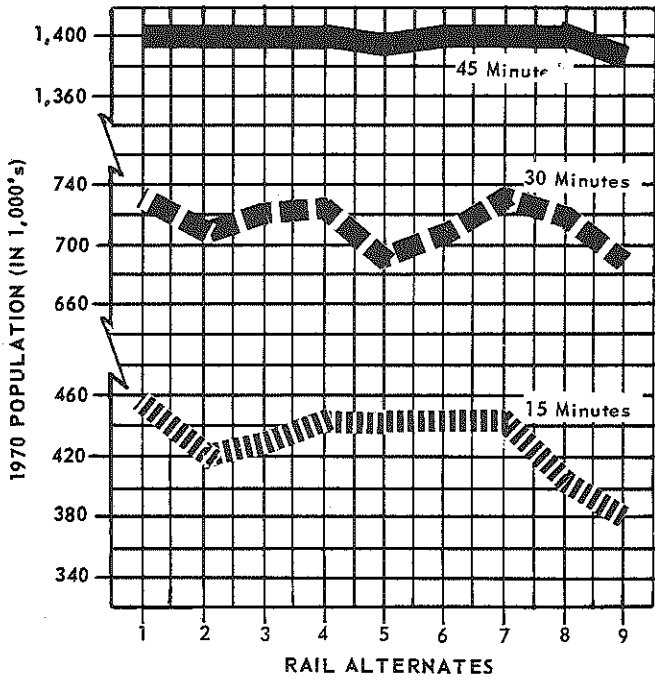
This is another skeletal network similar to Alternate 5, only in this case the Walton Junction to Petoskey segment and the Reed City to Cadillac segments are deleted and connection is kept between the regional system and the larger statewide system through Ann Arbor trackage from Cadillac to Clare.



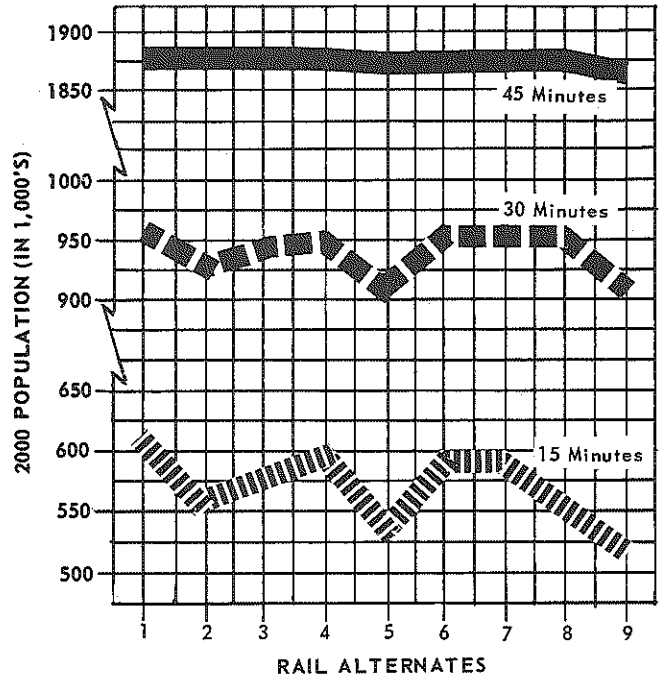
Network Analysis

The objective of the Location Team is to measure the social, economic, and environmental impacts of proposed changes in rail service as fully as these impacts are measured for proposed changes in highway service. Because the major issue at this time is one concerning which lines, if any, should be abandoned, Team members are working on ways to measure the impacts of abandonment. A series of proximity analyses have been run to determine how much economic activity is within possible service ranges of certain rail terminals, and how much activity is served by more than one terminal. Analysis of this information should help to determine which lines, if any, can be abandoned with minimal adverse impact to the Region. Results of these proximity runs are presented on pages 71 and 72.

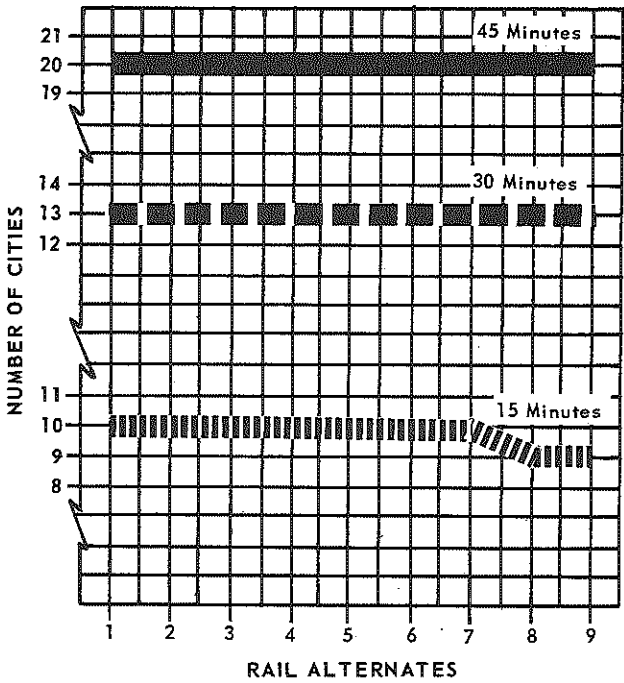
ACCESSIBILITY OF POPULATION TO ONE OR MORE RAIL STATIONS



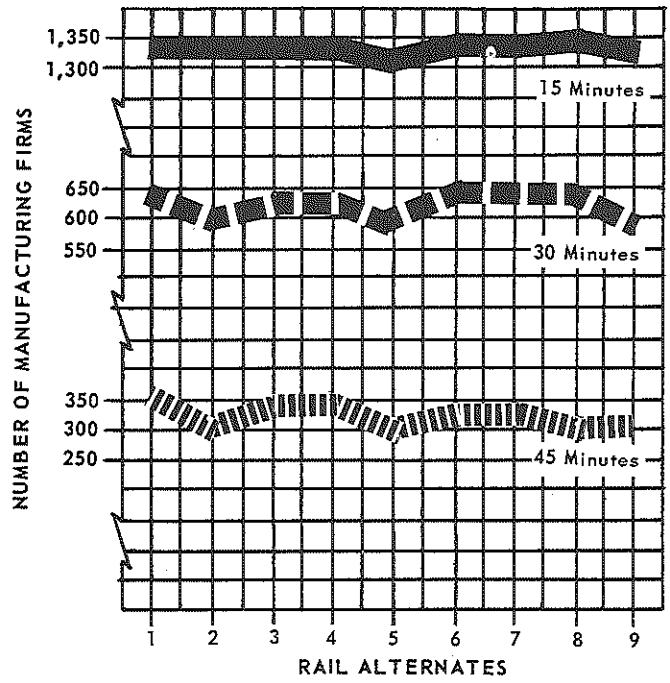
ACCESSIBILITY OF YEAR 2000 POPULATION TO ONE OR MORE RAIL STATIONS



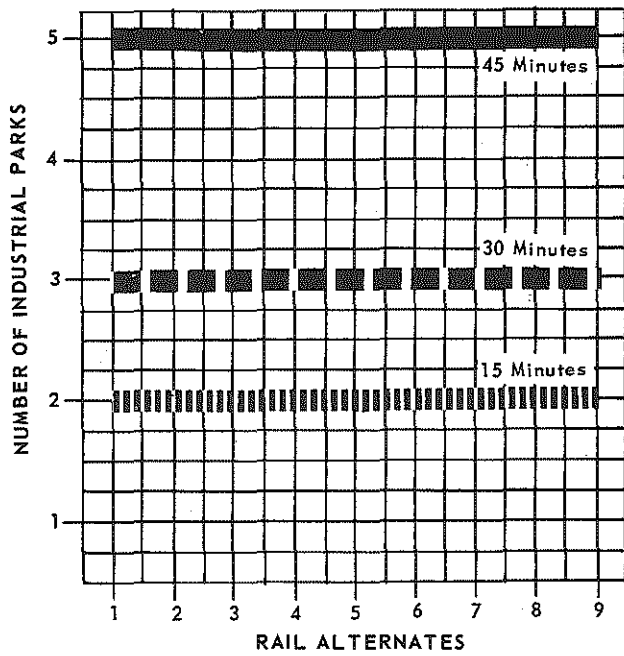
ACCESSIBILITY OF CITIES OVER 5000 POPULATION TO ONE OR MORE RAIL STATIONS



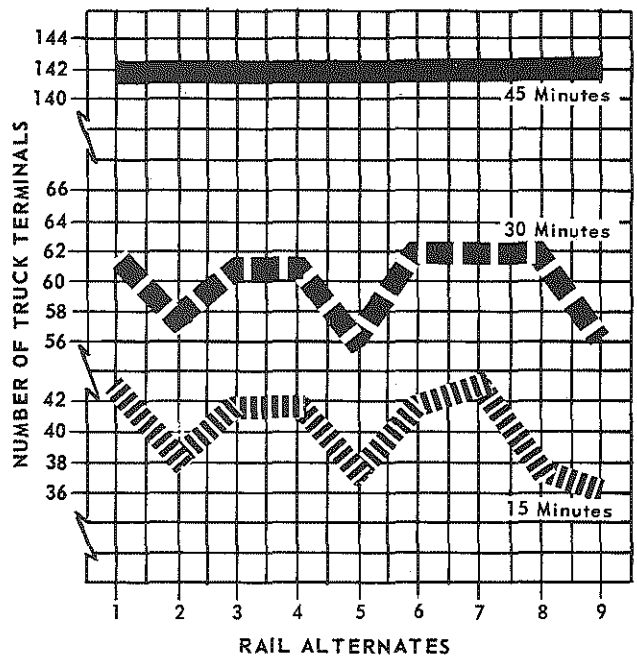
ACCESSIBILITY OF MANUFACTURING FIRMS TO ONE OR MORE RAIL STATIONS



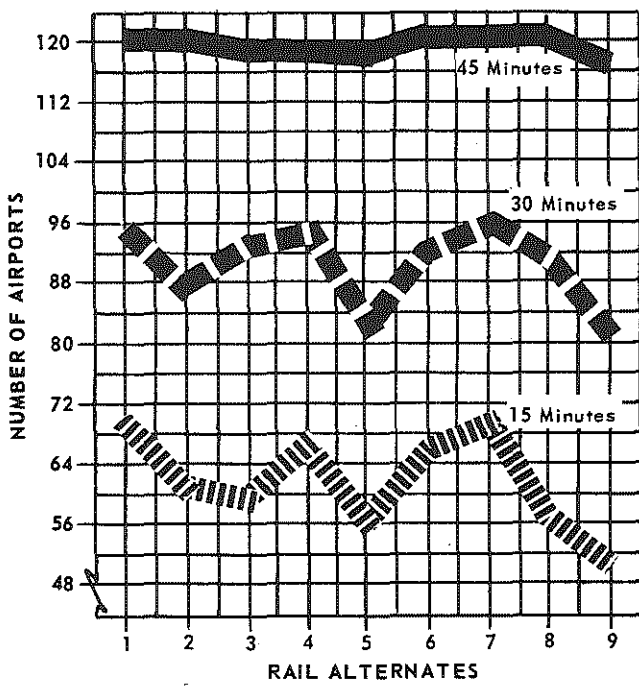
ACCESSIBILITY OF INDUSTRIAL PARKS TO ONE OR MORE RAIL STATIONS



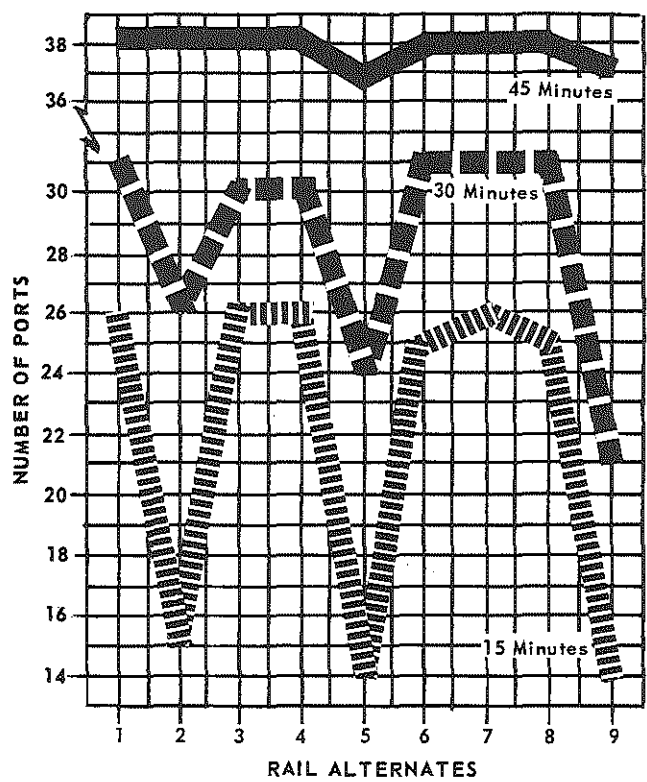
ACCESSIBILITY OF TRUCK TERMINALS TO ONE OR MORE RAIL STATIONS



ACCESSIBILITY OF AIRPORTS TO ONE OR MORE RAIL STATIONS



ACCESSIBILITY OF PORTS TO ONE OR MORE RAIL STATIONS



EXISTING LEVELS OF SERVICE (CARS AND TRUCKS)

SHORT RANGE APPROACH

As stated previously, questions have arisen relative to the need for new highways if rail service is improved sufficiently so that a considerable amount of highway traffic shifts onto the rail network. Conversely, if all the railroad service in the Northwest Region were to be abandoned it has been suggested that the resulting truck movements would seriously overload the highway facilities—present or planned.

These two hypotheses have been tested in their most extreme cases. First, railroad service was assumed to be so improved in the Region that all highway traffic that had any potential of being moved by railroads was removed from the highway network. Of interest was whether the removal of this portion of highway traffic would sufficiently decrease the demand for new highway facilities. And second, railroad service was assumed to be completely abandoned in the whole Region and the carloads of railroad traffic were converted to highway truckloads and added to the existing highway loads. Of interest was whether this incremental traffic was significant regarding decisions for new facilities. What actually happens in the future will be somewhere in between these two extreme cases. A realistic situation would not require capacity increasing improvements given that neither of these polar cases revealed the need for such improvements.

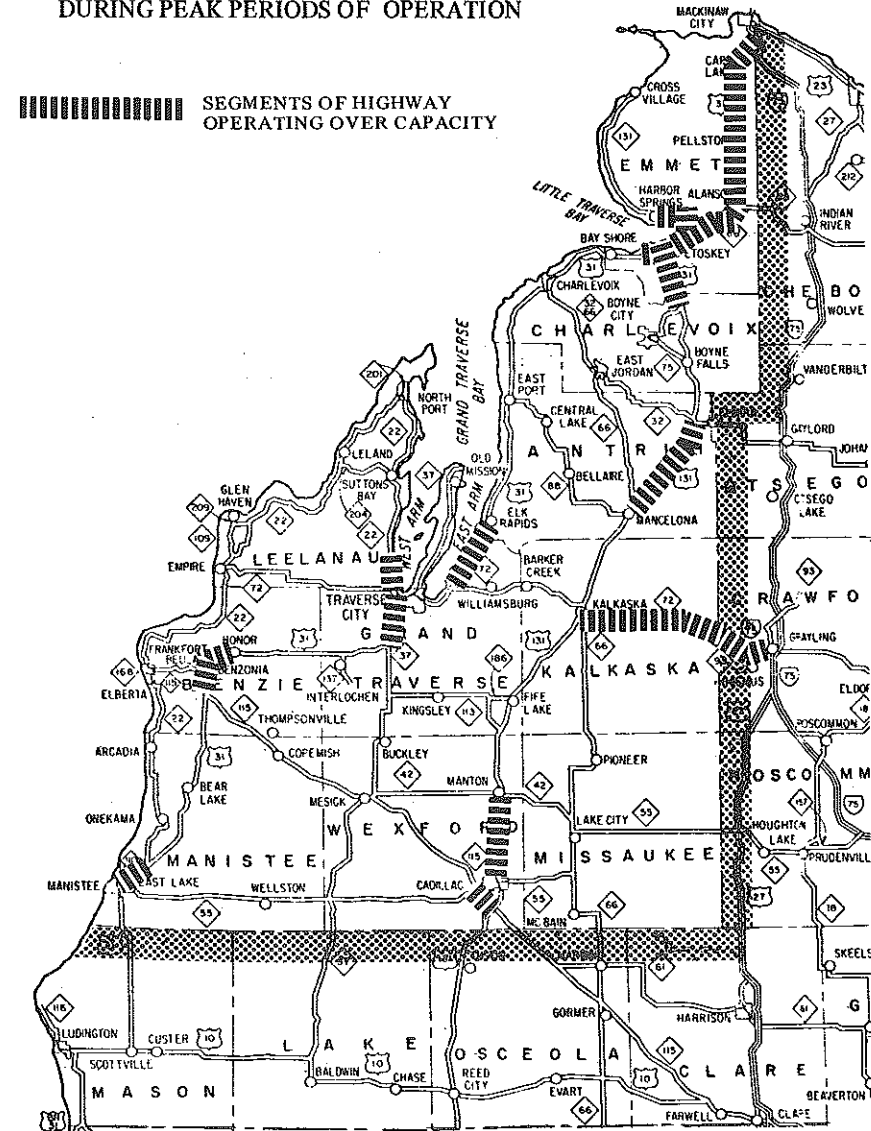
The existing Levels of Service on the highway network were calculated to be used as a basis of comparison for the two cases. Level of Service was defined on page 17 as “the condition under which a highway functions given a certain capacity and traffic volume”. There are six commonly recognized classes—A, B, C, D, E, and F—ranging from unrestricted traffic movement to frequent stops.

The analysis being discussed sought to determine the change in Level of Service for each case when compared to the existing conditions.

In this analysis, trucks were factored by 4.69 to yield passenger car equivalents for the calculations. The Highway Capacity Manual¹ prescribes conversion factors of 2.5 and 5.0 for trucks to passenger car equivalents on level and rolling terrain, respectively. Pro-rating each factor for the applicable miles of trunk line with such characteristics yielded the 4.69 composite factor. Factoring the truck component of the traffic volume into passenger car equivalents provided a more representative assessment of current levels of service as shown on the following map.

¹Highway Capacity Manual; Highway Research Board, Special Report No. 87; 1965.

THE CURRENT HIGHWAY TRAFFIC SITUATION
DURING PEAK PERIODS OF OPERATION

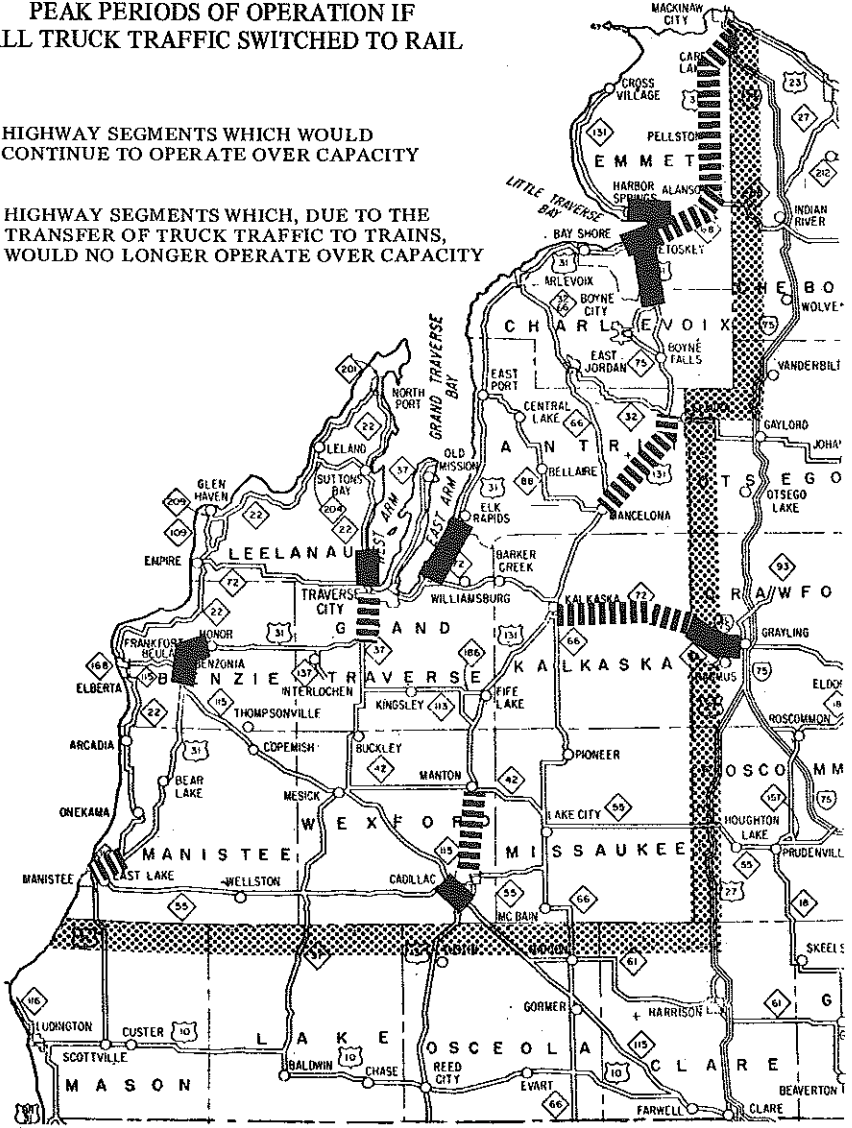


NOTE: Levels of Service calculations are based upon 1970 highway traffic data. The inconsistencies with the map on page 4 are the result of car/truck conversions as explained in the “note” in the left-hand column on page 17.

LEVELS OF SERVICE (CARS ONLY)

THE HIGHWAY TRAFFIC SITUATION DURING
PEAK PERIODS OF OPERATION IF
ALL TRUCK TRAFFIC SWITCHED TO RAIL

- ▨ HIGHWAY SEGMENTS WHICH WOULD CONTINUE TO OPERATE OVER CAPACITY
- ▨ HIGHWAY SEGMENTS WHICH, DUE TO THE TRANSFER OF TRUCK TRAFFIC TO TRAINS, WOULD NO LONGER OPERATE OVER CAPACITY



Next, the truck component of the traffic volumes was completely deleted and the Levels of Service were calculated again. The assumption that all of this service could be provided by the railroad mode is an exaggeration in that some of the truck traffic is light-duty, local service vehicles and would not transfer to rail. Using this "total transfer" theory, approximately 47 miles of highway that were operating at "unacceptable" levels of service in the existing situation attained "acceptable" levels of service as shown on the accompanying map. Actual differences were in the 100 vehicles per day range.

When assessing the significance of the amount of highway improved by this theoretical transfer (about 1/3 of that rated over capacity) the exaggeration of the underlying assumptions cannot be overstated. Clearly, not all truck traffic could be removed from the highway network and transferred to rail. For instance, not all freight lends itself to train earloads, not all trips are of a length to make the transfer economical, and not all shippers and receivers are conveniently located near a rail facility. Furthermore, areas of noticeable improvement occur around urban areas where short-haul, local service truck travel would continue to operate regardless of the availability of rail service. These realistic situations tend to de-emphasize the significance of the amount of highway which appears to be improved by the transfer as shown on the map.



Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

NOTE: Levels of Service calculations are based upon 1970 highway traffic data.

LEVELS OF SERVICE

(CARS, TRUCKS AND RAIL FREIGHT CONVERTED TO HIGHWAYS)

THE HIGHWAY TRAFFIC SITUATION DURING
PEAK PERIODS OF OPERATION IF
ALL FREIGHT WERE TRANSFERRED FROM RAIL TO TRUCKS

- 
 HIGHWAY SEGMENTS WHICH WOULD CONTINUE TO OPERATE OVER CAPACITY
- 
 ADDITIONAL HIGHWAY SEGMENTS WHICH WOULD OPERATE OVER CAPACITY IF RAIL FREIGHT WERE TRANSFERRED TO TRUCKS



NOTE: Levels of service calculations are based upon 1970 highway traffic data and 1972 railroad data, the closest complementary statistics available.

The third and final step in this analysis was to take all the railroad traffic off the railroad network, convert the rail carloads to truckloads, factor the truckloads for passenger car equivalents and calculate the third set of levels of service. Conversion of rail carloads to truckloads was accomplished by using a factor of 3.1 which suggests that 3.1 trucks would be necessary to haul the contents of one railroad car. This factor was derived by dividing tons of freight carried by trucks in the United States in 1972 by the number of truckloads hauled in the United States in 1972 and by dividing the answer into the average weight of a carload of freight in the United States in 1972. The major variable in such a factor is the commodity being moved but such precision was considered inappropriate for the purposes of this analysis. Comparing these levels of service to the existing situation showed few highway segments altered from one level to a worse level. Only one additional segment dropped to an "unacceptable" level. This is shown on the adjacent map.

In conclusion, it is apparent that whether the railroads in the Northwest cease operation altogether or provide all the service currently provided by both modes of transportation, very little difference would occur with regard to the planning of new or upgraded highway trunk line facilities. This is not to say that major and minor county arterials with seasonal weight restrictions or bridge restrictions would not be impacted by abandonment of railroads. Nor does this analysis purport to account for the community impacts of loss of railroad service such as loss of income, unemployment, tax losses, business closings, reduced accessibility, etc. The Railroad Planning Section, in developing the State railroad plan, is independently assessing the community impacts associated with loss of rail service on a segment by segment basis. What this analysis does indicate is that planning can progress in the Northwest Regional Transportation Study even in the uncertain environment surrounding the status of railroad operations in the Region.

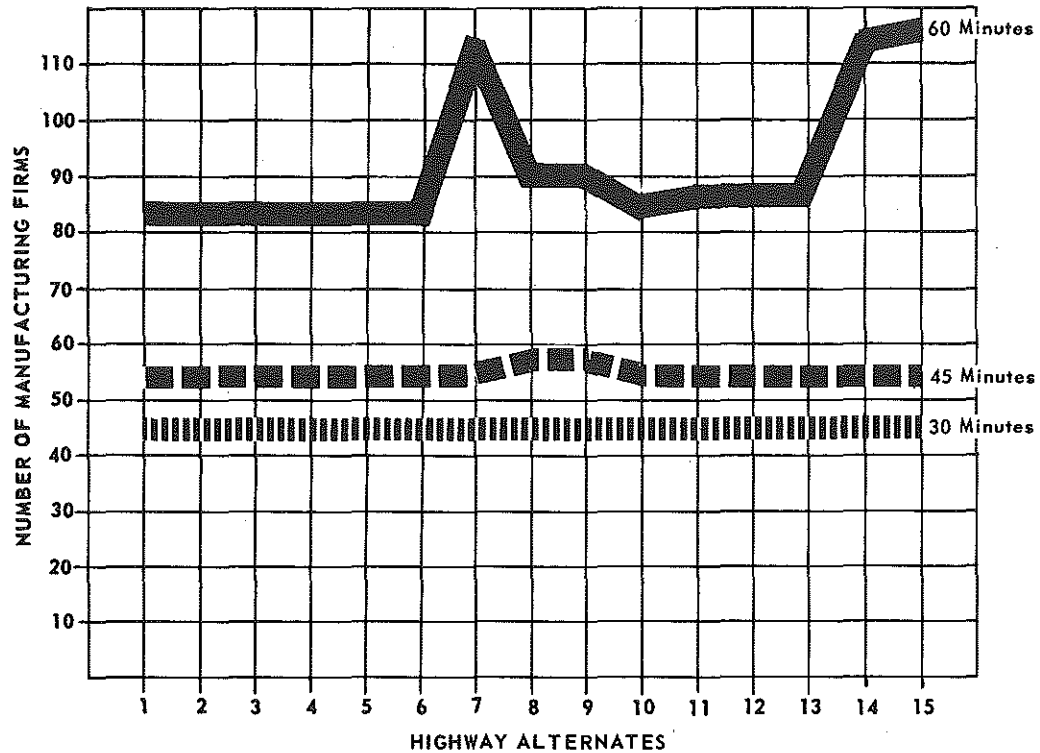
Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

Accessibility of Manufacturing Firms To Rail Stations

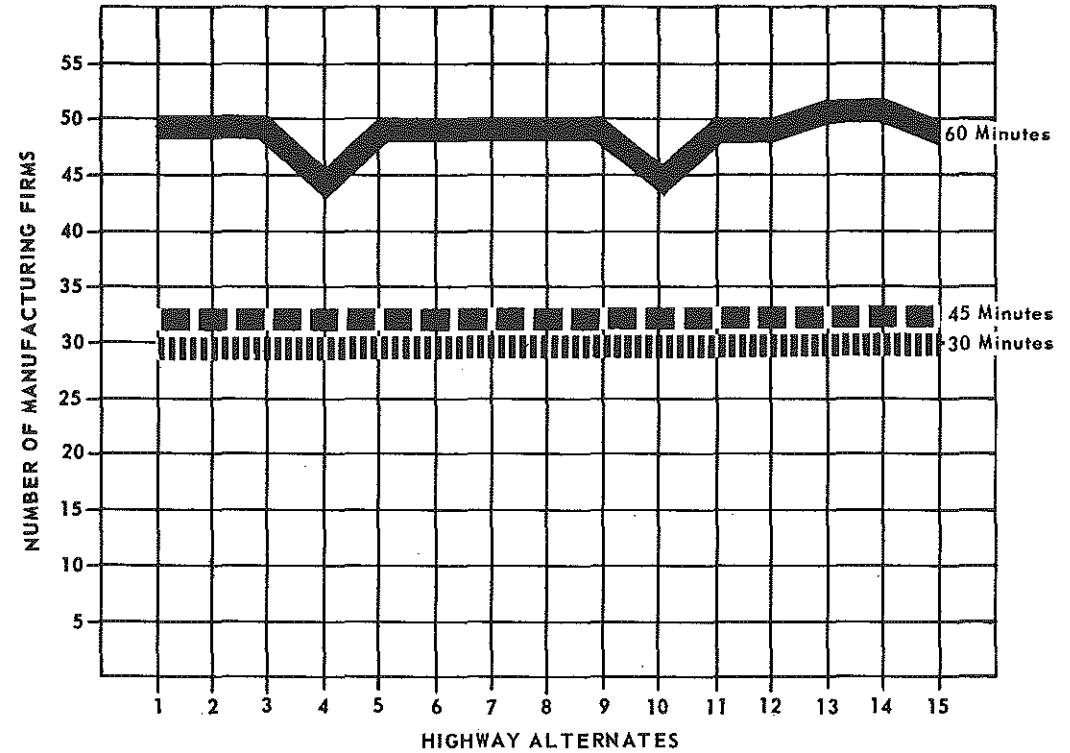
The following graphs show one of the relationships between the various highway alternates and existing railroad stations. Indicated are the number of manufacturing firms within 30, 45 and 60 minutes driving time of rail stations located within the major cities in the Region and relevant adjacent areas.

Sources used for this study were The Directory of Michigan Manufacturers, 1971 and "The Official Railway Map of the State of Michigan".

**ACCESSIBILITY OF MANUFACTURING FIRMS
TO THE RAIL STATION IN CADILLAC**

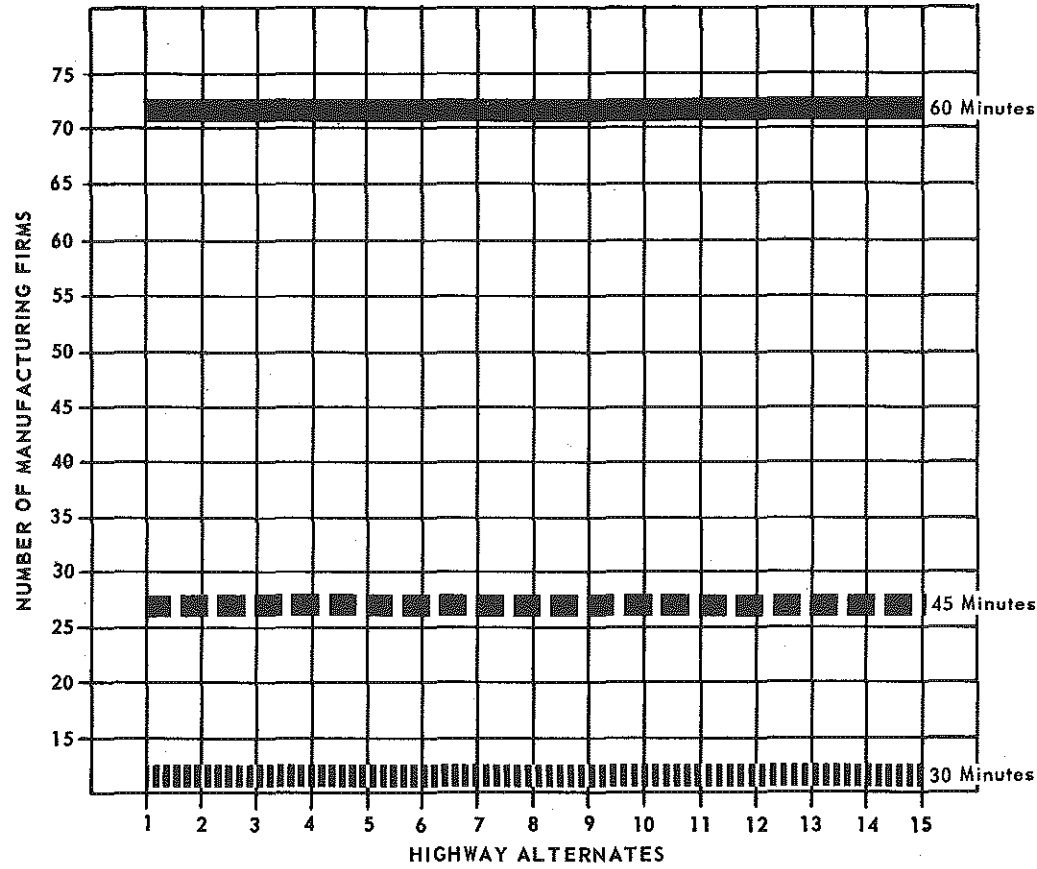


**ACCESSIBILITY OF MANUFACTURING FIRMS
TO THE RAIL STATION IN CHARLEVOIX**

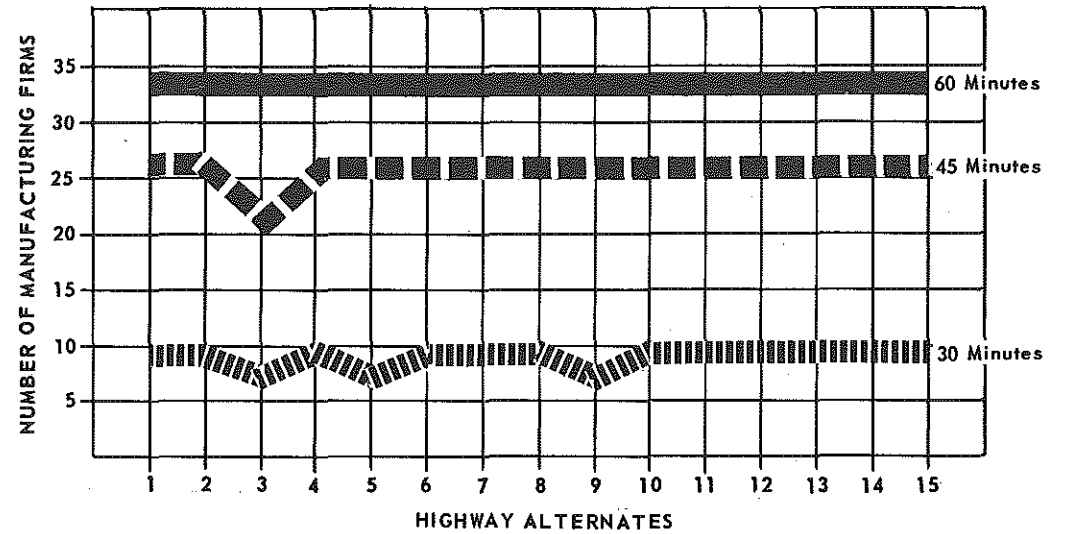


Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

**ACCESSIBILITY OF MANUFACTURING FIRMS
TO THE RAIL STATION IN GAYLORD**

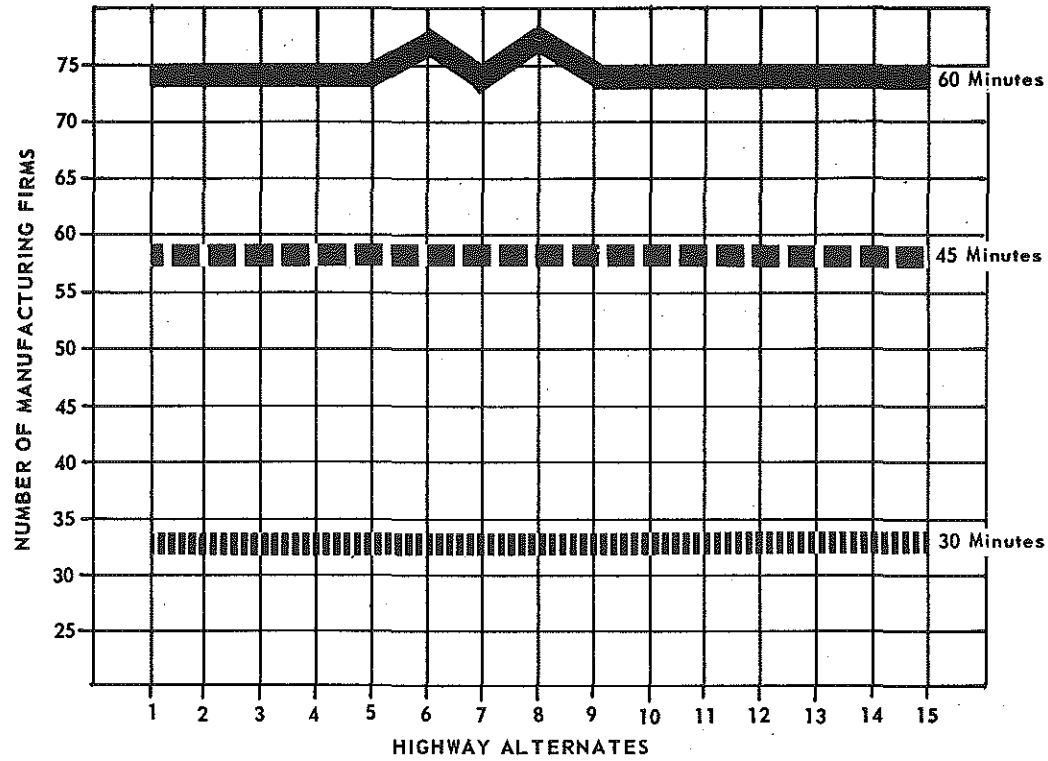


**ACCESSIBILITY OF MANUFACTURING FIRMS
TO THE RAIL STATION IN GRAYLING**



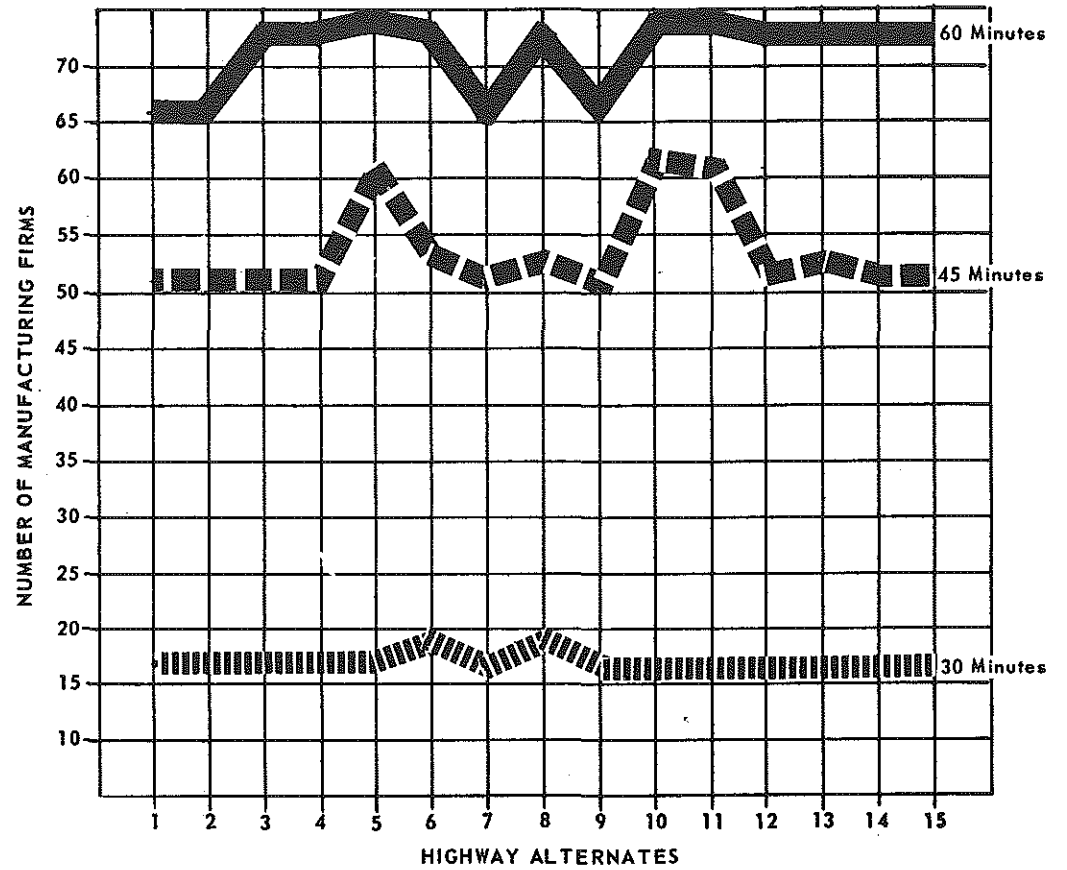
Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

**ACCESSIBILITY OF MANUFACTURING FIRMS
TO THE RAIL STATION IN LUDINGTON**

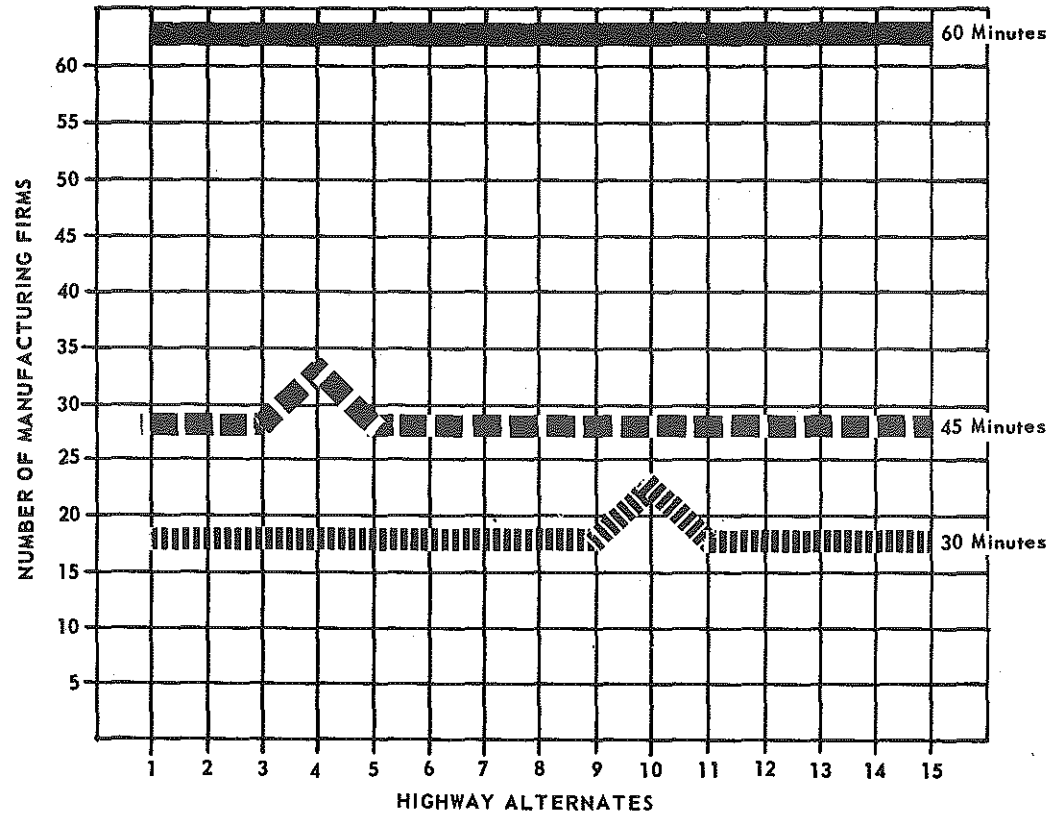


Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

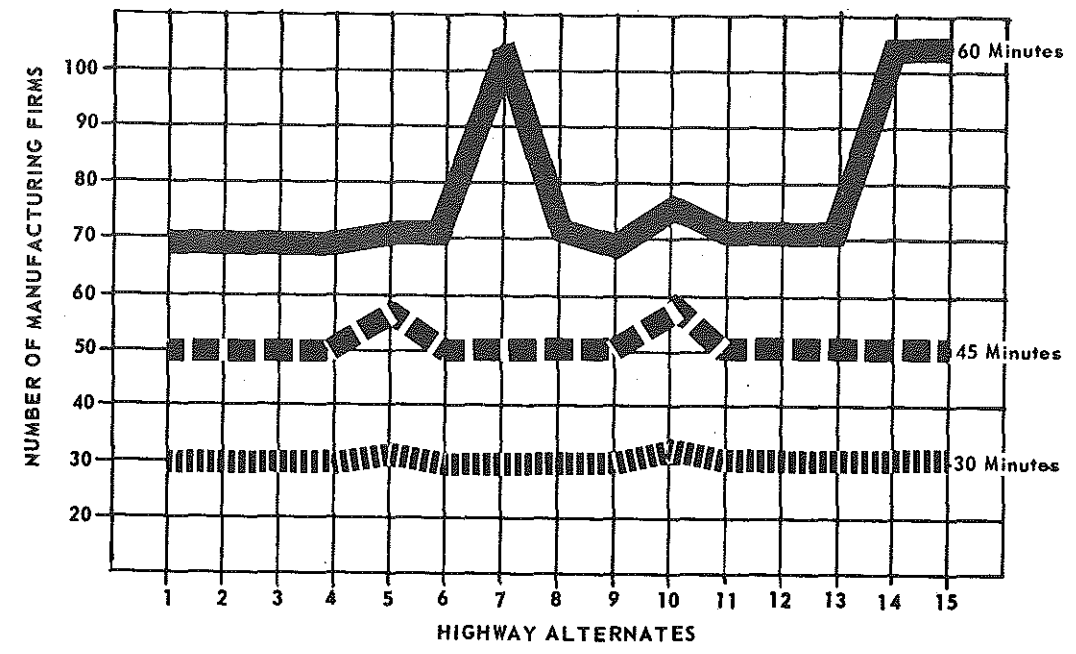
**ACCESSIBILITY OF MANUFACTURING FIRMS
TO THE RAIL STATION IN MANISTEE**



**ACCESSIBILITY OF MANUFACTURING FIRMS
TO THE RAIL STATION IN PETOSKEY**



**ACCESSIBILITY OF MANUFACTURING FIRMS
TO THE RAIL STATION IN TRAVERSE CITY**



Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

COMMERCIAL HARBORS

PLANNING AND DEVELOPMENT

Port development in the State is associated with two specific types of harbors: (1) Recreational harbors and harbors of refuge (emergency harbors) and (2) Commercial harbors. Within State government the responsibility for recreational harbors and harbors of refuge is vested primarily in the Michigan Waterways Commission of the Department of Natural Resources. The overall planning responsibility for commercial harbors lies within the Michigan Department of State Highways and Transportation.

Activity in the commercial harbors in and near the Northwest Region can be broken into three categories: (1) Recreational activity, (2) Commercial navigation, and (3) Maintenance activity by the U.S. Army Corps of Engineers. The highest level of activity in all cases is generated by recreational vehicles, and the second highest is generated by commercial vehicles.

With respect to commercial navigation, ports are defined as either major or minor activity centers. The major commercial ports are in Traverse City, Manistee, and Petoskey where approximately 500,000 tons in each port are moved per year. Products moved include coal, petroleum products, limestone and cement.

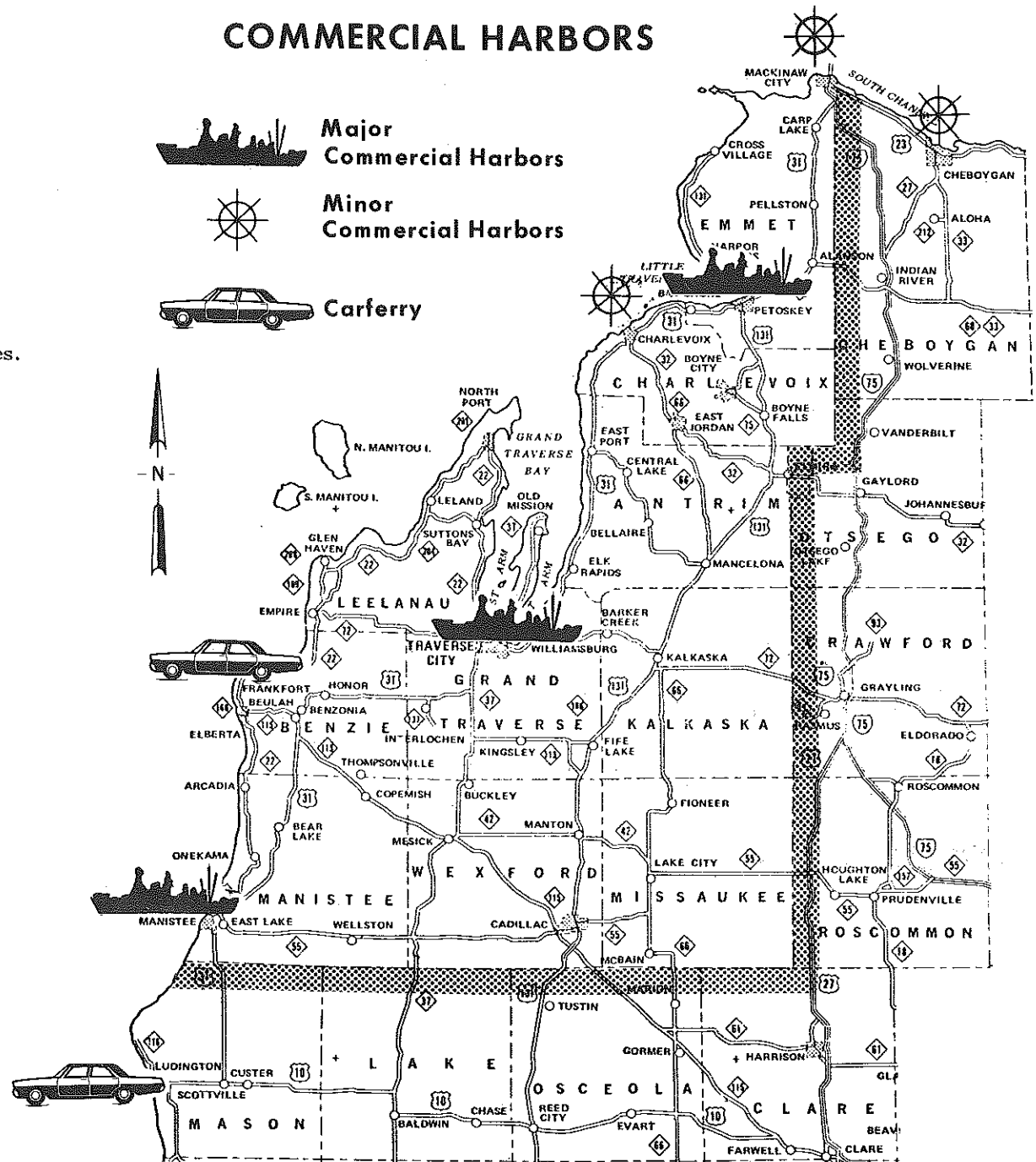
The minor commercial ports are in Cheboygan, Charlevoix, and Mackinaw City where 100,000 to 200,000 tons in each port are moved annually. The commodities moved are principally coal and petroleum products.

The ports at Frankfort and Ludington are currently carferry ports handling rail cars and passengers. The future of these operations is under study by the Michigan Department of State Highways and Transportation, the Federal Railway Administration, and Interstate Commerce Commission in conjunction with the formulation of the new Federal Rail Plan.

Channel and harbor improvement plans for the ports at Charlevoix and Ludington are presently under review by the U.S. Army Corps of Engineers. These plans have been drawn up in response to increased demand for water transportation at these ports.

Petoskey is classed as a non-project harbor and, consequently, harbor maintenance is not scheduled in the U.S. Army Corps of Engineers maintenance program.

COMMERCIAL HARBORS

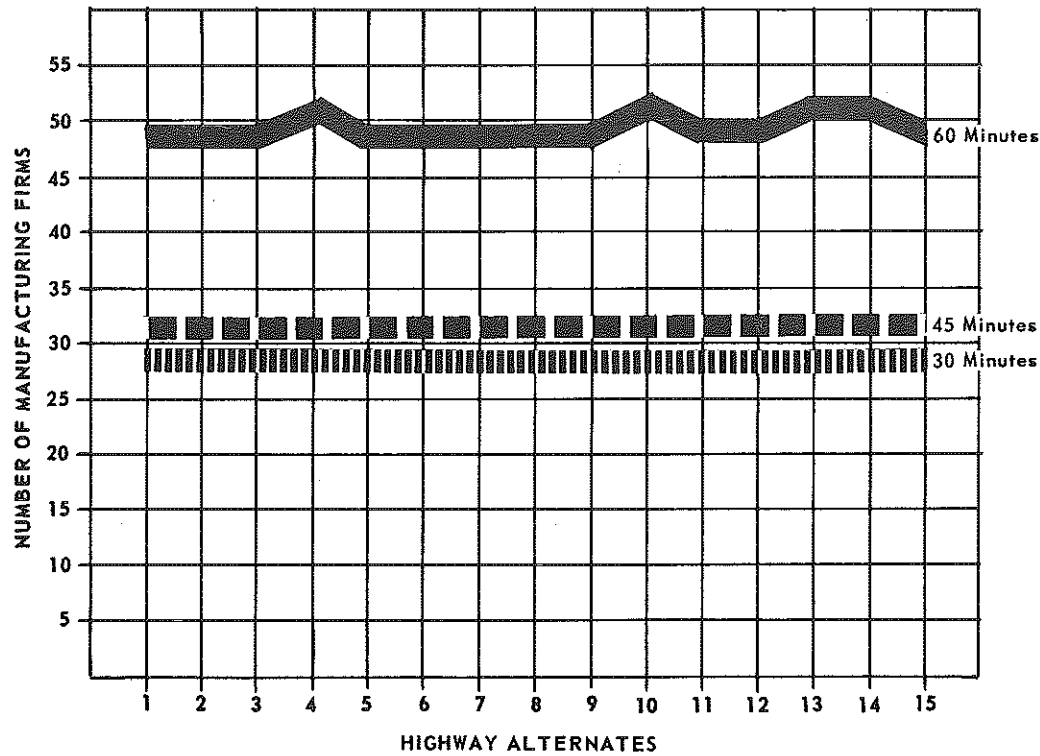


Accessibility of Manufacturing Firms To Port Facilities

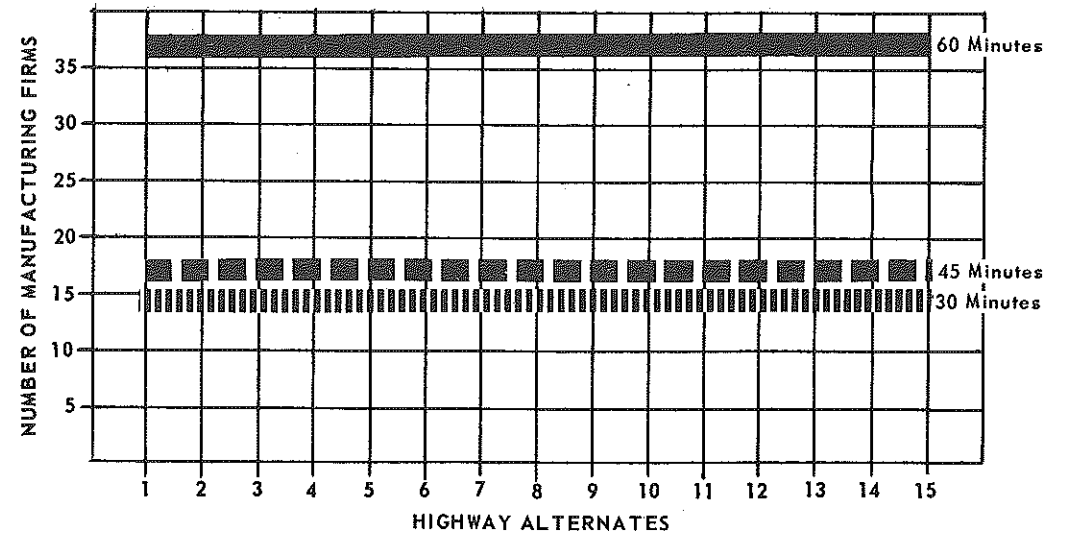
The following displays show the number of manufacturing firms within 30, 45, and 60 minutes driving time to the major commercial ports and harbors in the Region, as identified by the Port Authority Section, Bureau of Transportation Planning, Michigan Department of State Highways and Transportation.

The number of manufacturing firms in the area was obtained from The Directory of Michigan Manufacturers, 1971.

**ACCESSIBILITY OF MANUFACTURING FIRMS
TO THE PORT FACILITY IN CHARLEVOIX**

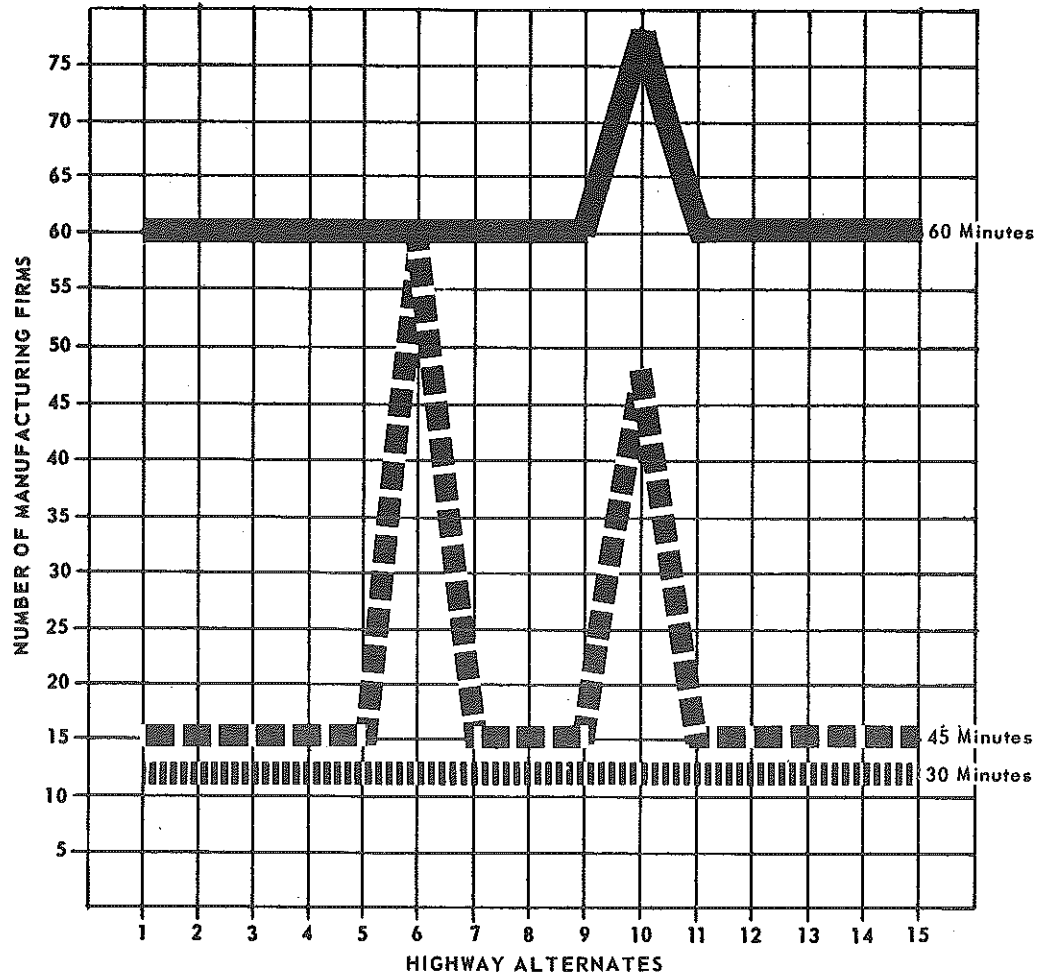


**ACCESSIBILITY OF MANUFACTURING FIRMS
TO THE PORT FACILITY IN CHEBOYGAN**

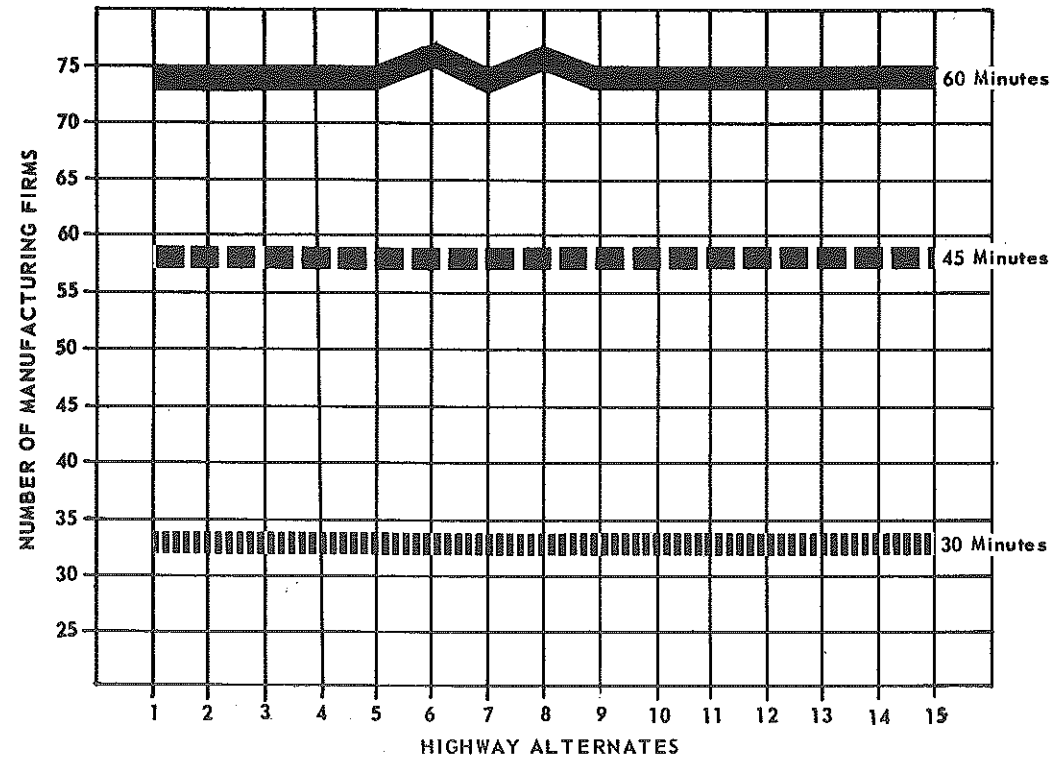


Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

ACCESSIBILITY OF MANUFACTURING FIRMS
TO THE PORT FACILITY IN FRANKFORT

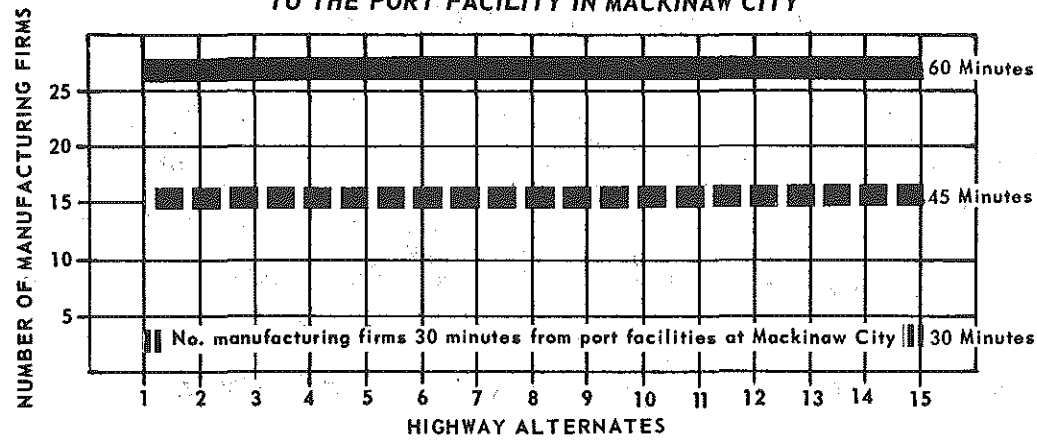


ACCESSIBILITY OF MANUFACTURING FIRMS
TO THE PORT FACILITY IN LUDINGTON

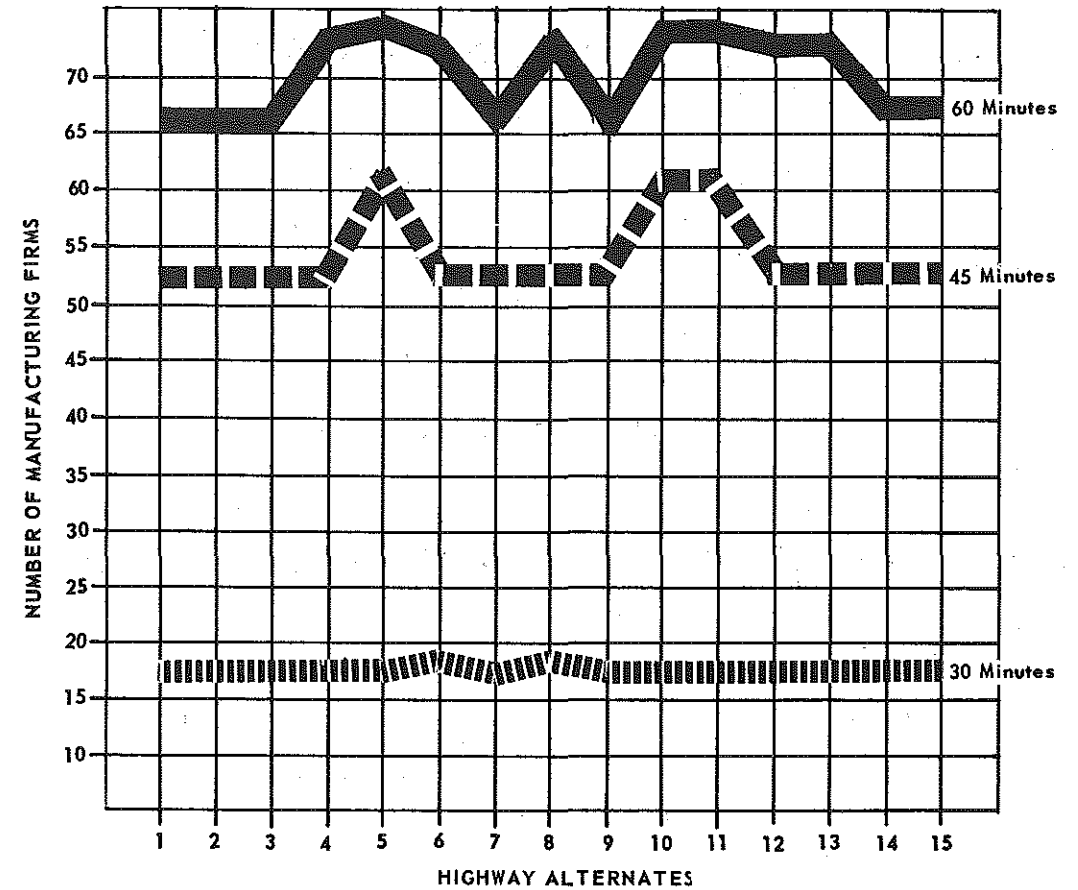


Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

**ACCESSIBILITY OF MANUFACTURING FIRMS
TO THE PORT FACILITY IN MACKINAW CITY**

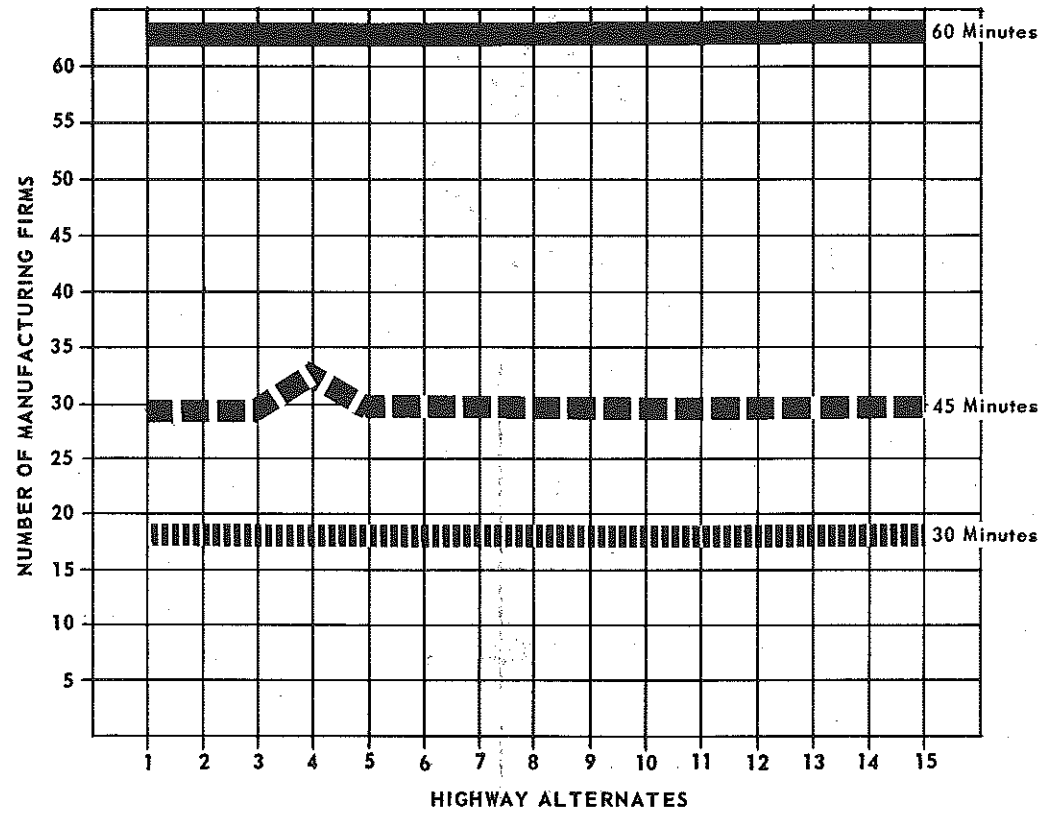


**ACCESSIBILITY OF MANUFACTURING FIRMS
TO THE PORT FACILITY IN MANISTEE**

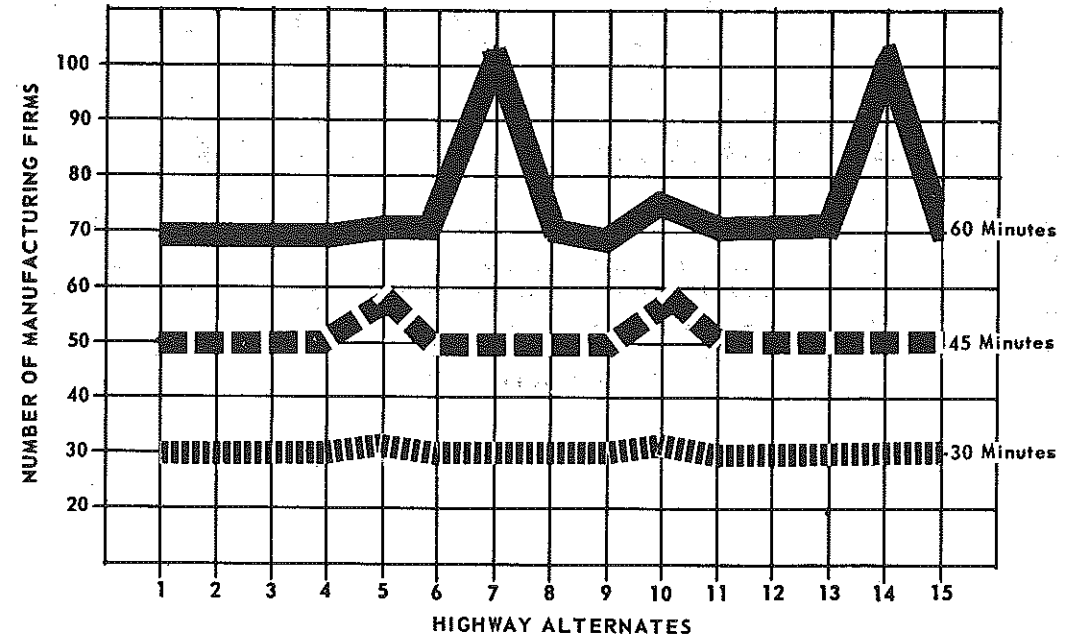


Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

**ACCESSIBILITY OF MANUFACTURING FIRMS
TO THE PORT FACILITY IN PETOSKEY**



**ACCESSIBILITY OF MANUFACTURING FIRMS
TO THE PORT FACILITY IN TRAVERSE CITY**



Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

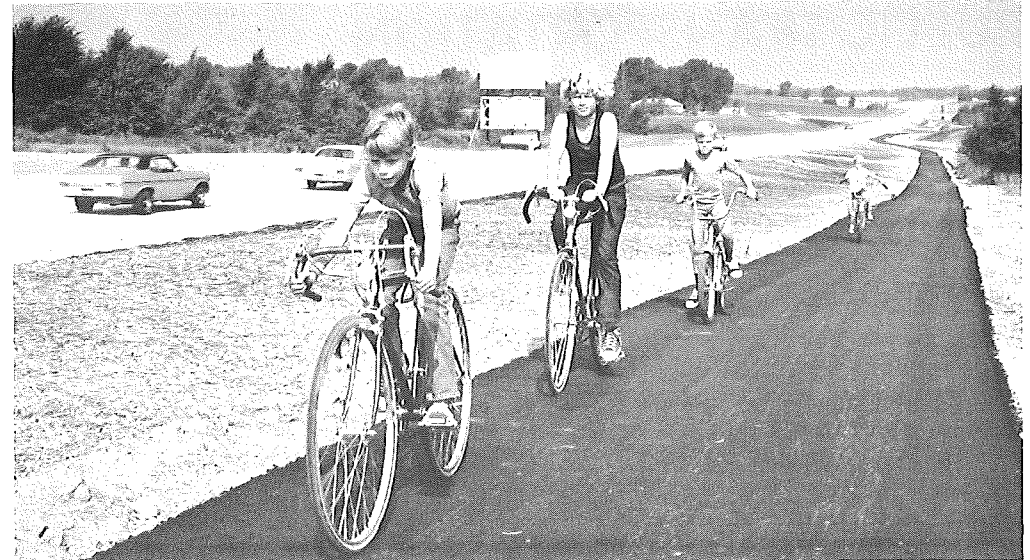
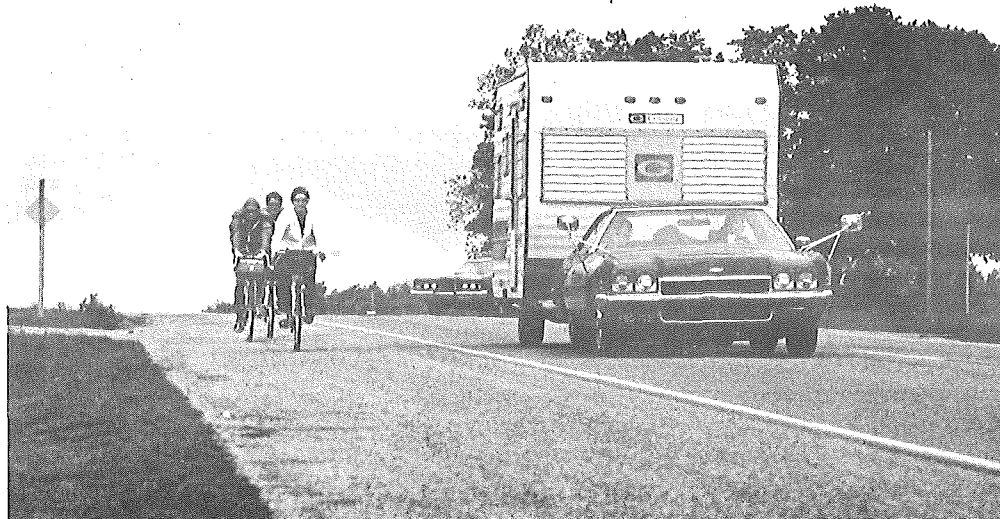
NON-MOTORIZED TRANSPORTATION

The three types of non-motorized transportation facilities that can be provided by the Michigan Department of State Highways and Transportation in the Northwest Region are bicycle lanes (often paved highway shoulders), bicycle paths, and equestrian trails.

Paved shoulders are eight foot wide strips of pavement along each edge of a highway. They are provided for bicycle traffic, but can also be used by cars for emergency service or temporary stops. Because paved shoulders are constructed to meet highway maintenance requirements, as well as to provide paths for bicycle traffic, this type of facility now exists along several segments of State trunk line in the Northwest Region.

Equestrian trails are unpaved facilities for horseback riding. Although the Michigan Department of State Highways and Transportation has not constructed any equestrian projects, this type of facility does exist in the Region. Special care will be taken to minimize the hazards of cross traffic at points where new highway construction will cross existing equestrian, biking, and snowmobile trails.

Bike paths are paved trails separate from any road or highway. The path is hard-surfaced—usually concrete or bituminous. Facilities of this type are currently being planned for the Region, although none have been constructed thus far.



The major constraint associated with the construction of any new non-motorized transportation facility is that present state law requires non-motorized facilities to be established in conjunction with the reconstruction of an existing highway, or the construction of any new highway. This means that rather than being planned as independent systems, the locations of non-motorized facilities are largely dependent on the location of the existing and future highway system. Enough latitude is provided by the law, however, to permit the construction of bicycle or equestrian paths separate from the highway as long as the non-motorized facility is in the same general service area as the highway.

Because the location of the non-motorized network is basically dependent on the location of the highway system, it is not generally feasible to discuss alternative locations for such systems. Consideration should instead be focused on the balance between bicycle paths and equestrian trails within the non-motorized system.

Despite these constraints, there may be some opportunity to locate these facilities independently of the highway system. In the event that certain rail lines are abandoned in the Region, it may be desirable to locate bicycle and equestrian trails on the rail right-of-way. This concept is currently being studied in southern Michigan through a demonstration project which involves converting abandoned rail right-of-way between Kalamazoo and South Haven into a combination bicycle-equestrian trail.

PUBLIC TRANSPORTATION

PLANNING AND DEVELOPMENT

Public transportation is only one element of a total transportation system designed to serve every transportation need of the Region. As a part of the system this element should supplement and complement the other modes. Public transportation policy is not oriented toward eliminating the need for new highway facilities by vastly expanding service in the area. This is so because, at this time, there is not a sufficient demand for such service in the Region.

Public transportation in the Northwest Region is generally synonymous with bus transportation. There is no railroad passenger service and only limited air service. Bus transportation operates over the regional network of streets and highways, and therefore, improvements in this network affect bus service. The degree of impact varies depending upon the highway improvement that is contemplated. City and county improvement projects usually have a minimal effect upon the regional public transportation system. However, major new freeway construction could have considerable impact on intercity bus services. A new freeway corridor is most beneficial to intercity buses if it is located close to the communities which require service. A new route passing through an undeveloped area many miles from any population concentration severely limits the ability of intercity buses to provide good service.

At the present, intercity buses carry considerably less than one percent of the total long distance trips in the Northwest Region. Demand for improved intercity service is extremely difficult to estimate at this time. This is caused by the many externalities and uncertainties of the economic situation, the cost of automobiles and gasoline, and various governmental policies relating to energy conservation and transportation funding. In order to decrease the number of auto trips sufficiently to present the need for new highway facilities, bus service and ridership will have to increase enormously. At this time such an increase is not anticipated. The approach of the Department and the intercity bus industry will be to incrementally improve service in the different travel corridors based upon the availability of funding and equipment, and upon ridership demand.

The importance of system planning for public transportation cannot be overemphasized. For example, greatly improved service between Grand Rapids and Traverse City will have only a small impact on ridership because so many of the trips in the Region originate in Chicago, Detroit, or other parts of Michigan and surrounding states. The need for collection and distribution systems at either end of the trip is important since most travelers require a means of local transportation at their destination.

SYSTEM HIERARCHY

It is beneficial to visualize public transportation as consisting of an integrated hierarchy of various services that ultimately form an overall regional public transportation system. The accompanying diagram portrays, in a conceptual format, the four service types that exist or are being considered for the Northwest Region. Type one, urban service, provides service within the larger communities in a region. Type two, county service, provides access for rural areas and smaller urban areas on a county-wide basis. Types one and two services can consist of fixed-route systems,* demand responsive systems** or a combination of the two. Type three, regional service, connects urban areas of all sizes with a region. Being smaller in scale, the type three services can provide more comprehensive routing and more convenient schedules than type four, intercity service. The first three types provide accessibility within a region while the fourth type provides connections between the region and major activity type centers in the remainder of the state and the nation.

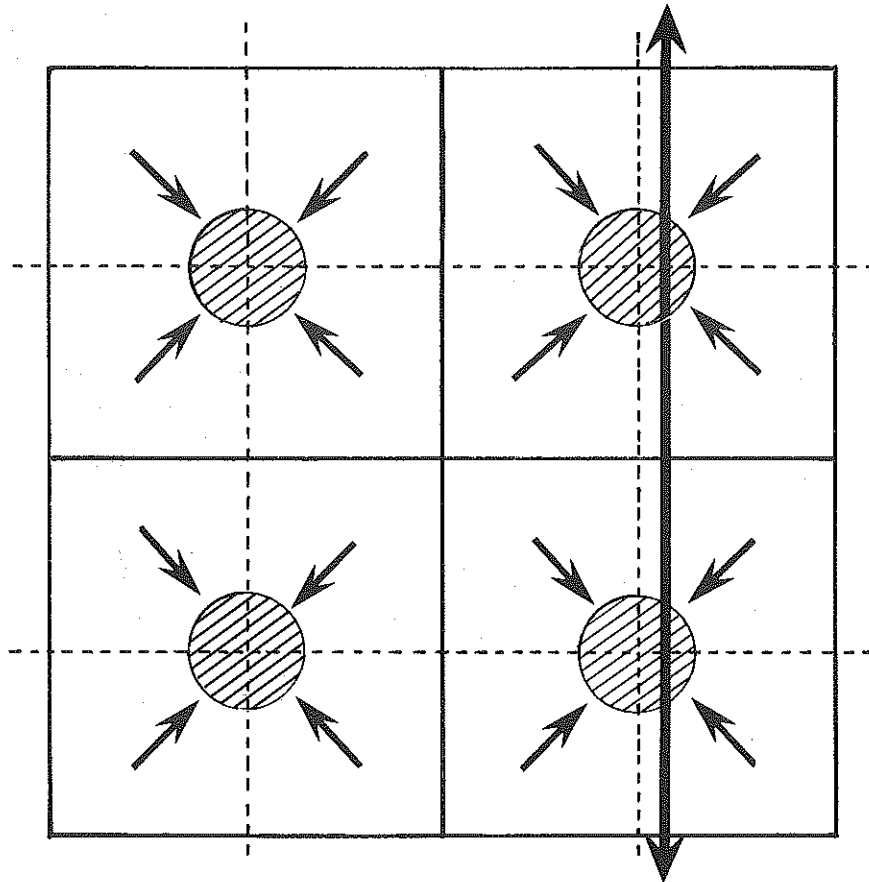
To provide an efficient overall public transportation system it is necessary to offer a balanced mix of all four types of service. Such a mix insures a convenient level of service to area residents while optimizing ridership on all four levels.



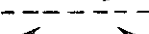

Until a few years ago, the public transportation system serving the Northwest Region consisted principally of type four, intercity bus services. Since 1973, however, other types of public transportation service have been expanded at a rapid rate. All four types of service are now operational or proposed within the Region. This rapid expansion in service dramatizes the need for coordination of public transportation planning to develop a region-wide plan. A coordinated effort could maximize the potential of each type of service. Each type of service could be designed and implemented as one component of the overall system. It is the intent of the Michigan Department of State Highways and Transportation to cooperate with the Northwest Michigan Regional Planning and Development Commission and other interested groups and agencies in the development of such a plan.

* A scheduled system operated on specific streets.

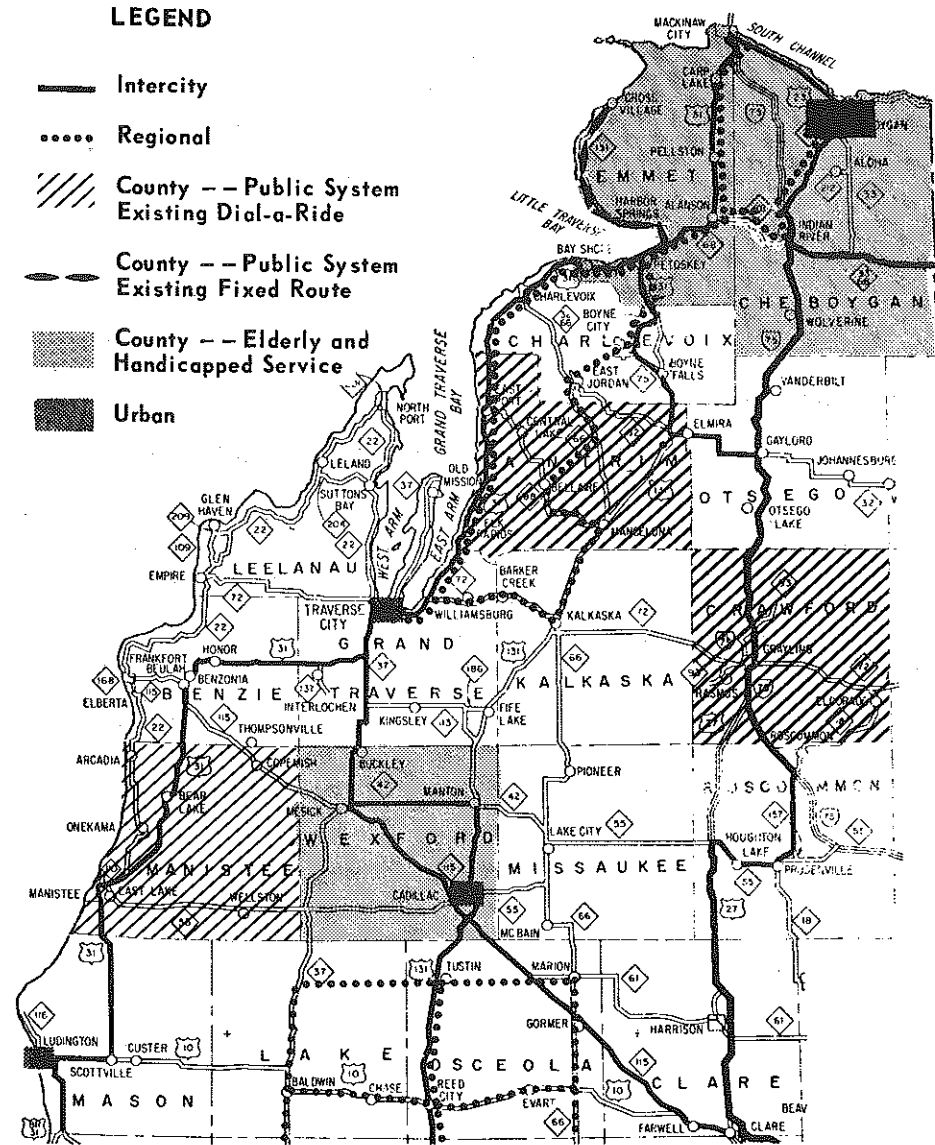
** A Dial-A-Ride system in which prospective riders call and request a door to door ride from where they are to where they want to go.

PUBLIC TRANSPORTATION
TYPES OF SERVICE



- LEGEND**
- Type of Service
- 1 Urban 
 - 2 County 
 - 3 Regional 
 - 4 Intercity 

PUBLIC TRANSPORTATION
Existing and Proposed



Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

TYPE ONE - URBAN PUBLIC TRANSPORTATION

Two urban areas within the Region have established urban public transportation services: Cadillac and Traverse City (See map on page 87). Both urban areas have initiated dial-a-ride transportation (DART) systems.

Both systems were established in 1974. The Cadillac system utilizes three vans and currently serves approximately 5,000 passengers per month. The Traverse City system currently utilizes five vans which carry over 6,000 passengers each month. The volume of ridership on these DART systems compares favorably with the volume on other DART systems in Michigan.

Two other cities, not in the Northwest Region but in adjacent counties, have or are being considered for a DART system. Ludington currently has a DART system in operation and Cheboygan is being considered.

TYPE TWO - COUNTY PUBLIC TRANSPORTATION

One additional DART system has recently been implemented within the Region as shown in the map on page 87. This is the Manistee County system. It was established in March, 1975 and utilizes four vans. As a county-wide system it provides service to all of the urban places located within the county. This system represents a combination of types of service one and two because it serves both the urban and rural areas of the county. Other DART systems of this type are proposed for Antrim County and Crawford County areas.

Three other full-county systems are proposed for the study area under Section 16 of the 1973 Federal Aid Highway Act. The objective of Section 16 is to provide public transportation services to the elderly and handicapped through grants to public or private non-profit organizations. Section 16 services are proposed for Emmet, Cheboygan and Wexford Counties. It is estimated that Emmet and Wexford counties will each receive two 10-15 passenger vans while Cheboygan County will receive three vans. Some vans will be equipped with wheelchair lifts.

TYPE THREE - REGIONAL PUBLIC TRANSPORTATION

A major function of regional public transportation services is to connect the various urban areas within the Region. A regional system is being considered under the provisions of Section 147 of the 1973 Federal Aid Highway Act. The purpose of Section 147 is to support demonstration projects which will encourage and test potential usage of public transportation service in rural areas. The service being considered is shown in the map on page 87

It will be a fixed-route system serving Traverse City and selected urban areas in Kalkaska, Antrim, Charlevoix, Emmet and Cheboygan counties. The system would provide several daily round trips between the communities and would utilize six-to-eight buses. To encourage the initiation of the regional service, the Michigan Department of State Highways and Transportation has loaned two vehicles to a local transit firm. Service is presently being provided on a limited basis between Boyne City and Mackinac City.

One other Section 147 project, not in the Northwest Region but in adjacent counties, is proposed for implementation. The proposal would include service to Lake and Osceola Counties.

TYPE FOUR - INTERCITY PUBLIC TRANSPORTATION

Intercity public transportation service is characterized by long distance trips between medium-sized and large communities. Ideally, intercity service should be express service, that is, service with infrequent stops. It should be supplemented by local and regional services which collect and distribute intercity travelers. Existing intercity bus service is shown on the accompanying map: Major connections between intercity bus services in the Region are provided at Traverse City and Mackinaw City.

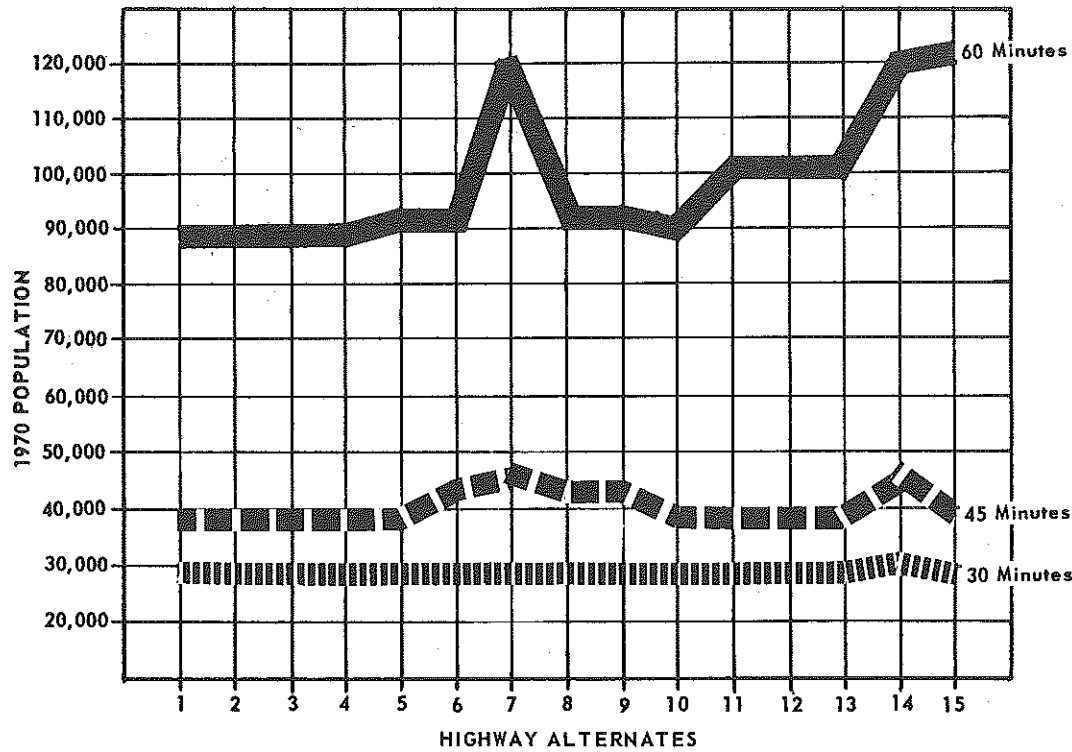
Use of intercity bus service is heaviest as it crosses the Mackinaw Bridge where 100-200 persons ride the system each day. The Mackinaw City to Clare corridor carries 50-100 passengers daily. Other routes in the Region generally carry 50 or fewer passengers per day. On the average, bus occupancy ranges from 15 percent to 30 percent.

The intercity bus industry in Michigan has experienced long term declines in ridership and service. In spite of these discouraging trends, buses continue to provide the most extensive system of intercity public transportation in Michigan. In an effort to reverse the serious decline in intercity bus traffic, the Michigan Department of State Highways and Transportation intends to initiate both short and long range planning and assistance programs. An Intercity Bus Task Force was established in December, 1973, to coordinate the activities of state and industry organizations. Improvement measures now being considered by the Department include the creation of a revolving state fund to assist intercity carriers in the acquisition of buses, the provision of operating assistance for demonstration projects to initiate service on new or existing routes, and the provision of assistance for new express, recreational and commuter bus service in both urban and rural areas.

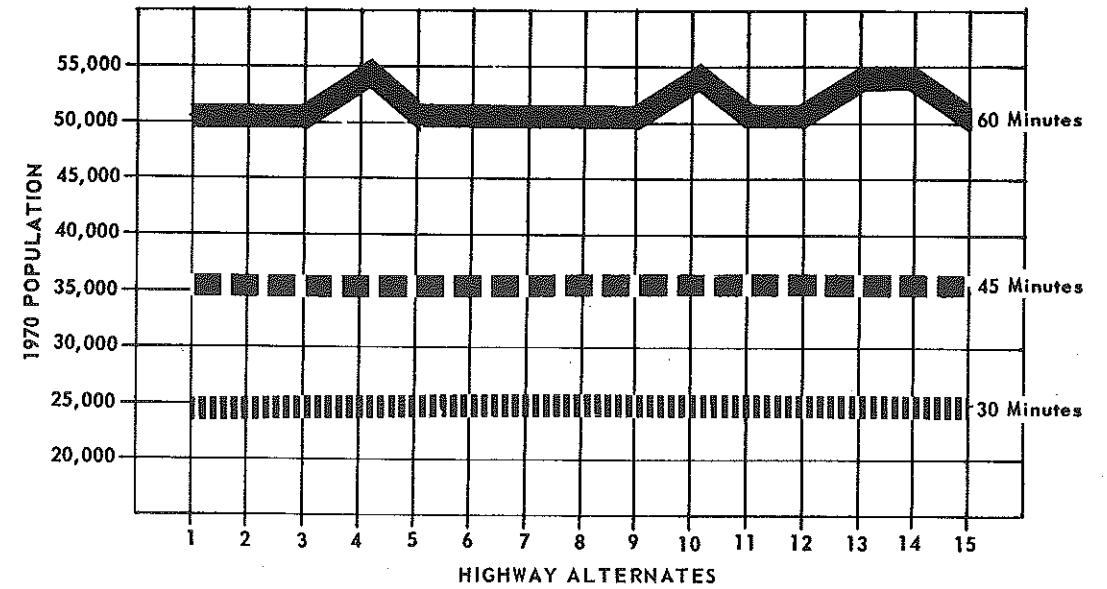
Population Accessible To Intercity Bus Stations

The following graphs show the number of people within 30, 45 and 60 minutes driving time of inter-city bus stations located in each major city of the study area. Sources used for this study were the 1970 Census and a list of all bus stations in the State provided by the Greyhound Bus Company in Lansing, Michigan.

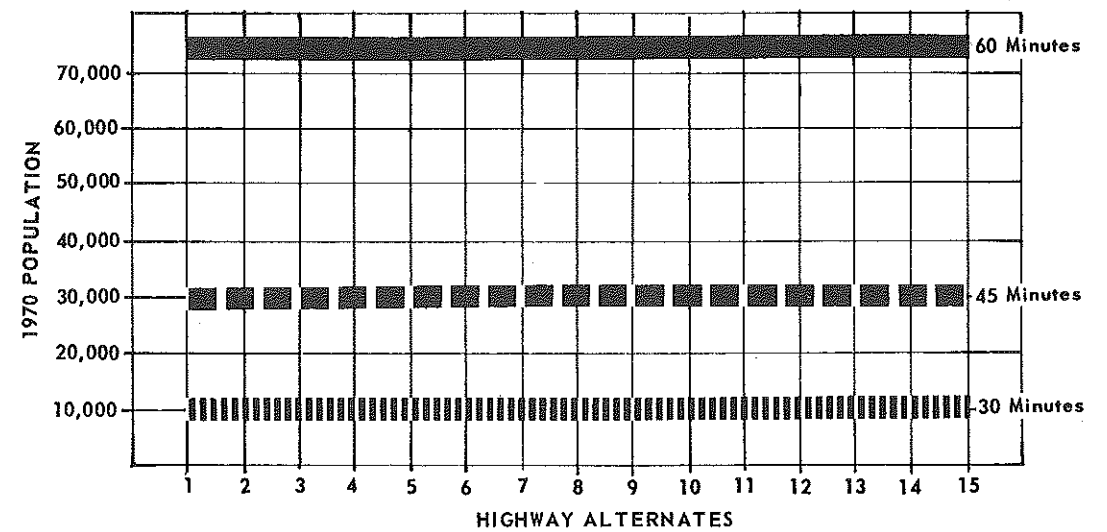
POPULATION ACCESSIBLE TO THE BUS STATION AT CADILLAC



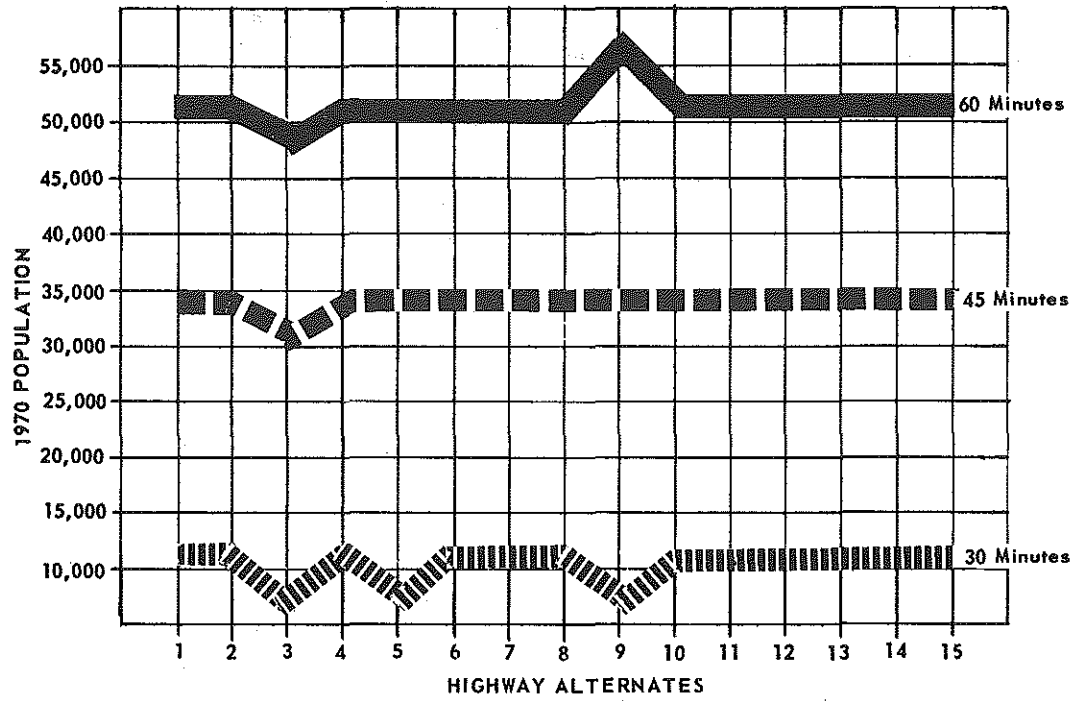
POPULATION ACCESSIBLE TO THE BUS STATION AT CHARLEVOIX



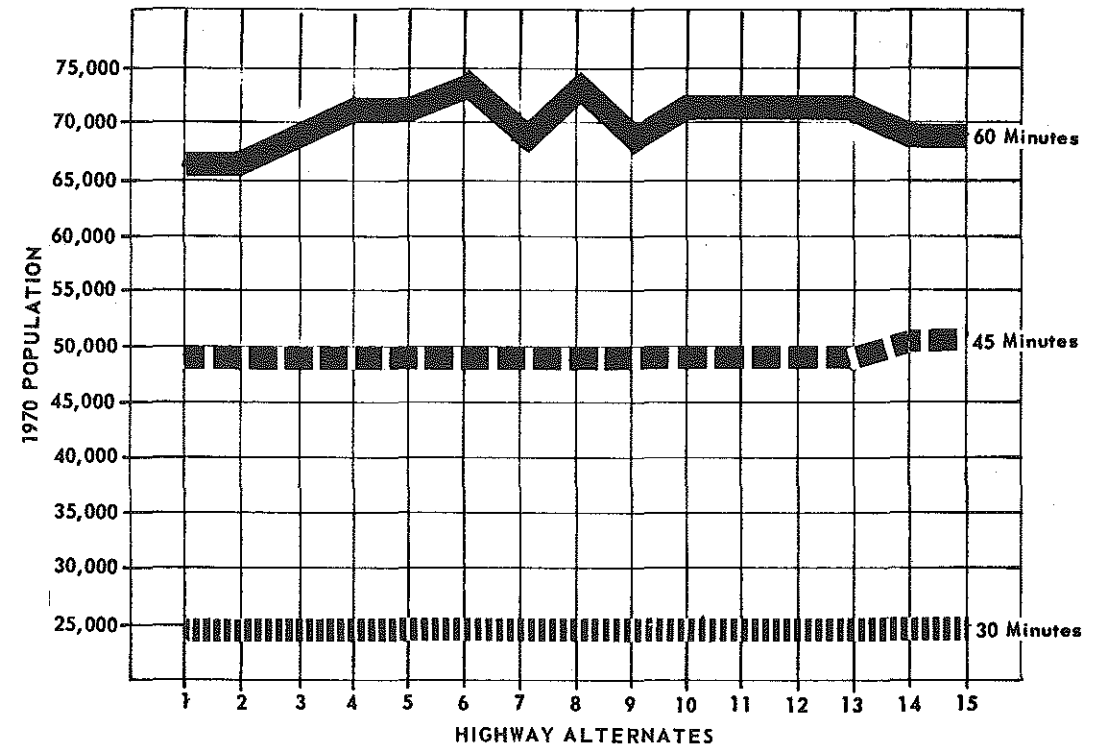
POPULATION ACCESSIBLE TO THE BUS STATION AT GAYLORD



POPULATION ACCESSIBLE TO THE BUS STATION AT GRAYLING

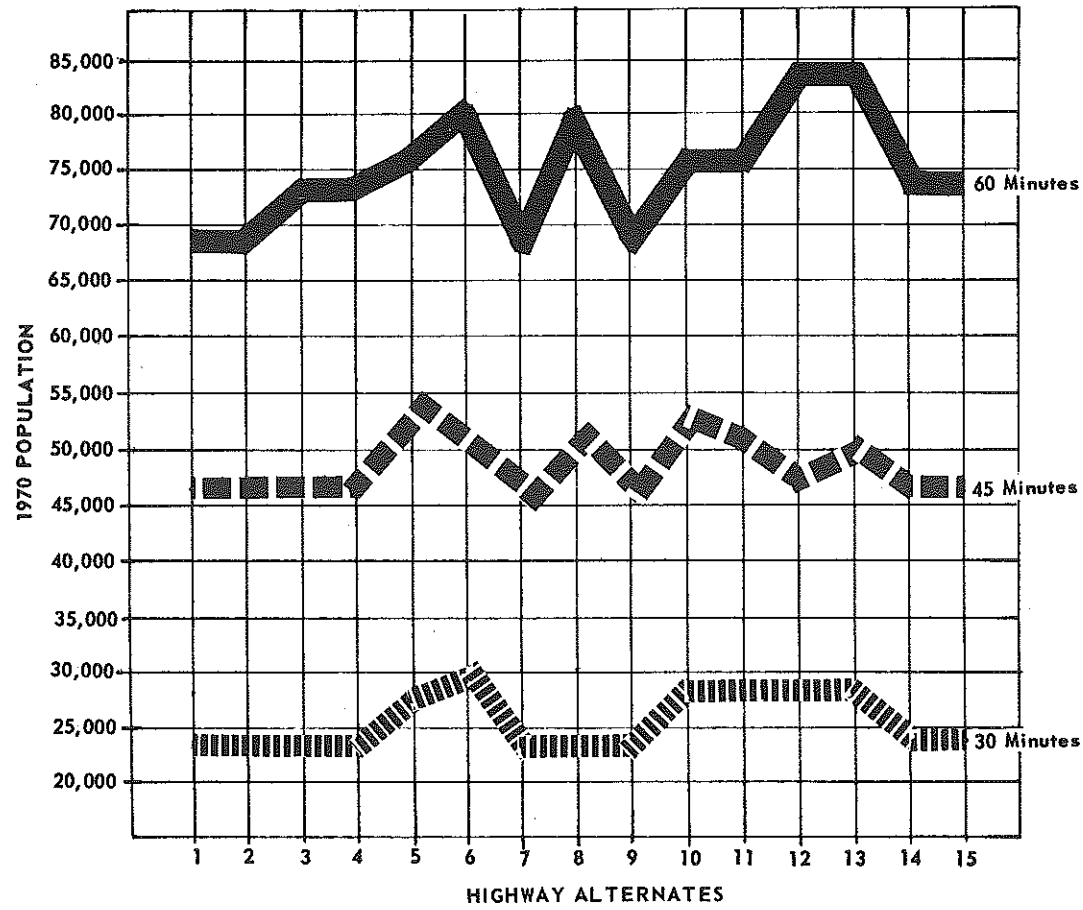


POPULATION ACCESSIBLE TO THE BUS STATION AT LUDINGTON

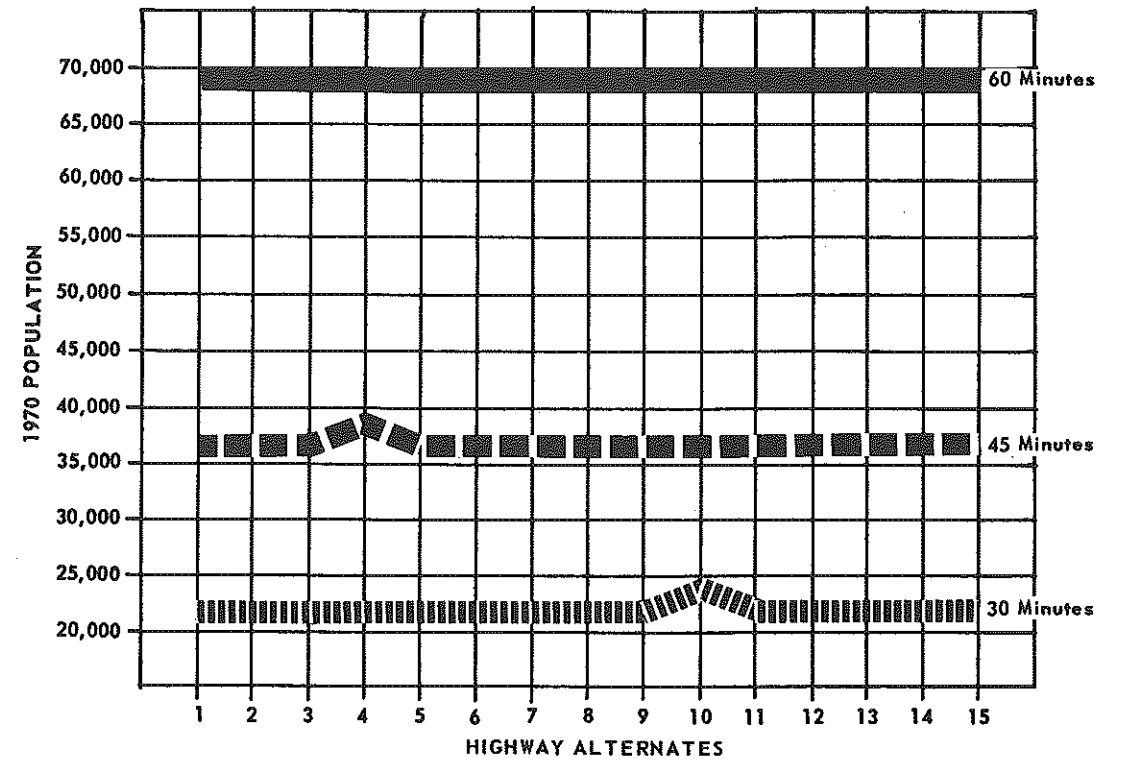


Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

POPULATION ACCESSIBLE TO THE BUS STATION AT MANISTEE

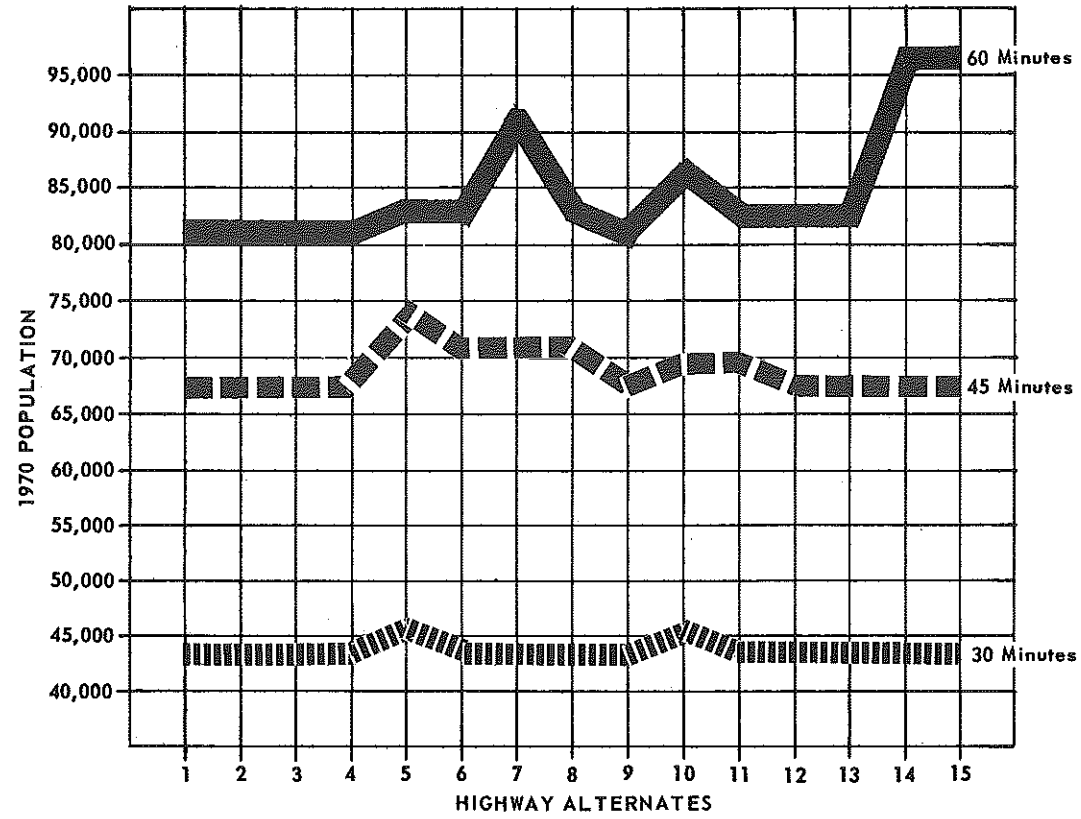


POPULATION ACCESSIBLE TO THE BUS STATION AT PETOSKEY



Northwest Regional Transportation Study,
Michigan Department of State Highways and Transportation, 1975.

POPULATION ACCESSIBLE TO THE BUS STATION AT TRAVERSE CITY



SUMMARY OF DATA FOR HIGHWAY ALTERNATES

Note: All data based upon year 2000 projections for rural state trunkline highways only. Cost estimates represent 30 year totals between 1970-2000 unless otherwise indicated.

SOCIAL CRITERIA	HIGHWAY ALTERNATES														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Population accessible to major cities (in 1,000's)	553	553	557	564	570	575	597	578	559	574	580	588	592	606	603
Population accessible to existing airports (in 1,000's)	194	194	207	215	235	211	206	211	196	239	224	232	236	218	205
Population accessible to bus stations (in 1,000's)	551	551	554	564	567	573	594	575	562	575	578	586	590	608	606
For a visual comparison of proximity to seasonal housing densities, see the map on page 43															
ECONOMIC CRITERIA															
Capital expenditure costs for US-31 and US-131 in proposed corridor (in millions)*	\$ 0	\$ 17**	\$ 108	\$ 236	\$ 202	\$ 199	\$ 173	\$ 227	\$ 193	\$ 246	\$ 215	\$ 197	\$ 227	\$ 208	\$ 196
Annual maintenance costs (in millions)	\$ 1.55	\$ 1.55	\$ 1.70	\$ 1.94	\$ 1.84	\$ 1.93	\$ 1.92	\$ 2.00	\$ 1.88	\$ 1.99	\$ 1.99	\$ 1.93	\$ 2.04	\$ 2.01	\$ 1.91
Improvement costs on other state trunklines in the Region (in millions)*	\$ 0	\$ 15	\$ 112	\$ 62	\$ 83	\$ 95	\$ 113	\$ 106	\$ 148	\$ 79	\$ 57	\$ 114	\$ 96	\$ 92	\$ 123
Auto and truck running and time costs (in millions)	\$1,146	\$1,159	\$ 964	\$ 864	\$ 912	\$ 941	\$ 968	\$ 987	\$1,023	\$ 885	\$ 826	\$ 949	\$ 895	\$ 897	\$ 946
Manufacturing firms accessible to truck terminals	356	356	356	363	366	365	391	373	362	371	368	367	367	421	358
Manufacturing firms accessible to rail stations	511	511	518	513	521	520	576	528	517	521	523	522	524	585	585
Manufacturing firms accessible to port facilities	321	321	321	330	331	332	356	332	321	338	331	330	332	358	321
For a visual comparison of proximity to areas of various assessment values, see the map on page 48															
ENVIRONMENTAL CRITERIA															
For a visual comparison of proximity to primary environmental issue areas and protected areas, see the maps on pages 54 and 57 respectively															
TRAVEL CRITERIA															
Accidents per 100 million miles of travel	396	396	363	326	308	319	326	331	356	280	317	335	308	318	340
Miles of freeway in the Region	3	3	3	3	142	139	116	161	131	173	146	131	167	145	120
Average daily trips to and from the Region (in 100's)	610	613	613	654	648	687	675	712	670	690	708	668	704	667	642
Annual vehicle miles of travel in the Region (in millions)	1,290	1,323	1,320	1,401	1,474	1,425	1,438	1,474	1,494	1,611	1,425	1,427	1,530	1,579	1,446
Miles of state highway operating at or above level of service C	437	513	533	714	666	712	715	724	614	733	764	699	751	727	686
Miles of state highway operating below level of service C	345	270	321	168	189	187	192	206	266	180	163	208	192	210	215

Note: Figures used for accessibility comparison represent a total for all of the major cities evaluated and include only the cumulative 60 minute time band data. Cities include Cadillac, Charlevoix, Gaylord, Grayling, Ludington, Manistee, Petoskey and Traverse City.

* Includes segments of trunkline east of the Region to I-75 and south to US-10.

** Proposed corridor is on the existing alignment.

TRAVEL TIMES BETWEEN SELECTED
CITIES BY ALTERNATE
(In Minutes)

Northwest Regional Transportation Study
Michigan Department of State Highways and Transportation
1975

	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 8	Alt 9	Alt 10	Alt 11	Alt 12	Alt 13	Alt 14	Alt 15
Cadillac- Manistee	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Cadillac- Petoskey	115	114	117	107	111	105	111	103	104	98	102	107	93	100	107
Cadillac- Traverse City	71	70	72	65	64	68	55	71	67	64	64	65	65	53	62
Cadillac- Detroit	229	229	230	229	230	230	230	229	229	230	228	228	228	228	228
Cadillac- Flint	160	160	161	160	161	161	161	160	160	161	159	159	159	159	159
Cadillac- Grand Rapids	105	105	106	105	106	106	106	105	105	106	104	104	104	104	104
Cadillac- Lansing	152	152	153	152	153	153	153	152	152	153	151	151	151	151	151
Cadillac- Chicago	331	331	332	331	332	332	332	331	331	332	330	330	330	330	330
Cadillac- Toledo	267	267	268	267	268	268	268	267	267	268	266	266	266	266	266
Manistee- Petoskey	171	171	165	152	144	132	141	132	147	131	139	135	121	132	146
Manistee- Traverse City	83	83	79	75	65	68	83	68	83	65	66	67	67	83	83
Manistee- Detroit	282	281	282	282	282	282	282	282	282	282	282	282	282	282	282
Manistee- Flint	212	212	212	212	212	212	212	212	212	212	212	212	212	212	212
Manistee- Grand Rapids	138	138	132	129	127	127	133	127	133	127	128	128	128	132	132
Manistee- Lansing	205	204	199	197	195	195	201	195	201	195	195	195	195	199	199
Manistee- Chicago	332	332	325	323	321	321	326	321	326	321	321	321	321	325	325
Manistee- Toledo	320	319	319	320	319	319	320	319	320	319	320	320	320	320	320
Petoskey- Traverse City	94	94	94	90	91	88	88	88	94	78	88	94	79	79	94
Petoskey- Detroit	297	296	295	296	297	297	297	297	297	297	297	297	297	297	297
Petoskey- Flint	227	227	226	226	227	227	227	227	227	227	227	227	227	227	227
Petoskey- Grand Rapids	217	215	218	208	211	205	211	202	202	197	203	208	194	201	208
Petoskey- Lansing	233	232	233	232	233	233	233	233	233	233	233	233	233	233	233
Petoskey- Chicago	443	441	444	434	436	431	437	427	428	423	429	433	420	426	433
Petoskey- Toledo	335	334	333	333	335	335	335	335	335	335	335	335	335	335	335
Traverse City- Detroit	292	290	294	291	283	292	280	292	288	288	289	287	290	278	286
Traverse City- Flint	222	221	224	221	214	222	210	222	218	219	219	218	221	209	217
Traverse City- Grand Rapids	170	166	170	167	164	168	156	170	164	164	164	166	166	154	162
Traverse City- Lansing	217	213	217	214	211	215	203	217	211	211	212	213	213	201	209
Traverse City- Chicago	396	392	396	393	379	379	381	379	386	379	380	381	381	380	388
Traverse City- Toledo	329	328	331	329	321	329	318	329	325	326	326	325	328	316	324

MODIFICATION OF ALTERNATIVES

THE REGIONAL COMMISSION'S PARTICIPATION

Early in 1972 the Northwest Michigan Regional Planning and Development Commission gave its staff the direction to seek means of developing a Regional Transportation System Plan. Shortly thereafter, agreement was reached with the Department of State Highways and Transportation to undertake a pilot study centered on (the legislative mandate to consider upgrading or replacing) US-31 and US-131 as they pass through the ten-county Region. Also, at this time, the Regional Transportation Advisory Committee was formed to advise the Northwest Regional Commission on transportation matters. The Committee was composed of a member from each county's Planning Commission to broaden the regional perspective of this most important planning study.

The staff and Advisory Committee have participated with the Department of State Highways and Transportation since 1972, seeing the study expanded from its initial scope to consider other modes of transportation as the Governor ordered the Department of Highways and Transportation to, in effect, undertake total transportation responsibilities.

ACTIONS OF THE TRANSPORTATION ADVISORY COMMITTEE

Since 1972 the Advisory Committee has entertained initial planning considerations for rail and airport facilities and services in the Region in addition to highway planning concerns. As several counties have recently created planning departments, much valuable input has been made by these staff members representing local interest at the technical level.

Based on the information collected during 1972-73 on the interests and concerns of elected officials and citizens, preliminary highway transportation study corridors were outlined for review by each county's Planning Commission. This review stage began in the fall of 1974 and continued through early 1975.

Each county's Planning Commission was asked to recommend several alternate corridors for further, detailed study by the Michigan Department of State Highways and Transportation to determine the social, economic and natural environmental impacts likely to occur with each alternate.

The Transportation Advisory Committee met and discussed how to combine the various county recommendations in approximately five separate systems. In February the Committee did recommend a set of corridor systems to the Regional Commission along with the recommendation that a series of public information meetings be held around the ten-county Region. The purpose of these meetings would be to report the status of the study and to encourage

comment and constructive input from the general citizenry. The Regional Commission received the report and requested the Location Team to make arrangements for the informational, status report meetings with the general public. Action by the Regional Commission on recommending corridors for further study was to follow consideration of pertinent input from the informational meetings.

THE COMMITTEE'S RECOMMENDED CORRIDORS

In addition to the alternate of making no changes in the existing US-31 and US-131 facilities, which will be considered in any event, the Committee suggested that the following transportation study corridors be analyzed.

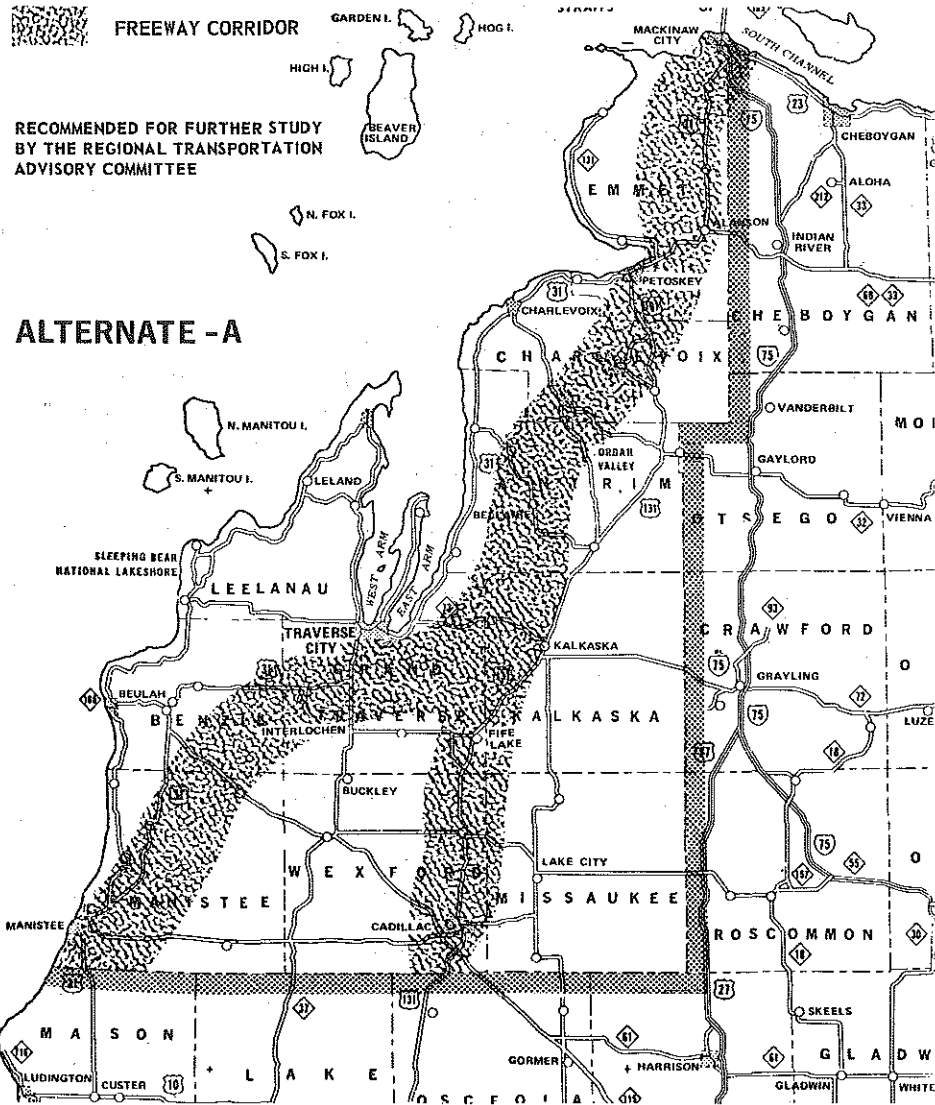
The locations and design options suggested for these corridors are graphically represented on the following maps. Because these are essentially new study corridors relative to the fifteen prepared in late 1974, the Advisory Committee has suggested that the portions containing freeway design options be ten miles wide, but the portions containing four-lane controlled and four-lane free access be somewhat narrower. These corridor widths should allow for thorough evaluation of possible environmental constraints.

No alignments have been suggested or chosen because the facility could be located anywhere within the indicated corridor except where constrained by social or natural barriers. The purpose at this stage of planning is not to select a specific location for any highway, but to decide if the corridor itself is acceptable for the location of a new or upgraded facility. At a later point in the study, there will be detailed consideration of various possible locations for a facility within a recommended corridor or corridor segment.

The study corridors shown are composites of the corridor-design options which the county Planning Commissions have referred to the Regional Transportation Advisory Committee to consider in its role as advocate of the Regional perspective in transportation planning. More detailed analysis to these corridor-design options should provide additional information by which to determine the possible social, economic and environmental impacts of the alternates on each county and its residents. This additional information should enable the citizens of the Region to select a transportation network that will adequately meet the transportation and other goals of both the counties and the Region.

ALTERNATE A

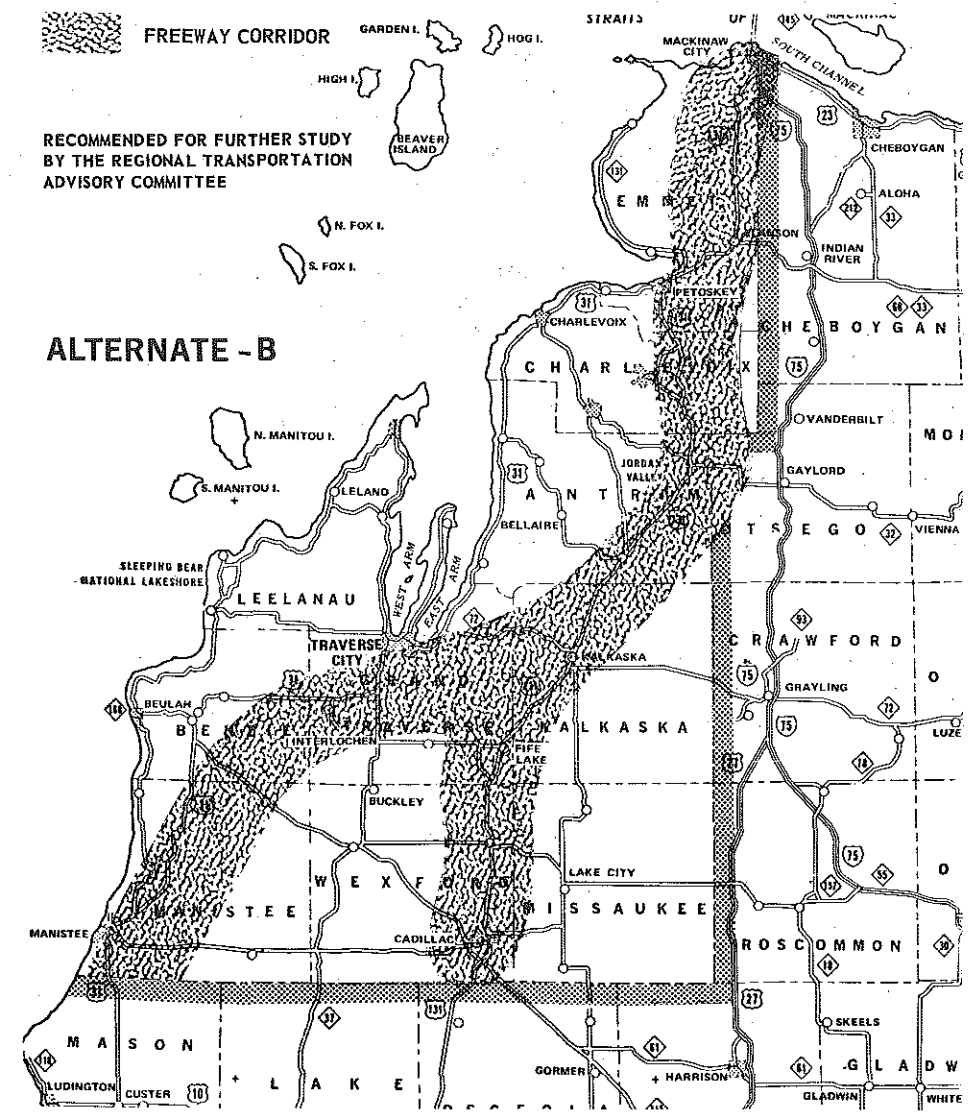
This is a freeway study corridor through the Region. The general location would provide proximity service to Manistee, the Sleeping Bear National Lakeshore, Traverse City, Charlevoix, Petoskey and Cadillac. The intent, in Grand Traverse County, is to examine the impact of a corridor north of Interlochen and, in Antrim County, a corridor west of the Jordan Valley.



ALTERNATE -A

ALTERNATE B

This alternate transportation study corridor varies from "A" only in that it passes east of the Jordan Valley in Antrim County.



ALTERNATE -B

ALTERNATE C

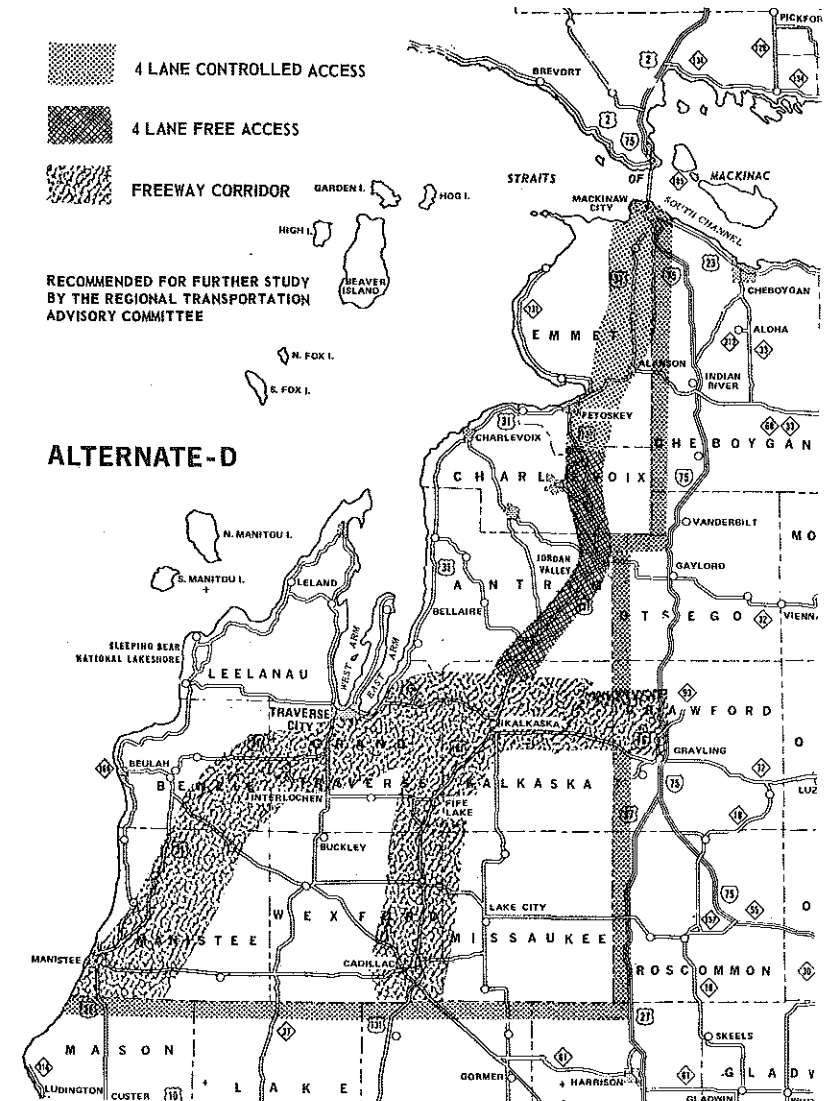
This is a transportation study corridor with a more southeasterly location extending northward from Manistee, passing south of the Interlochen area in Grand Traverse County, and intersecting I-75 somewhere north of Gaylord. Service to Cadillac would be similar to the other alternates. This alternate would require upgrading of the service to Charlevoix and Petoskey. A four-lane, controlled access corridor running northward to Mackinaw City from the freeway corridor is proposed for analysis. Existing US-31 north of Alanson would be examined for possible incorporation as two of the required lanes.



Source: Northwest Michigan Regional Planning and Development Commission, 1975.

ALTERNATE D

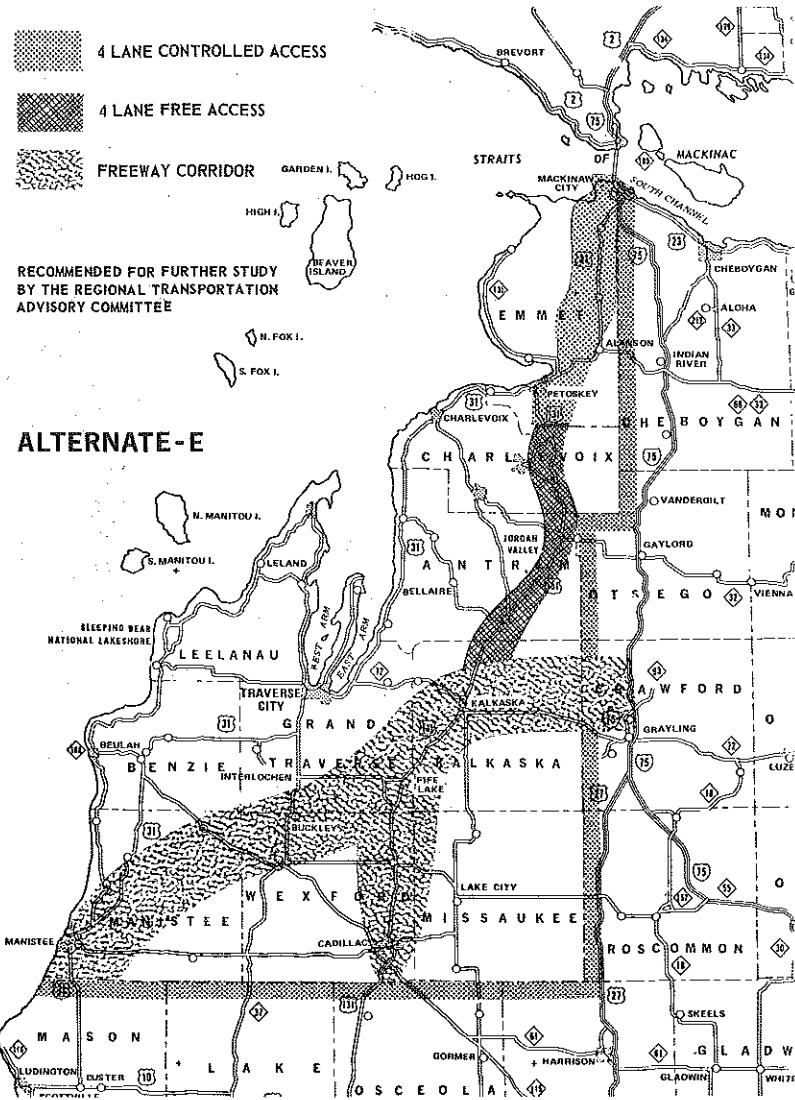
The freeway portion of this study corridor is similar to "A" and "B" as far north as Traverse City, but it then veers directly east to the Grayling area and I-75. North of the freeway portion of the corridor, upgrading of US-131 through Antrim and Charlevoix counties to a four-lane, free access facility is proposed for assessment. Through Emmet County the impact of a four-lane, controlled access facility will be analyzed under the conditions noted in "C".



Source: Northwest Michigan Regional Planning and Development Commission, 1975.

ALTERNATE E

The difference between this transportation study corridor and Alternate "D" is the location of the corridor from Manistee to the Kalkaska area. The intent is to assess the impact of this corridor which passes through the Buckley and Fife Lake areas before going north, relative to the "A" and "C" corridors which come closer to Traverse City.



PUBLIC INPUT

REQUEST FOR PUBLIC PARTICIPATION

The Northwest Regional Transportation Study: A Status Report is the product of several years of community interaction and data analysis concerning the transportation needs of the Northwest Region of Lower Michigan. This document has been prepared to facilitate this interaction and serve as a basis for informed discussion at forthcoming public meetings.

The meetings, to be held throughout the Region, are intended to provide an opportunity for interested citizens to express opinions and concerns regarding the study approach and to assist in making the decisions necessary at this point in the study.

Included in this status report is a review of the information generated by the Northwest Regional Location Team, a team of representatives from various agencies and disciplines. This information includes what has been done in the planning of highways and other transportation modes in the Region, fifteen highway alternatives which were initially developed to illustrate specific issues and interests identified in the early stages of the study, and various types of associated impacts. Also provided for review are five modified highway alternatives which the Regional Transportation Advisory Committee has selected for further analysis. It must be stressed that these five alternates have not been approved by the Regional Planning Commission nor the Location Team as practical alternatives. They have, however, been suggested by the Committee for review by the general public as possible practical alternatives.

In order to develop a transportation plan that will satisfy the needs of this Region, it is imperative that all affected interests express their concerns at this stage in the planning process. It is hoped that you will review this information with the goal of reducing the range of highway alternatives to a practical number. A more extensive study of these alternatives can then be undertaken relative to each other and to other transportation systems. The options should be reviewed in regard to state and regional goals and your own personal evaluation of transportation issues in the Region.

Resulting modified or practical alternatives should continue to represent a broad range of service characteristics. These will then be analyzed relative to a range of possible future situations. Included among the considerations will be energy efficiency, interaction with existing highway systems and other transportation systems, population projection ranges, and potential social, economic and environmental impacts.

To assist us at this point of decision, please complete the following brief questionnaire and return it to us either at the meetings or by mail.

TEAR ALONG THIS LINE

(Fold twice so that mailing address on reverse side shows. Staple or tape closed)

**PUBLIC RESPONSE TO THE
STUDY APPROACH, PRELIMINARY HIGHWAY ALTERNATES
AND OTHER TRANSPORTATION SYSTEMS**
NORTHWEST REGIONAL TRANSPORTATION STUDY
MICHIGAN DEPARTMENT OF STATE HIGHWAYS & TRANSPORTATION
November 1975

1. The Study Approach

YES NO

a) Is the information contained in this report adequate to evaluate the study approach? . . .

b) Have the opportunities for public participation been adequate?

c) If no, how would you prefer to have been involved? _____

YES NO

d) Do you feel local governmental agencies have been adequately involved?

e) Are there discrepancies or omissions which should be identified? Please specify:

2. Preliminary Highway Alternates

a) Is the information contained in this report adequate to narrow the range of highway alternates?

b) If no, what additional data should be provided?

c) Which of the data, if any, are unnecessary? _____

3. Other Transportation Systems

a) Are there issues or considerations for other means of transportation that have been overlooked which are essential to the continuation of the Regional Transportation Study, and specifically, evaluation of the highway alternates?

b) If yes, please specify: _____

4. If you would like to have your name included (or retained) on our mailing list to receive pertinent information relative to the study, please complete the following:

PLEASE PRINT CLEARLY

NAME _____

STREET ADDRESS _____

CITY _____ STATE _____ ZIP _____



**PLACE
STAMP
HERE**

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