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ECONOMIC EFFECT OF FREEWAYS ON URBAN AREAS
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ECONOMIC EFFECT OF
FREEWAYS ON URBAN AREAS

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1. Economic impact of the proposed interstate program in the Phoenix, Arizona area.
Arizona Highway Department 1957, 57p.
2. Residences and freeways.
Traffic Eng 28: 15-22+, Feb 1958.
Lists effects on housing prices.
3. Residences and freeways.
Calif Highways & Pub Works Mar-Apr 1957, p 23-31.
4. Predicting the economic impact of alternate interstate routes, Robert Stroup.
Nat'l Research Council--Highway Research Board Proc 1962.
5. Social effects of modern highway transportation.
Public Roads 32: p 1-10, Apr 1962.
6. U. S. Congress, House, Committee on Ways & Means.
...Studies of the economic and social effects of highway improvement. 87th Congress, 1st Session, HD 72.
7. The economic effects of bypass highways on selected Kansas communities, Hulse Wagner.
Kansas University, Lawrence..Center for Research in Business, 1960, 51p. in cooperation with U. S. Bureau of Public Roads.
8. Economic impact of highway improvement.
Univ Wash Bus Rev 19: p 3-20, Oct 1959.
Considers trading areas, labor markets, growth or decline of urban centers. Results of studies conducted at Univ of Wash.
9. Influence of highway improvements on urban land, William Garrison.
Univ. of Wash., Seattle, Department of Geography, 1958, 70p.
10. The effects of a depressed expressway.
Appraisal J 26: p 487-507, Oct 1958.
Studies depressed facilities and the effects on land use and property values.
11. Interstate highway construction can make or break a city.
Eng N 165: p 26-30, Sept 15, 1960.

12. Highway development: community attitudes and organization, H. Kirk Dansereau, John C. Frey, and Robert D. Pashek. Nat'l Research Council--Highway Research Board Preprint, 1963, 32p.

This paper is but one of a number completed and projected, based on data gathered and analyzed by members of the highway impact research staff of The Pennsylvania State University. The research effort, initiated by a land economist in 1958, is under his leadership and that of a transportation economist and a sociologist. The major objectives of the research, as set forth in the original proposal, included:

1. The measurement of economic and social changes in selected areas of the Commonwealth where highways are being constructed or improved. Included were changes in the following: (a) value of real property and capital worth of business establishments, (b) land use and tenure, (c) volume of production and retail sales, (d) farm enterprise organization and farm income, (e) commercial employment and wages of hired labor, (f) real estate taxes, (g) population, (h) levels of living and community values, (i) community organization.

2. The determination of which changes are attributable, wholly or in part, to highway improvement.

3. The correlation of changes with distance from the highway, traffic volume, and other selected measures of road service.

4. The determination of principles and standards for objective economic evaluation of new highway improvement projects.

To date, these research objectives have been partially fulfilled relative to three research sites, Monroeville, Blairsville, and four interchanges in the vicinity of York, Pennsylvania. Each of these sites contributed to the variety found in the overall research task. See Figures 1, 2, and 3 respectively.

This report deals almost exclusively with selected aspects of population, community attitudes toward highway development, and changes in community organization. The items are those listed above as objectives 1, g, h, and i.

13. Area redevelopment and highway transportation, David A. Grossman and Melvin R. Levin. Nat'l Research Council--Highway Research Board Preprint 1963, 42nd Annual Meeting, 16p + Bibliography.

High quality highways are one of the most important elements in economic development in modern American communities. Although good highways alone are not sufficient to ensure economic improvement in competition with other areas, they are a necessity to any area seeking to ensure its attractiveness to new industry, its ability to retain existing industry,

and its overall efficiency as a place to live and work.

Highway transportation has become more important to the local and regional economy as construction of the Interstate Highway System and the extension of the ABC System has progressed. At the same time another significant phenomenon of American life has gained greater recognition; the fact that many parts of the nation have not shared fully in the general prosperity that has characterized the nation as a whole in the past World War II period. Despite periodic recessions that have resulted in temporary declines in the Gross National Product, and despite the fact that in recent years the national economy has suffered from higher rates of unemployment than are consistent with our growth-rate objectives, the past decade and a half have been years of significant gains in the American economy. During this same period a number of areas have experienced unemployment rates well above the national average and have seen their traditional economic bases eroded.

These areas, which have frequently been referred to as depressed or distressed areas became the subject of special concern by the states and the Congress in the late 1950's. Federal legislation, the Area Redevelopment Act of 1961, provides special assistance in the form of loans, grants, and other aid to help such areas in improving their economies. The Area Redevelopment Act, which reflected an increasing degree of concern for such areas by the states as well as the Federal Government, established official criteria for "redevelopment areas" and clearly stated a Federal responsibility for assistance to such areas.

It is not the purpose of this paper to examine the specific nature of the Federal Area Redevelopment program and the potential effectiveness of the wide variety of means that have been marshalled by the Area Redevelopment Administration and other Federal, State, and local agencies to help localities and regions in the transition to a sounder economy. Rather, the aim is to consider the extent to which highway transportation, and particularly the Federally-aided highway system, can be an effective instrument in assisting the kinds of economic development sought in area redevelopment efforts. Toward this end, the bulk of the paper is devoted to an analysis of the major varieties of distressed areas that exist in the United States and the role that highway transportation can play in solving the problems faced by each.

For the most part, the analysis is based on previous work done by the authors as consultants to State, regional, and local agencies. Footnotes are provided in the text referring to the Bibliography which lists these previous studies and reports. The interested reader is invited to refer to these studies for a more detailed analysis of how the statements of the paper are based on specific situations.

This analysis is intended more as a first than as last word

on the subject. The precise ways in which new highways can assist in area redevelopment will undoubtedly continue to be a subject of interest to persons concerned with the theory and practice of economic development for many years to come. In addition, the Federal and State programs in this field are still in the developmental stage, and the degree of utility of any specific form of aid is still largely a matter of conjecture, rather than of precise measurement.

14. Discussion of "A Study to determine the economic impact of Atlanta Expressway upon the areas through which it passes", R. A. Flynt (Discussion), J. H. Lemly, author.
American Association of State Highway Officials, Washington D. C. undated, Proceedings of San Francisco, Calif., convention, December 1-5, 1958.
Discussion includes consideration of the general characteristics of the study area and the control area, changes in land use within the study area, and changes in land values.
15. Economic impact of San Antonio expressways U.S. 81 and U.S. 87, W. G. Adkins.
American Association of State Highway Officials, Washington, D. C., undated, Proceedings of San Francisco, Calif., convention, December 1-5, 1958.
16. Economic impact of highway change on six communities in Oregon, R. L. Shindler.
American Association of State Highway Officials, Washington, D. C., undated, Proceedings of San Francisco, Calif., convention, December 1-5, 1958.
17. XIth Congress, Rio de Janeiro--1959. Section 2: roads in relation to traffic--administration and finance. Question 6. The financing of road works and their economic justification. General report: J. B. Pereira: Paris, 1959 (Permanent International Association of Road Congresses), pp 22.
Reports from various countries are summarized and general conclusions are presented. The topics dealt with are as follows: (a) General: elements to be considered in studies of economic analysis; determination of simple criteria for the classification of projects according to the degree of economic return--preparation of an economic balance sheet; the influence of permissible loads as determined by tests and the types of vehicles authorized (type of carriageway and wearing life, costs of maintenance, costs of transport); accidents; research leading to a method for determining the economic return of roadworks by the estimation of their

contribution to the national income; financing of roadworks (taxation, loans, tolls); the economic role of the road network in underdeveloped countries: (b) Urban roads: the economic return from improvements in large cities; study of the economic advantages deriving from the construction of new traffic facilities; the development of economic criteria to allow the determination of priorities; the financing of parking places and garages.

18. Motorways and land use, Sir O. Williams:
Chart Surveyor 90: n 8, 1958, p 431-3.
Contract J 168: n4103, 1958, p 769-70.
Rds & Rd Constr 36: n 422, 1958, p 36-8.
Surveyor, Lond 117: n 3432, 1958, p 101-2.

Motorway design and land requirements are outlined. The land acquisition problem is discussed with reference to severance of properties, drainage and access rights, the comparative costsof retaining walls and embankments, and severance of flood plains. It is pointed out that minimizing dislocation to industries, agriculture, traffic and drainage is an intricate and lengthy process, particularly in a built-up country like Great Britain. Time of building is considered in two phases: (a) up to the date at which the route and land requirements are finally defined for the acquisition of land and property and (b) the actual construction. It is suggested that some procedure is required whereby the first phase may be carried out years ahead of actual construction without involving the Government in the immediate purchase of the property and with compensation for tenants for loss of unfettered tenure.

19. Right-of-way, 1956.
Nat'l Research Council--Highway Research Board Bulletin 140, 1956, 83p.

As in previous years, the Committee on Land Acquisition and Control of Highway Access and Adjacent Areas has summarized developments in the field of the Committee's interests during the year 1955 in bulletin form. Papers presented at the open session of the Committee during the Annual Meeting of the Board in January 1956 also are included.

Various phases of the expressway problem formed the subject of three of the papers presented. "Limiting Access to Existing Highways," by William E. Duhaime, explores the legal aspects of converting a conventional-type highway to one of expressway design. In "Regulation of Access Versus Control of Access in Oklahoma," LeRoy A. Powers relates how

his state has successfully utilized the police power to control access to expressway projects. Finally, Joseph L. Intermaggio discusses the importance of relating highway planning to over-all urban planning in "Expressways and Urban Planning."

Protection of the roadside is the theme of two other papers, including "Administration of Highway Protection Laws," by Adolf Feifarek, and "The Problem of Highway Encroachments in New Jersey," by Alexander W. Muir. Feifarek discusses some new ideas in roadside protection being developed in Wisconsin; Muir outlines techniques and methods utilized by New Jersey in a recent effort to rid the roadside of undesirable encroachments.

20. Developing concepts of land acquisition, 1957.
Nat'l Research Council--Highway Research Board Bulletin 169,
1957, 84p.

This bulletin contains five papers presented at the 36th Annual Meeting of the Highway Research Board, as follows: "Report of Committee on Land Acquisition and Control of Highway Access and Adjacent Areas," "Dallas Expressway Economic Impact Studies," "Some Sociological Considerations in Highway Development," "Washington Highway Economic Impact Studies," "The New Land Acquisition Law of Maryland."

21. The central business district and its implications for highway planning, Raymond E. Murphy.
Nat'l Research Council--Highway Research Board Bulletin 221,
1959, p 29.

In every American city there is one major focus or area of concentration known as the Central Business District or the CBD. This area is variously treated in highway planning. In some cities major routes still pass through the district, causing serious traffic congestion at busy periods. In other cities major through routes bypass the CBD or at least avoid its peak intersection. In still others, although major arteries do not enter the district they are routed around its circumference with shuttle buses or other arrangements to take pedestrians into the CBD. However it is treated the district remains a major target area for those planning the transportation routes of the metropolis.

This paper proposes to discuss the CBD. First, some of the area's distinguishing characteristics will be considered.

The characteristic that most people probably think of immediately is the presence of high buildings. Though

isolated buildings may stick up above the skyline elsewhere in the city the CBD has the greatest concentration of such buildings, the greatest average building height.

A concentration of certain functional establishments is even more of an index to the CBD. Here, typically, are the major office buildings and banks, the major hotels, the principal concentration of business services, and various associated establishments. Department stores and specialized clothing stores are likely to be present also in spite of the growing competition from outlying shopping centers. Typically, the whole CBD assemblage serves the entire city rather than a section of it, and people of all levels rather than those of any one class or group.

22. Measurement of central business district change and urban highway impact, Edgar M. Horwood, and Ronald R. Boyce. Nat'l Research Council--Highway Research Board Bulletin 221, 1959, p 40.

The problem of evaluating the impact of urban freeways on the city center has not yet been studied in any systematic way. In fact, no approaches to the subject have been developed and no ideas have been advanced as to just how to go about such an investigation (1,2). At this elementary stage in the development of knowledge concerning land use structures and its relationship to transportation, the problem must be presented in very broad terms involving some degree of subjective analysis. Nevertheless, it is clearly realized that a proper assessment of highway impact on any land use or activity must necessarily evaluate conditions within the freeway network itself, which may alter impact; secondly, it must fully understand the characteristic of the object supposedly receiving the impact. In addition, closely related variables must also be understood. Of course, in evaluating the role of freeways on the central business district (CBD) it is critical that trends within the CBD be fully realized. Only by considering both inherent and closely related change in the freeway network, and independent change in the CBD, can the impact of freeway development on the city center be fully realized.

Although improvements in both inter and intracity transportation may have a marked effect on an urban economy, there are many other simultaneous changes in the structure of the metropolis which may also have a broad impact. These include inter-regional migration, defense spending, national

market conditions, the availability and adequacy of water, industrial waste problems, labor conditions, and the sheer multiplying effects of urban growth itself, as well as many other things. As any urban area increases in population it becomes more self-sufficient in providing the range of goods and services required by its inhabitants. Thus, some new establishments are woven into the economy for this reason alone. With all of the variables operating and having some mutual effect on each other, a substantial research problem arises in segregating the influences of freeways, even in a general manner, and particularly in assessing their influence on the CBD. As a general rule, it is extremely difficult, statistically, to isolate from a complex set of factors, the effects of a single factor (such as the impact of urban freeways on the CBD) unless one has previously determined the effects which some of the other important factors have had on CBD activities.

First, primary variables inherent in the freeway network itself, and then the closely related variables, will be discussed. Secondly, CBD district changes will be presented and analyzed in relation to future freeway development.

23. Land acquisition--1959.
Nat'l Research Council--Highway Research Board Bulletin 232,
1959, 123p.

This bulletin contains the reports and papers pertaining to land acquisition matters as presented at the 38th Annual Meeting of the Highway Research Board. Included are the following:

"Report of Committee on Land Acquisition and Control of Highway Access and Adjacent Areas," by David R. Levin.

"A Review and Some New Thinking on Control of Highway Access," by Norman A. Erbe.

"A Method of Measuring Changes in the Value of Residential Properties," by Francis E. Ryan.

"Highway Planning and Protection Measures in Wisconsin: A Panel Discussion."

24. Land acquisition and economic impact studies--1958.
Nat'l Research Council--Highway Research Board Bulletin 189,
1958, 125p.

This bulletin contains five reports and papers presented to the 37th Annual Meeting of the Highway Research Board, as follows:

Report of Committee on Land Acquisition and Control of

Highway Access and Adjacent Areas.

Industrial Development Survey on Massachusetts Route 128.
Economic and Social Impact of the Connecticut Turnpike.
Methods Used to Study Effects of the Lexington, Virginia,
Bypass on Business Volumes and Composition.
Tenant Relocation for Public Improvement.

25. Highways and economic development.

Nat'l Research Council--Highway Research Board Bulletin 227,
1959, 88p.

This bulletin contains the six papers on the subject presented at the 38th Annual Meeting of the Highway Research Board under the sponsorship of the Committee on Economic Analysis and the Committee on Land Acquisition and Control of Highway Access and Adjacent Areas, as follows: "Changes in Land Use and Value Along Atlanta's Expressways," by James H. Lemly. "Massachusetts Route 128 Impact Study," by A. J. Bone and Martin Wohl. "Land Value Impacts of Expressways in Dallas, Houston and San Antonio, Texas," by William G. Adkins. "Approaches to Three Highway Impact Problems," by William L. Garrison. "Some Effects of Limited Access Highways on Adjacent Land Use," by Stuart Parry Walsh. "The Land Use Map Versus the Land Value Map: A Dichotomy?"

26. Effect of Freeway development on adjacent land values in California, Frank. C. Balfour. "Convention Group Meetings." Proc., American Association of State Highway Officials, 1947, pp, 55-76.

Contains sections dealing with acquisition, limited-access and damages.

27. The highway and the local community, Justin K. Hartzog. "Fifteenth Short Course on Roadside Development." Ohio State University, Columbus, 1956, pp 104-109.

Physical, economic and social problems resulting from passing limited-access highways through established communities and suggestions for enhancing the advantages of such introductions while minimizing the detrimental features.

28. Relations with adjacent property owners on water conservation and erosion control, S. L. Taylor. "Thirteenth Short Course on Roadside Development, Ohio State University, Columbus, 1954, pp 12-16.

Cites problems of the engineer in designing highways and certain malpractices of land owners which affect proper design. Suggests practices which will improve relationships and create more thoroughly integrated land units.

29. The role of the roadside council in the development of the Ohio highways, Mrs. William G. Mather.
Twelfth Short Course on Roadside Development, Ohio State University, Columbus, 1953, p 17-25.
Discusses the functions and projects of the Ohio Roadside Council and its work in roadside improvement, legislation, and education.
30. A program of highway research at the University of Wisconsin, J. H. Beuscher, Donald Heaney, Ray Vlasin and Frank M. Covey, Jr.
Nat'l Research Council--Highway Research Board Bulletin 205, 1958, p 11-17.

Professor Beuscher: This is a description of highway research in progress and an outline of some future research hopes. We are not here reporting research findings; rather, we are focussing on research goals and methods.

I have fortified myself, in this presentation, with Messrs. Heaney, Vlasin and Covey, who are all researching on highway problems, at Madison, working closely with each other, benefiting from each other's suggestions. Mr. Heaney and Mr. Covey are lawyers and their research is being financed by the Automotive Safety Foundation. Mr. Vlasin is an agricultural economist in the employ of the U. S. Department of Agriculture. He is working under Professor Raymond J. Penn of our Agricultural Economics faculty.

As each of these men gives a description of the research he is attempting, note the ease with which we have crossed the departmental lines between law and economics. Notice, also, that the research of each man gives emphasis to empirical findings. In the Law School we call this "law-in-action" research.

How are appraisers actually applying the black letter rules of eminent domain evaluation law? What, in detail, is the process by which highways are planned and right-of-way acquired? What voice do local people and local governments have in the process? How can some of the adverse effects of highway development upon the farming business be reduced? How can we more effectively protect both public highway and private business investment by regulating land uses on land abutting our highways? These are some of the important questions Messrs. Heaney, Vlasin and Covey are attempting to answer. After each has briefly described his work and his goals, I shall try to outline briefly some of our future plans for highway research.

31. Comprehensive arterial highway plan for the Cleveland metropolitan area, Thomas J. Fratar.
Nat'l Research Council--Highway Research Board Bulletin 153,
1957, p 28.

The Cleveland Metropolitan Area is co-extensive with Cuyahoga County. It contains 58 municipalities, the largest of which is the City of Cleveland.

The county extends along the shore of Lake Erie for about 30 miles. Its width is about 19 miles at its eastern boundary and about 10 miles at its western boundary. Its population in January 1954 was approximately 1,500,000.

Joint Action for a comprehensive survey and plan

Recognizing the need for a comprehensive arterial highway plan based on the prospective development of the county and comprehensive and up-to-date traffic data, a survey program was agreed upon by the U. S. Bureau of Public Roads, the Ohio State Highway Department, the City of Cleveland, and the County of Cuyahoga. The County Engineer, Albert S. Porter, was selected as Survey Director.

With the financial assistance and technical cooperation of the Bureau of Public Roads, the Ohio State Highway Department undertook a comprehensive origin and destination survey of vehicular trips by means of postcard questionnaires, supplemented by roadside interviews. The county was responsible for traffic volume counts and traffic pattern investigations.

Cleveland participated equally with the county in payment for the services of Tippetts-Abbett-McCarthy-Stratton, who were retained as consultants for the preparation of a comprehensive arterial highway plan and report. Their project engineer in direct charge of the consultant's work was Glenn E. Brokke.

32. Urban arterial developments which benefit the community, W. Earle Andrews.
Nat'l Research Council--Highway Research Board Bulletin 190,
1958, p 25.

The New York parkway system in the New York City area is the oldest and most comprehensive urban arterial development which benefits its community. Starting with the old Bronx River Parkway Commission in the Bronx and Westchester Counties more than forty years ago, and soon thereafter with the Long Island system, these two suburban systems on the outskirts of New York City in New York State finally were

joined within the city itself to form an extensive urban network. The principles governing their establishment, extension, and development were adopted by the State Council of Parks in 1929, after wide experience in the initial development of this program. These principles were amended in 1955 to become effective January 1, 1956 by approval of the State Council of Parks headed by Robert Moses.

33. Expressway and industrial location, Charles Ball and Michael Teitz.

Traffic Quarterly 12: n 4, pp 589-601, October 1958.

Objectives of this article are three: to combine researchers' findings about the impact of expressways on industrial development; to comment tentatively about that impact; and to discuss whether engineers and planners are organized and tooled to make expressways yield maximum secondary benefits.

On the effects of expressways on land-use and industrial investment, we have case studies and monographs of empirical evidence; yet we have no body of theory applicable in a variety of situations. This may prove a costly shortage as engineers and planners confront unprecedented highway construction with few firm notions about effects the new public works will have on metropolitan land-use, on urban area efficiency, and forms and spatial relationships in tomorrow's cities.

34. Consequences of highway improvement.
Nat'l Research Council--Highway Research Board Record No. 16,
59p.

The book contains five reports presented to the 42nd Annual Meeting of the Highway Research Board.

35. Highway Law revision developments--1962 and reservation and acquisition of highway rights-of-way.
Nat'l Research Council--Highway Research Board Record No. 8,
106p.

This book contains five reports on the first field and eight reports on the second, presented at the 42nd Annual Meeting of the Highway Research Board.

36. Urban freeways and social structure; some problems and proposals, Marvin G. Cline.

Nat'l Research Council--Highway Research Board Preprint,
January 1963, 19p.

...It will be the purpose of this paper to suggest that the space and its social structure through which an urban freeway is to be constructed needs to be understood in great detail by the road designer in order both to avoid the

harmful effects and to gain potential advantages which the freeway may have for the community...

37. Interstate right-of-way acquisition and road closures in South Mississippi--some early findings.

The University of Mississippi, School of Engineering, 1963, 89p.

This report is the third of a series resulting from the study of the effects of the controlled-access Interstate Highways on land value and land use in selected areas of Mississippi. These studies were provided for in the agreement between the University of Mississippi, through its Engineering Experiment Station and the Highway Department, and are being conducted by the Bureau of Economic and Business Research of the University.

The present report is an analysis of data developed in the Lamar-Forrest-Jones counties area of study along Interstate Highway 59. The analysis deals with the effects of right-of-way acquisition and road closures resulting from right-of-way requirements on land value in a period after acquisition but before completion of the Highway. Because of the phase of construction of the Highway at the date of investigation, these results can only serve as indications of trends. The final effects can only be determined after completion and after the area has experienced the Highway in use.

38. By-passes for small city and town traffic, Mayer Ableman. Traffic Quarterly 4: n 2, April 1950, pp 164-172.

Reports changed attitudes of businessmen in a Missouri community about the adverse effects of a bypass.

39. Dallas expressway economic impact studies, William G. Adkins. Nat Research Council--Highway Research Board Preprint Jan 1957, 36th Annual Meeting, 23pp.

The major objectives of the studies are to determine: (1) changes in selling prices of properties in areas affected by Central and in non-affected areas, (2) changes in tax valuations in affected and non-affected areas, (3) changes in land use in affected and non-affected areas, and (4) attitudes of business men and residents along the facility.

40. Los Angeles study reveals freeway benefits, L. Aldrich. Public Works 84: July 1953, pp 96-97.

41. Economic factors involved in proposed highway construction, W. L. Anderson.
Roads & Streets 85: March 1952, pp 38-44.
General economic and social benefits are gained through well-designed, permanent highways in the stabilizing effect they have on both business and the people.
42. Business survey of Safford Highway 70 relocation. Arizona Highway Department, Division of Economics and Statistics, and others, Phoenix, 17pp., April 1953.
Describes stimulus to small town economy accredited to relocation of main traffic artery.
43. The maximum value of urban land converted to diverse uses, Henry A. Babcock.
Econometrica 3: n 2, p 147, April 1935.
In this paper, an attempt is made to find a starting point for a comprehensive theory of urban land utilization and city growth in its broader aspects...in mathematical terms.
44. Economic impact of expressways, Frank C. Balfour.
American Association of State Highway Officials Proc 36th, pp 119-123, 1950.
Author reports that empirical studies have persuaded land owners and business men of beneficial effects of a by-pass.
45. Effect of freeway development on adjacent land values in California, Frank C. Balfour.
American Association of State Highway Officials Proc, 33rd, pp 55-76, 1947.
Effects of by-passes on three California cities are described.
46. Effect of freeways and expressways on business and property, Frank C. Balfour.
Traffic Quarterly 21: n 8, pp 262-264, May 1951.
Summarizes economic impact studies of three California towns.
47. How freeways increase property values, Frank C. Balfour.
Engineering News-Record 145: n 15, pp 44-47, Oct 12, 1950.
Discussion of land values, land use, and business composition.
48. New York State to build through cities as a check to decentralization, Leonard A. Bergman.
Civil Engineering 16: n 11, p 479, Nov. 1946.
Refers to increased property values in urban areas through access to improved roads.

49. Economic evaluation of two Indiana bypasses, A. K. Branham.
Nat Research Council--Highway Research Board Bulletin 67,
p 1-14, 1953, Washington, D. C.
Lists benefits resulting from by-passes and some problems
encountered.
50. Protect investment in arterial highways with control of access,
W. F. Childs, Jr.
Better Roads, July 1956, p 25.
Although these roads have not been opened to traffic for a
sufficient length of time to make economic studies to deter-
mine their effect on property values, it is only reasonable
to expect that properties will be very materially enhanced
in value and there will be a tremendous increase in business.
51. Cities as long as highways-that's America of the future.
U. S. News and World Report, April 5, 1957, p 27.
Cities rapid movement of business toward superhighways,
gradual rise of belt cities following major thoroughfares,
and land booms along expressways.
52. What are the benefits of controlled access?, A. C. Clark.
Better Roads 25: n 4, pp 52-54, April 1955.
Stabilizes and enhances the value of abutting and other
property.
53. Effect of limited access highways on community development,
F. L. Dieter.
Proceedings, Conference on Modern Highways, Massachusetts
Institute of Technology, Cambridge, p 5, June 1953.
54. Land value along Gulf Freeway in Houston, Texas, H. W. Elder.
Traffic Quarterly 6: n 4, pp 390-401, October 1952.
Based on comparison of land values near the Gulf Freeway
with those farther away.
55. Here's proof, outer highway increases both business and
property values, Harry N. Cook.
California Highways & Public Works 28: n 7-8, pp 13-14,
16-17, 51, July-Aug 1949.
Indicates limited-access highway affords good business
sites, increase in land values and business activity.
56. Their roads buy themselves, Henry K. Evans.
Nation's Business, 6pp, Nov 1954.
General description of economic effects of highway construction
in several areas in the U.S., especially changes in land values.

57. Freeway ups and downs.
California Highways & Public Works 29: n 1-2, Jan-Feb 1950.
Studied real estate and retail sales; interviewed retail merchants and motel operators. Concluded that all types of business benefit.
58. The businessmen's stake in highway improvements, L. D. Friend.
Proceedings, Conference on Modern Highways, Massachusetts Institute of Technology, Cambridge, p 3, June 1953.
Mentions organized business groups in support of highway improvement, cites various benefits to be expected.
59. Temecula study, F. O. Gibbons.
California Highways & Public Works 30: n 7-8, July-Aug 1951.
Two years "before and after" study finds no ill effects on businesses catering to motorists.
60. Access control one way of restoring traffic stability, D. C. Greer.
Better Roads p 31, Oct 1956.
...our experience long ago completely repudiated the old theory that a controlled access highway is injurious to the economy of a community.
61. Increase in land values following construction of expressways, D. C. Greer.
Technical Bulletin No. 202, American Road Builders Association, Washington, D. C. pp 1-6, 1953.
62. Road construction as an economic balance wheel, A. H. Hansen.
Roads & Bridges 83: p 214, June 1945.
States long range highway construction plan will stimulate investment, motivate production, stabilize business and relieve unemployment.
63. By-product benefits of freeways in metropolitan areas, Paul O. Harding.
American Highways 34: n 4, pp 6,8, 21-22, October 1955.
Says freeway benefits widely used in California as selling point for housing subdivisions.
64. Business benefitted by expressway, Rudolf Hess.
California Highways & Public Works 30: n 3-4, p 30, March-April 1951.
Lists some benefits of expressways and rural four-lane highways to nearby business.

65. Land values before and after freeway development, Rudolf Hess.
American City 47: n 10, p 117, October 1952.
Pro and con views of change in land value and use, some undesirable aspects.
66. Economic factors affecting real estate values, Jeffrey Holbrook.
American Association of State Highway Officials Proc. 40th, pp 53-59, 1954.
An independent appraiser and real estate consultant discusses these factors affecting real estate values - (1) influence of government, (2) fixed supply of real estate, (3) dependence of real estate upon personal income, (4) availability of financing, and (5) real estate is always a local market not affected by national trends.
67. Changing land-use patterns as a basis for long range highway planning, Homer Hoyt.
Nat Research Council--Highway Research Board Bulletin 64, 1952, pp 1-8, Washington, D. C.
An analytical discussion of the effect of the automobile on decentralization of the city and on suburban development together with the attendant problems deriving from the changed traffic flow pattern.
68. Venture success, W. Hubbard.
California Highways & Public Works 30: n 5-6, May-June 1951.
Safeway Stores, Inc. conducted extensive research prior to selecting a new site, business volumes exceeded estimates.
69. Camarillo study, J. F. Kelly.
California Highways & Public Works 34: n 9-10, Sept-Oct 1955.
A study of freeway development and frontage roads showed that property values and retail business volumes increased; accessibility and growth were not hindered.
70. Four years after, J. F. Kelly.
California Highways & Public Works 32: n 5-6, May-June 1953.
A follow-up of a previous 'Fairfield Study' published in Jan-Feb, 1951 (See Young, W. S.).
Bypassed businesses adjusted and gained increased local patronage; Travis AFB encouraged business and residential growth; bypass improved accessibility.

71. Economic consequences of highways by-passing urban communities, J. L. Lemly.
Research Paper #1, Bureau of Business and Economic Research, Georgia State College of Business Administration, Atlanta, October 1956.
Survey of existing studies pertaining to the economic effects of by-passes upon nearby urban areas.
72. Highway by-passes and their economic effect upon nearby communities, J. H. Lemly.
Atlanta Economic Review 6: n 7, p 8, July 1956.
Fourteen states are studying or have studied economic effects of bypasses. Preview of author's report above.
73. Expressways and the central business district, David R. Levin.
American Planning and Civic Annual pp 131-139 (1954).
74. Limited access highways in urban areas, David R. Levin.
The American City 59: p 77, Feb 1944.
Resume of a publication by the author, entitled Public Control of Highway Access and Roadside Development, Public Roads Administration 1943, which discusses limited-access highways, marginal land acquisition, land use controls, highway development rights and restriction of ribbon development.
75. Limited access for modern roads.
Better Roads, adopted from Ohio Dept of Highways booklet Limited Access for Modern Highways, p 34, Sept 1956.
Lists ten advantages of limited access highways.
76. The case for urban expressways, Thomas H. MacDonald.
The American City 62: pp 92-93, June 1947.
Long range planning of adequate highway facilities will save many cities from stagnation and decay...Traffic generally tends to avoid congestion...Cities that refuse to modernize their arterial routes will pay a heavy price in loss of business and depreciation of property values in the central business district.
77. The influence of public improvements on property values, Robert Moses.
Triborough Bridge and Tunnel Authority, 17pp., August 1953.
Some figures on the increase in property values due to highway construction and effects on public housing programs.

78. The city comes to Needham.
Needham Planning Board, Needham, Massachusetts, 1955.
A discussion of the problems facing a town which is now being swamped by industry and suburban Boston.
79. New England highway upsets old way of life.
Business Week, pp 186-188, May 14, 1955.
They create demands for industrial and commercial land along the super road and open a new market for residential property in the towns nearby.
80. New roads keep dollars at home.
Engineering News n 9, pp 145-151, 1950.
Arizona attempts to keep shoppers' dollars at home by building roads, making Tusson and Phoenix more accessible to outlying areas.
81. Broad aspects of highway planning affects nation's economic, cultural and social life, C. M. Noble.
Civil Engineering 17: p 27, October 1947.
Says that good roads develop more attractive, productive communities.
82. A 15 year study of land values and land use along the Gulf Freeway on the city of Houston, Texas: Norris and Elder, Consulting Engineers.
Highway Planning Survey, Texas Highway Department, 183p, 1951.
Study of Gulf Freeway through 1950. Substantial increases in adjacent land values attributed to freeway development.
84. Westlake Community, G. S. Pingy.
California Highways & Public Works 30: n 3-4, March-April, 1951.
Residential builder-developer plans community along expressway using frontage roads; shopping center and parking area planned off highway.
85. Controlled access stabilizing influence on economic growth, Harold L. Plummer.
Better Roads p 25, June 1956.
Benefits of access control became evident to land owners, many of whom had opposed it, after road was constructed.

86. Shell Beach study, T. A. Reinhardt.
California Highways & Public Works 30: n 11-12, Nov-Dec,
1959.
Absence of other factors attributes town's suddenly
accelerated growth rate almost entirely to the improved
safety, comfort and time savings of the new highway
which attracted new residents.
87. Limited access throughfares in the community plan, T. W.
Schulenberg.
Proceedings, Purdue University Road School, 41st, pp 260-
268, 1955.
Describes opposition to drastic traffic changes resulting
from limited-access, means of effecting improvement measures,
and general benefits to be derived by the community.
88. Highway and thoroughfare planning in relation to urban planning
and development, I. S. Shattuck and K. B. Rykken.
Nat Research Council--Highway Research Board Bulletin 31,
July 1950, Washington, D. C.
Presents effects of new roads on land use.
89. Controlled access, Sixth Highway Transportation Congress.
Highway Highlights, pp 56-66, June-July 1956.
The theme of discussion is "Traffic Freedom and Good
Business with Controlled Access". Includes problems of
business and traffic flow which result from changing to
controlled access highways.
90. Economic effects of New York Thruway, B. D. Tallamy.
Traffic Quarterly 9: pp. 220-228, April 1955.
...a kind of beneficial economic revolution is already
underway along the route and especially near the inter-
changes." Describes considerable industrial and commercial
development, appreciation of land values, and estimates
of increased tourist trade.
91. Highway design and the business community, E. T. Telford.
California Highways and Public Works 30: n 9-10, pp 36-37,
49, Sept-Oct 1951.
California Division of Highways has data supporting the
thesis that improved highways enhance property values
and business volumes.

92. Estimating damage caused by loss of access rights, Frank K. Wall.
Land Acquisition and Control of Highway Access and Adjacent Areas.
Nat Research Council--Highway Research Board Bulletin 10, 1948, pp 36-42, Washington, D. C.
Emphasizes the following factors; (1) When accessibility is destroyed, it is seldom that it cannot be reestablished, (2) it is not conclusive that an existing access always lends value to a property, (3) damages caused by loss of access are dependent on the utility of the property, and (4) the proper formula for estimating damages is a "before and after" approach to value.
93. By-pass effects, W. S. Young.
California Highways & Public Works 30: n 5-6, May-June 1951.
Through traffic contribution to various business volumes is insignificant; neither bypass has shown detrimental effects to towns of Folsom and Imperial.
94. Escondido study, W. S. Young.
California Highways & Public Works 30: n 7-8, Jul-Aug 1951.
Notes varying degrees of benefit to different types of business.
95. Factual studies, W. S. Young.
California Highways and Public Works 30: March-April 1951.
(1) Means of access to commercial property from highway often overweighted in comparison with other factors,
(2) some advantages of limited access.
96. Freeway ups business, W. S. Young.
California Highways & Public Works 29: n 1-2, Jan-Feb 1950.
Describes freeway effects on retail sales, real estate sales; retail merchants and motel operators interviewed; describes methods of investigations.
97. Freeway values, W. S. Young.
California Highways and Public Works 30: n 9-10, Sept-Oct 1951.
Concludes that the freeway was the principal reason for increases in property values.

98. Future highways and urban growth, Prepared by Wilbur Smith and Associates.

Automobile Manufacturers Association February 1961, 376pp.

This study analyzes the usage and impacts of the National System of Interstate and Defense Highways, particularly as related to urban areas. Its purpose is three fold; First, it indicates transportation needs of future urban areas; second, it predicts the use and effects of the Interstate system on urban and rural travel; and third, it determines the benefits to be derived from the system and the penalties resulting from a halt or delay in construction.

Accordingly, it has been necessary to investigate the alternate approaches to urbanization and urban transportation. In this regard, consideration has been given to many questions that commonly arise: What is the most likely form of future metropolitan areas? What will be the role of the future central business district? What will be the function of public transportation? How can Interstate Highways and other freeways be most effectively used? What complements to urban Interstate highways will be required? What are the economic implications and benefits accruing from Interstate highway improvements?

Many opinions and predictions relative to future growths and distribution of population have, therefore, been reviewed. The role of urbanization and the preferred forms of metropolitan areas have been anticipated, since future transportation plans must be based on these assumptions.

While the study is concerned primarily with highway development, it is obvious that in many areas highway transportation alone will not suffice. Accordingly, the potentials of transit, especially rapid transit, have been thoroughly investigated, particularly as they relate to highway and freeway development.

The extent to which the Interstate system will satisfy urban area transportation needs has been indicated. Attention was also given to the traffic that this system will serve, the impacts it may have on the development, growth, and stability of communities, and the urgency of its completion. In most of these analyses, it was necessary to deduce and generalize from studies-in-depth of selected cities, and from a series of specially conducted impact studies.

Obviously, new arteries of travel must be adequately supplemented by terminal facilities and attractive means for dispersal and concentration of volumes. Accordingly, consideration has been given to the proper integration of freeways and transit with off-street parking facilities and collector-distributor routes.

Finally, the economic values of the Interstate system have been explored. Particular emphasis has been placed on benefits to motorists and other that will be derived from the urban and rural segments of the Interstate system. Conversely, losses or penalties that would result if the system is not completed on schedule also are discussed.

The background information on urban growth and travel presented in the early chapters of this study is essential for a thorough understanding of future transportation needs. These exploratory analyses of city developments, population growths and distribution, travel patterns and characteristics, and transit usage provide a sound framework for evaluation of the specific problems discussed in subsequent chapters.

99. Relocation--People and Homes--Where do they relocate when the freeway comes? James R. Smith.
California Highways & Public Works 39: n 9-10, pp 39-42, Sept-Oct 1959.

The major function of any highway right-of-way department is to acquire the lands upon which a proposed highway facility is to be constructed. Some of these lands will be vacant and some will be improved. All will reflect varying uses and will be used to varying degrees.

Freeway right-of-way acquisition through primarily residential areas affects people and their homes. When the owners have moved and the freeway path has been cleared, it is not accurate to assume that both taxpayers and taxable improvements have been completely "written off" the community's tax and economic roster.

In the cities of Oceanside and Carlsbad a before-and-after study of these 2 important elements of the over-all right-of-way acquisition picture has been made in which it is clear that a majority of the displaced owners and their former homes and buildings remain in the incorporated area of the 2 communities. To the extent that this study measures the reaction of people to a directly-affecting freeway improvement--as well as the relocation sequence of their homes and buildings--it can be a helpful measure of expected impact to those concerned with the problem in other communities where similar facilities are proposed. It may be premised that the sequence developed in this study area is both reasonable and typical.

The facts produce a pattern; the pattern permits theory. A sequence of building disposition can be premised. From the total number of improved properties acquired for a freeway project, a majority of homes will be relocated clear

of the highway right-of-way but still within the immediate vicinity. In some cases the occupants will go with the homes; in other cases, the improvements will be sold to new owners to be subsequently removed from the right-of-way. In either case, after the extensive rehabilitation and upgrading, which relocation makes possible, these improvements as a group will support higher values than those which prevailed in previous locations.

A certain number of improvements on any project will not be allowed to be relocated and these will be subsequently demolished for salvage. Such improvements will always be buildings which do not currently meet community standards and are in such a condition so as not to justify the expense of bringing them up to the required levels. The marginal values attributable to such buildings will be removed from the community base.

Most of the owners displaced by right-of-way acquisition will remain within the immediate area. As noted previously, some will retain and relocate their original buildings, while other will prefer to sell their homes and thereafter purchase or build another. It is characteristic that owners will attempt to better themselves by acquiring something more desirable--generally more valuable--than that which they have sold. In most instances the payment of cash and the assumption of almost all selling and escrow costs by the state provides the opportunity for such betterment with its resulting individual and community gains.

100. The geographic impact of highway improvement, William. L. Garrison and Marion E. Marts. Univ. of Wash., Highway Economic Studies, Dept. of Geography & the Dept. of Civ. Eng, July 1958, 139pp.

This study is an attempt to measure the effects of the realignment and improvement of US 99 in the vicinity of Marysville, Washington. It is intended to complement the majority of highway "impact" studies by presenting results in great detail for a single case. Whereas the majority of studies have dealt with a relatively few selected indicators, this study makes use of many different indicators of effects and presents hundreds of separate combinations and comparisons of data. Although the study presents a wealth of data, the reader should bear in mind that the data deal only with a single case (and some convenient comparisons) and do not permit single-answer sorts of generalization. What value the study may have lies in the great detail of the results presented.

It is believed the results of this study will be of interest to appraisers, property owners, business men, and others faced with the necessity of making evaluations and investment decisions under the uncertainties attendant upon the tremendous Interstate Highway program. It will help give clearer understandings of changes occurring with expansion and relocation of highway facilities when related to specific kinds of land uses and of locations.

The study is empirical. Attempts have been made to measure changes that have occurred and link these to changes in the highway system. Statements are limited to what can be observed from data rather than what one thinks might or should have happened.

Many changes are emphasized in the study, so that it contains no single answer as to the impact of highway improvements. For an overview of more general statements of effects, the reader is referred to the "Influence of Highway Improvements on Urban Land: A Graphic Summary," an earlier study which details findings from many different areas (see Highway Research Abstracts, Sept., 1958, p 7).

101. The impact of highways on land uses and property values, A. E. Warner.

Highway Traffic Safety Center & College of Business and Public Service, Michigan State University, March 1958, 75p.

Fourteen different reviews of articles on Economic and Social Impact of Highway Developments have been included. One of these in turn includes a summary of fourteen studies in California. A more extensive list of studies is included in the reference list in the appendix for the convenience of investigators in this field.

Review and analysis of the substantial body of literature on the subject which deals with the role of highway systems and property values indicate that matters involving theory, concept and methodology have not been adequately resolved. Much of the work to date is highly descriptive and replete with opinions and value judgements based sometimes more on preconceptions than on objective reasoning supported by concrete facts.

Specific problems involved in carrying forward economic impact studies which must be resolved if future research efforts are to supply useful material for making all types of broad policy and operating decisions include:

1. Development of a sound theory of value of real property that includes the highway improvement factor as a contributing variable. (Most studies reviewed here have implicitly assumed that highway improvements are the only variable to be considered in drawing conclusions concerning changes in land and

property values.)

2. Development of scientific research methods and techniques which will provide a factual foundation for supporting or rejecting the theoretical framework established.

3. Development of a working definition of value that will serve as a guide for collecting data which purport to quantitatively measure value.

4. Development of a fund of research knowledge based on sound methodology that is broad enough in coverage and deep enough in penetration to permit formulation of useful generalizations.

Many studies now under way will contribute more information and undoubtedly will answer some of the questions raised. It is hoped that this review may be of assistance and may stimulate others to investigate additional phases of this important subject. Contains bibliography of 30pp.

102. The estimated effects of four proposed shopping centers on metropolitan Lafayette, Mart Kask.
Joint Highway Research Project, Purdue University, July 1957, n 25, 119p.

This report includes an economic appraisal of the Metropolitan Lafayette area and an evaluation of the effect of the proposed shopping centers on traffic, economic conditions, tax rates, and land use. Since all of the proposed shopping centers are located adjacent to State Highways the traffic findings and recommendations should be of immediate value to the State Highway Department.

103. Land economic studies in Indiana, V. J. Stover, and H. L. Michael.
Joint Highway Research Project, Purdue University, Sept. 1963, n 28, 12p+.

The paper presents examples of the land economic studies which have been made during the past eighteen months of parcels of land involved in a right-of-way taking for a new highway location and also summarizes the findings which have been obtained from the studies to date.

104. Land economic studies in Indiana.
Joint Highway Research Project, Purdue University, Case Study n 23, June 1962, 9p.

One of the most difficult and controversial problems associated with the location and construction of a highway

is the appraisal of properties directly affected by the highway. Severance damages, proximity damages, and land appreciation or depreciation resulting from highway location and construction are subjects which at the present time are not possible of satisfactory and agreeable evaluation. This situation exists because of the absence of documented data as to what does occur to property which is directly affected by a new highway.

The Joint Highway Research Project at Purdue University in cooperation with the Indiana State Highway Commission and the Bureau of Public Roads, therefore, has established a research project which will document what happens in the market place to property directly affected by highway location and construction or reconstruction in Indiana. Case studies of individual properties directly affected by highway location will be reported as actual transfers occur or as land use changes. This will provide a base of historical data from which a set of principles may be evolved which will permit accurate forecasting of affects for similar cases, that may arise in the future and which should permit more satisfactory and agreeable appraisals.

The study which is here reported is one of these case histories of actual affects which did occur to a property directly affected by an Indiana highway project.

105. Land economic studies in Indiana.
Joint Highway Research Project, Purdue University, Case Study n 24, June 1962, 5p.
The purposes of the report are in exact accordance with those in Case Study n 23 but covered different property.
106. Early impact of a highway improvement on an urban area, A. F. Lohr.
Joint Highway Research Project, Purdue University, May 1962, n 14, 88p.
This report contains a record of the basic travel pattern and land use data in the vicinity of the urban highway improvement in Lafayette-West Lafayette, Indiana, and will be most useful for future studies of the impact of the improvement. The major early impact of the improvement was relative to the change in traffic patterns and benefits accruing from time savings by motorists.

107. Land use in Delaware, Gerald F. Vaughn.

University of Delaware Circular No. 33, Division of Urban Affairs and Agricultural Experiment Station, February 1962, 12p.

Delaware's land has been used primarily for production of food and timber since the State's original settlement in the 17th Century. Since World War II however, use of land in the State has changed rapidly. Technological advances have made possible a substantial reduction in land used for agriculture and forestry. During the 15 years from 1945 to 1959, cropland decreased by approximately 68,000 acres. Woodland (farm and nonfarm) declined by nearly 50,000 acres.

At the same time, tremendous population and industrial growth increased the demand for housing, shopping centers and recreational areas. Many acres of land have now been converted to these uses, particularly in the vicinities of Wilmington, Newark, Dover and Seaford. Among the important effects of this activity have been rising land values and higher property taxes.

Because Delaware's land resource is limited, interest in comprehensive planning for its future use is keen throughout the three counties--New Castle, Kent and Sussex. An initial step in planning for future land requirements in Delaware involves the study of present land use. This publication is intended to help Delaware's citizens better understand existing land use conditions in the State.

108. Land use in the rural-urban fringe, a case study of New Castle County, Delaware, W. M. Crosswhite and Gerald F. Vaughn.

University of Delaware Bulletin 340, Agricultural Experiment Station and Division of Urban Affairs, July 1962, 28p.

Land use in northern New Castle County is becoming increasingly urban. Careful planning for the future becomes mandatory as urban demand for land increases and the availability of open land decreases. This study was initiated to provide information for the regional planning program of northern New Castle County.

Using a land use classification system designed specifically for the "rural-urban fringe," an inventory was conducted of existing land use and related factors. Information was obtained on all ownership units of 10 or more acres lying outside subdivisions and incorporated municipalities. An ownership unit is defined as all contiguous acreage to which an owner holds title.

There were 1,260 separate ownership units of 10 or more acres lying outside subdivisions and incorporated municipalities in northern New Castle County, in 1960. They contained 109,969 acres of land or 68 percent of all land in New Castle County north of the Chesapeake and Delaware Canal.

109. Blairsville, a bypass study; the economic and social impact of a highway.
Pennsylvania State Univ. Highway Impact Research Staff, University Park, Pa., 1962, 69p.
A.E. & R. S. 35, Agricultural Experiment Station, Dept. of Agricultural Economics and Rural Sociology of the Pennsylvania State University in cooperation with Pennsylvania State Dept. of Highways and U. S. Bureau of Public Roads.
110. Economic survey of Gallup, New Mexico, 1950-1960 of a highway relocation impact study; the "before" portion, Paul W. Zickefoose.
University Park, N. Mex., 1962, 28p (New Mexico Eng. Espt. Sta. Bulletin 24).
Survey for New Mexico State Highway Dept. in cooperation with U. S. Bureau of Public Roads.
References, p 25.
111. Distribution of land values in Topeka, Kansas, Duane S. Knos.
Kansas Univ Center for Research in Business, Lawrence, Kans., 1962, 33p.
Study is concerned with description of spatial structure of land values in Topeka, Kansas, for years 1954 to 1959. Includes effect of roads on land values.
112. A demonstration project in relocation.
Community Service Society of New York, New York, 1962, 59p. Processed.
In cooperation with the Bureau of Relocation, Department of Real Estate of the City of New York.
Report of the Committee on Family and Child Welfare and the Committee on Housing and Urban Development concerning a demonstration project in relocating families whose homes were being demolished to provide the site for a public school.

113. Economic impact on by-passed business and adjacent areas due to the Interstate highway program, F. L. Hendrix and Lewis S. Pipkin.
Atlantic City, American Right of Way Association 1963, 43p.
Processed.
Presented to Ninth Annual National Seminar of American Right of Way Association, Atlantic City, New Jersey, May 21, 1963.