

Studies of Highway Impact in Indiana; Progress Report No. 1— Development of the Studies

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INTRODUCTION

Effective transportation is indispensable to economic progress. The economic level of achievement of any society is dependent upon, and a measure of, the efficiency of the transportation system serving the society. Without adequate facilities for moving people and goods, economic and social activities can be carried on only in a limited, local way. (1)* Throughout history the most advanced areas in the world have been those whose transportation facilities were the best and most efficient. Any area, whether a farm, village, city, state or nation, must have adequate transportation facilities available to permit effective competition of markets for the products of that area and to make that area accessible for imported goods, raw materials, capital, and labor.

The history of this country provides a graphic illustration of the impact of transportation upon the growth and development of a society. For 200 years the sole means of transportation in this country was by water—excluding walking, horseback riding, or conveyance in some type of animal-drawn vehicle. Cities and towns grew along the coastlines, rivers, and canals. The steam locomotive then came into its own and spread to the west, not because the demand for transportation facilities in the west existed but because the tremendous effect of transportation on development was recognized. After the railroads were built the transportation demand grew and cities developed alongside the rails almost overnight, bringing tremendous growth and prosperity to areas which had been very sparsely populated or even completely undeveloped prior to the existence of the railroads. The railroads had

* Numbers in parentheses refer to list of references.

their limitations, however, in that they were not flexible enough to permit expansion of this developed prosperity to all areas. The next step in the transportation evolution was the development of widespread acceptance of automobiles as a means of private transportation and trucks as a means of transportation for a wide variety of consumer goods and raw materials. The motor vehicle continued the expansion and development process of the economy in areas untouched by the railroads.

Now, however, the transportation problem is changing. It is no longer a problem of not having the mode of transportation flexible enough to permit development in remote areas, but rather that the existing facilities have not been meeting the increasing demands made upon them. The way of life in the United States is becoming much more complex, the demand for more and better consumer goods is increasing, and this country is approaching the point where transportation facilities begin to strangle economic growth. In other words, economic progress in this country has brought the economy to the point where, for the first time since the development of the railroad, the ability of the transportation system to handle the requirements made upon it is being taxed.

In order to encourage and promote continued economic development and growth, the transportation system in this country must be improved. The society of the United States is a dynamic one, and it is vital to the economic system to be able to move goods, people, and products quickly and economically. An increasing standard of living creates demand for improvements in transportation, which, when realized, create in turn opportunity for an increasing level of economic activity. Within limits, the transportation system of any area has a cause and effect relationship on the economic welfare of the people in that region, thus by improving the transportation system the entire society benefits. The maximization of these benefits, however, is a major problem.

One of the basic components of the transportation system in this country is the vast network of highway facilities. This network is composed of well over three million miles of roads and streets serving, in some capacity, virtually every area of the country. Until the beginning of the National System of Interstate and Defense Highways, known as the Interstate System, few miles of new highways on new locations had been constructed in this country for the past 30 years. Even the Interstate System, vast and expensive though it is, will, when completed, constitute less than two per cent of the total mileage of highways in this country. The major difficulty with the highway system is not that the total mileage is insufficient, nor is it that the facilities are not properly located. Rather, the problem lies in the

fact that highways, in general, are antiquated in design, structurally and geometrically, to the extent that there is not sufficient capacity now in many locations to meet the current traffic demands and certainly not the future requirements.

The problem then is to improve and/or reconstruct the highway system in such a manner as to provide the maximum benefits to the entire population of this country. Too often in the past highways have been improved by resurfacing existing lanes and adding additional lanes to meet capacity requirements with a complete lack of regard for the effects on adjacent property and property in the immediate area. So long as the required capacity was obtained it was assumed that the overall effect was beneficial.

In more recent years, the concept of access control was developed, mainly due to the example of the toll roads with their success in moving high traffic volumes without the restrictions caused by roadside development. It is now a widely recognized fact that access control tends to preserve the benefits to movement of traffic for the economic life of a facility and because of this the use of access control has become, or is becoming, increasingly widespread. Controlled-access facilities have a history of accident reduction, higher speed traffic flow, and more driving convenience. The direct benefits to the motorist have been obvious and substantial. There is another aspect of access control and other highway improvements, however, about which much less is known. This is the economic effect on the adjacent and neighboring areas caused by highway improvements. These areas may be benefited or damaged to varying degrees and these effects should be considered an integral part of any study undertaken to determine the benefits due to a potential highway improvement. Any facility will have some effects on the adjacent area but insufficient information is currently available to predict the scope or extent of these effects caused by different types of highway improvements.

In the hope of supplying much needed information in this area, a long-term research project on the impact of highway improvements on adjacent areas was initiated in Indiana. The Joint Highway Research Project of Purdue University, the State Highway Commission of Indiana and the Bureau of Public Roads are the cooperating agencies in this study.

SCOPE AND PURPOSE

This project is tentatively scheduled to last for a period of at least ten years, during which time information on the effect of highway

improvements on the adjacent areas, including land-use changes, land-value changes, and changes in characteristics of highway travel, will be studied for several types of highway facilities. A study of this type will permit analyses of differences in changes which occur adjacent to various facilities and changes which occur with time for a single facility. By using a study area large enough to include a substantial portion of the affected areas, the extent to which the effects of highway improvements vary with distance from each of the facilities may also be determined.

The general purpose of this study is to provide information on the effects of highway improvements. Such information would provide for more efficient, economical, and beneficial highway location and relocation in the future.

An additional purpose, but not to be considered of secondary importance, is to provide information which will permit more equitable purchase of rights-of-way for future highway improvements. This portion of the study involves a parcel by parcel analysis of tracts involved in partial takings for right-of-way purposes. Currently, if the property owner and the state do not agree on the value of the portion taken condemnation proceedings are necessary. On occasion the courts have awarded damages which the state considers excessive and on other occasions the property owner has not been satisfied. There are no satisfactory methods available, no good tools available, to aid in reaching a mutually satisfactory solution. This study will attempt to provide such tools by developing individual case histories of remainders of parcels involved in partial takings, with emphasis on changes in land use and land value of such remainders.

FACILITIES INCLUDED

The specific types of highway improvements to be studied are:

- (1) an urban by-pass with complete control of access
- (2) a rural highway with complete control of access
- (3) an urban by-pass with little or no control of access
- (4) a rural highway with little or no control of access
- (5) a bridge and its approaches in an urban area
- (6) a major highway interchange near a metropolitan area

The specific facilities corresponding to the types of improvements listed above are:

- (1) the Interstate 65 by-pass around Lebanon, Indiana

- (2) a 13-mile portion of Interstate 65 from the south end of the Lebanon by-pass southeastwardly to the interchange with Interstate 465 northwest of Indianapolis, Indiana
- (3) the U. S. 31 by-pass around Kokomo, Indiana
- (4) U. S. 31 from the south end of the Kokomo by-pass to the north edge of Marion County, Indiana
- (5) the U. S. 231 bridge over the Wabash River connecting Lafayette and West Lafayette, Indiana
- (6) the interchange connecting Interstate 65 and Interstate 465 northwest of Indianapolis, Indiana

Facilities 1, 2 and 6 are continuous portions of Interstate 65, extending southeastwardly from the north edge of Lebanon to approximately eight miles northwest of the central business district of Indianapolis. Facilities 3 and 4 are continuous portions of U. S. 31, extending from the north boundary of Kokomo to the north edge of Marion County. The locations of the facilities are shown in Figure 1.

PROCEDURE OF STUDY

This series of highway impact studies was initiated July 1, 1960 by the Joint Highway Research Project at Purdue University. The initial phase of these studies consisted of determining what facilities should be included and the approximate sizes of the study areas surrounding these facilities, determining what types of data were required and establishing procedures for the collection of these data, and determining the base year for the studies to provide sufficient time prior to the highway improvement to establish initial conditions.

Table 1 shows a summary of the six highway improvements, the

Table 1

BASE YEARS AND SIZES OF STUDY AREAS

Facility	Base Year	Width of Study Area
1. Lebanon by-pass	1945	4-6 miles
2. Interstate 65	1950	4-6 miles
3. Kokomo by-pass	1945	4-6 miles
4. U. S. 31	1945	4-6 miles
5. U. S. 231 bridge	1950	variable
6. Interchange- I-65 and I-465	1950	4-6 miles

base years chosen for these facilities, and the study area sizes.

It is anticipated that the study area sizes given above will be sufficiently large to eliminate the necessity for control area studies. Control areas are areas which are as nearly similar as possible in all



Fig. 1. Location of facilities.

respects to the study areas, except that they are beyond the influence of the highway improvement. They are chosen for study for the purpose of providing control data on such variables as land values. By comparing results in the study and control areas, the differences are assumed to be caused by proximity to the highway improvement. These studies will not use the control area approach, as such, but will concentrate on

analyses of changes occurring in bands of various widths at different distances from the facilities involved.

The initial data collection will consist of obtaining complete information for the base year on the study area and the date and extent of changes from the base year to 1960 relative to land use and development, land value, traffic characteristics in the area, and other selected items. Similar information for each year after 1960 will then be gathered as it occurs so that all data are reasonably current at all times.

The results of the data collection phase and of initial studies of the data will be reported in a series of progress reports for each of the highway facilities. Additional and periodic progress reports will be issued throughout the study period as sufficient data to warrant analysis become available.

PREVIOUS INVESTIGATIONS

The state of California pioneered the economic impact studies, with the completion of a study of land prices and land use along California freeways in 1947. The California Division of Highways conducts economic impact studies as a regular part of the state highway operation, as well as continuing case studies of remainders of properties after partial takings for right-of-way, including severance damages and land values.

In the last ten years many states have initiated research into the area of economic impact of highway improvements. Some of the major effects studied are land use, land value, general economic effects, effects on agriculture, tax revenues, traffic patterns, safety, industry, residential development, and retail business. A partial listing of some major completed or in-process studies, indicating the effects studied and the conclusions reached, are given below.

1. Massachusetts Institute of Technology completed an economic impact study of Massachusetts Route 128. This study provided a comprehensive report of industrial development along approximately 55 miles of limited access highway around Boston. The study showed a remarkable increase in industrial investment along this route and indicated that the predominant factor motivating this industrial movement to Route 128 was the "desire for ease of regional access." (2)

2. A study of the land value impact of expressways in Dallas, Houston, and San Antonio, Texas was made by William G. Adkins of the Texas Transportation Institute. This study indicated that prop-

erties adjacent to these freeways appreciated in value considerably more than properties located as little as two blocks away from the freeways or the control areas used in the study "outside any possible zone of influence of the freeway." (3)

3. The University of Connecticut is conducting a study of the economic and social effects of the Connecticut Turnpike, with special emphases on manufacturing, tourist accommodations, retail establishments and sales, real estate, and local governments and service. (4)

4. Western Business Consultants, Inc. has completed a study for the Arizona State Highway Commission dealing with the economic impact of proposed locations of the Interstate System in the Flagstaff area. This study is a location study concerned with highway business, land use, tax revenues, user benefits, and construction costs. (5)

These few examples of studies conducted in various areas of the country give an indication of the wide scope of the problem and the varied approaches taken by researchers in attempting to determine the various economic effects of highway improvements. The very nature of the problem makes it difficult to find completed studies because most studies of this kind are concerned to some degree with changes in land values, which must be measured by some indicator, such as selling prices as transactions occur. The completed studies cannot be considered to indicate the total impact of a facility on land values because this would assume that the more immediate changes in land values noted in these studies are the total changes. It is quite possible that parcels of land in the vicinity of new highway facilities will continue to show changes in value different from "control areas" for a considerable period of time. Sufficient time has not elapsed since recent highway improvements to enable most studies to determine whether this is the case.

The interest in the area of highway impact is great, and numerous publications of findings are available. Several summaries of the published studies in this area have been made and are of tremendous value to any one interested in this area. One of these is listed in the attached list of references. (6) Those interested are referred to it as one of the most complete which has been published.

It is hoped that the "Studies of Highway Impact in Indiana" will materially contribute to a better understanding of the impact of highway improvements and to better planning and development of highway systems in Indiana and throughout the world.

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