THE GASOLINE SERVICE STATION AND COMMUNITY DEVELOPMENT

THESIS FOR THE DEGREE OF MASTER IN URBAN PLANNING

MICHIGAN STATE UNIVERSITY

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1958

THE GASOLINE SERVICE STATION AND COMMUNITY DEVELOPMENT

An Examination of an Urban Planning Problem and an Outline of Possible Policies

By

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A THESIS

Submitted to the College of Business and Public Service of Michigan State University of Agriculture and Applied Science in partial fulfillment of the requirements for the degree of

MASTER IN URBAN PLANNING

Department of Urban Planning and Landscape Architecture

1958

ABSTRACT

The process of physically organizing or reorganizing an urban area so as to produce a desirable and efficient environment is based fundamentally upon the planner's ability to reconcile the aspirations, rights, and privileges of those who conduct the economic activities of the community with the goals of the community as a whole. The purposes of this study are to isolate and examine the problems created by gasoline service stations, which represent an essential economic activity in any urban community, and to formulate policies and regulations which can be used to control or eliminate these problems. Three approaches are used to define and present the problems which may be developed by gasoline service stations in an urban area. First, the service stations constructed in an urban community since the end of World War II are analyzed to identify the problems created. Next, the legislation concerned with service stations is examined to discover what problems have been recognized and how they are handled. Finally, the practices and policies of the oil companies who build and operate or lease service stations are explored as they relate to the physical problems associated with this activity. These analyses lead to the development of policies and

controls governing the construction and location of service stations which are oriented toward specific problems, and which can be effectuated through comprehensive planning.

Examination of the gasoline service stations constructed in Lansing, Michigan, during the past twelve years discloses many problems which fall within the province of community planning. The community has not been consistently successful in guiding or controlling the location of service stations through either the master planning process or zoning. As a result, many problems related to land utilization, community growth, and traffic congestion have developed.

A wide variety of state statutes, special ordinances, zoning ordinances, and building codes have been utilized throughout the country in an effort to control the problems attributed to gasoline service stations. However, these efforts have been almost universally characterized by a piecemeal approach to individual problems and by continuous experimentation and change, indicating that in general legislation has not yet solved the problems of the service station.

A postwar trend toward construction of an increasingly larger proportion of gasoline service stations by oil companies for operation or lease provides a more positive direction to the locational

pattern and design of service stations. Some company practices are in agreement with the objectives of community planning, while others will intensify existing problems and create new ones. The locational considerations and design techniques used by these organizations can be evaluated and utilized by planners in controlling some of the undesirable aspects of this use.

A program formulated to cope with the many problems associated with gasoline service stations in urban areas must include controls over both the design and location of service stations. The community must establish dimensional requirements regulating the building and site, and must define and designate areas in which service stations may be located. These controls are effectuated through the building code and zoning ordinance, and preferably also through use of a special service station ordinance. This legislative program must be evolved and accomplished within the master planning process.

PREFACE

Urban planning is now entering a period characterized by the development and application of extremely detailed and exact techniques of analysis in an effort to solve the problems besetting urban communities today. The profession is moving beyond the area of generalized knowledge into one of specific knowledge, or at least as specific as it is possible to be when dealing with the constantly changing urban complex. The growing volume of published studies of a detailed and definitive nature, the increasing utilization of economic analysts, statisticians, and researchers in planning agencies, and the appearance of the IBM machine in the planning office all testify to the fact that the solutions to contemporary urban problems are no longer a matter of intuition and clairvoyance, but instead must be founded upon comprehensive study and analysis.

The study presented here represents both an example of the scope and depth of study which I believe is necessary to effective urban planning, and an attempt to apply this level of procedure to a specific urban problem in a way which will produce workable solutions. The particular subject of this study was selected because the need for detailed examination of the problems of the gasoline service

station is widely recognized, and because there is little or no useful information concerning these problems and their solutions readily available.

Mr. Myles G. Boylan, Associate Professor of Urban Planning at Michigan State University, served as the faculty advisor to this study. His guidance and suggestions were essential to the study, and greatly enriched the learning experience which a project of this type entails. Mr. Victor G. Leyrer, Planning Director, and Mr. Rolf C. Campbell, Senior Planner, of the Lansing City Plan Commission, furnished most of the information for Chapter I, while Mr. Fletcher Robinson of the Building Department, city of Lansing, provided all of the data obtained from building permit records. The assistance and encouragement afforded by these agencies made the case study of an urban community possible.

The information on the policies and attitudes of the major and independent oil companies toward various aspects of the problem were obtained entirely from representatives of the companies concerned, who furnished data which are not available from any other source. Mr. Roland M. Dilworth of the Gulf Oil Company, Mr. Walter F. Halliday of the Cities Service Oil Company, and Mr. L. P. Waugh of the Standard Oil Company, who represent their organizations in Lansing, and Mr. W. H. Beim, president of the Beim Oil Company,

operative

in Chapter

cooperated in every possible way in preparing the material contained in Chapter III.

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INTRODUCTION

The invention of the automobile and its subsequent development as a major means of transportation has brought many changes to the physical pattern of urban areas. Release of the area of urban development from the limitations imposed by rail transit, the construction of major streets and limited-access highways, dispersion of many commercial and industrial activities to outlying areas, and the ever-increasing demand for places to park are obvious manifestations of the influence of the automobile. Extensive use of automobiles has also created a demand for service and maintenance facilities, and the development of these facilities has resulted in many problems for the planner who is concerned with bringing about a desirable and efficient urban environment.

As the automobile evolved from a novelty to a necessity during the first half of the twentieth century, facilities for the retail sale of automobile fuels underwent a parallel evolution. Prior to World War I, gasoline was sold only by general stores or hardware stores, or by a few "filling stations" which were converted stores or houses with a hand pump placed at the curb. Wider use of automobiles during the 1920's brought individual status to the gasoline

station as a retail activity, and installations designed specifically to service the automobile appeared. These stations usually consisted of a small building containing an office and storage area, one or two pumps, and an open pit for lubrication and minor repair. Such stations typically occupied a site of about 5,000 square feet, and were located in the central business district, along major streets, or at random locations in residential areas.

Continuing growth of motor vehicle registration, and of the total number of miles traveled annually, stimulated competition in retailing gasoline and associated products among both individual service station operators and the oil companies. Reflecting these efforts to attract increasing numbers of customers, the gasoline station of the 1930's emerged as a major commercial activity. New stations included space for servicing or repairing one or two vehicles inside the building, larger access driveways and paved service areas, and eye-attracting advertising devices. Since the end of World War II the competitive efforts of both major and independent oil companies has resulted in the construction of many new, large, and attractive service stations, and the abandonment of numerous older, smaller stations.

The more obvious implications of the appearance and development of facilities for retailing gasoline have made themselves known

to some extent in every urban area. Increased traffic congestion, indiscriminate mixing of land uses and resulting depression of property values, and conflicts between service station builders and local zoning authorities have spotlighted the failure of community planning to effectively guide the development of gasoline stations in most areas. This failure is a reflection of a widespread lack of knowledge as to what the problems associated with service stations actually are and how they are caused.

The purpose of this study is to examine the problems developed by a gasoline service station in an urban area, and to evolve policy recommendations which can be used in handling this use within a planning program. The study is divided into four chapters, each comprising a distinct phase of the study:

I. A study of the gasoline service stations constructed in Lansing, Michigan, during the period 1945 to 1956, to isolate the major problems associated with gasoline service stations in an urban community.

II. A survey of the legislation related to the problems isolated in Chapter I, to determine how these problems are being handled in political units throughout the country.

III. An examination of those policies of the major and independent oil companies concerned with the location

and construction of gasoline service stations in an urban area.

IV. Suggested policies designed to ameliorate or solve the problems delimited by this study while permitting the widest possible range of action to the designers, builders, and operators of gasoline service stations.

For purposes of this study, a gasoline service station is defined as the activity or use devoted primarily to the retail sale of fuels, oils, and lubricants for motor vehicles. All repair activities are minor in scope, and are subordinate to the sale of petroleum products. The term "gasoline service station" was selected from the many applied to this use as the one most descriptive of the functions of supply and service to motor vehicles.

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CHAPTER I

A STUDY OF THE GASOLINE SERVICE STATIONS CONSTRUCTED IN LANSING, MICHIGAN: 1945 TO 1956

Introduction

The purpose of this chapter is to examine the construction of gasoline service stations in a community over a period of time in order to isolate the problems which may be created by service stations in an urban environment. This study is oriented toward the problems arising from the physical relationship between a particular activity and the complex of land uses and activities which comprise an urban area. Economic, social, legal, governmental, and other considerations are included only to the extent necessary to explain and complete the analysis of the physical pattern.

The city of Lansing, Michigan, is used as the basis of this case study. Although no city can be described as "typical," Lansing provides a frame of reference sufficiently broad in nature to include the essential aspects of any urban problem. Those problems discovered in Lansing may also exist to some degree in other urban communities, and the method of analysis developed in this chapter

can be applied to any community to locate specific problems. The analysis covers the period from January 1, 1945, to December 31, 1956, which includes all of the construction since the end of World War II.

Gasoline service station construction in Lansing is analyzed in its relationship to the master plan, zoning ordinance, building code, major thoroughfares and thoroughfare plans, traffic volume, the land-use pattern, and the quality of housing. This procedure is utilized solely to identify the problems which stem from such relationships, and does not infer that responsibility for any problem so disclosed should be placed on any of the factors included in this analysis. The plates included in this chapter illustrate the relationship of the pattern of gasoline service station construction from 1945 to 1956 to the instruments of public policy and functions of land use considered in this analysis. The locational pattern portrayed on each overlay is based on information obtained from official building permit records of the city of Lansing.

Gasoline Service Station Construction in Lansing

The city of Lansing, like most other urban areas, has seen a relatively large volume of gasoline service station construction during the years since the end of World War II. Many people, including

public officials, have interpreted this activity to be an extensive expansion of the number of service stations within the city, a seeming increase which bears no apparent relation to population growth or area development during the period 1945 to 1956. Construction of large, well-lighted service stations at prominent points along heavily traveled routes has contributed to the impression that oil companies are irresponsibly flooding urban areas with service stations to the detriment of the community.

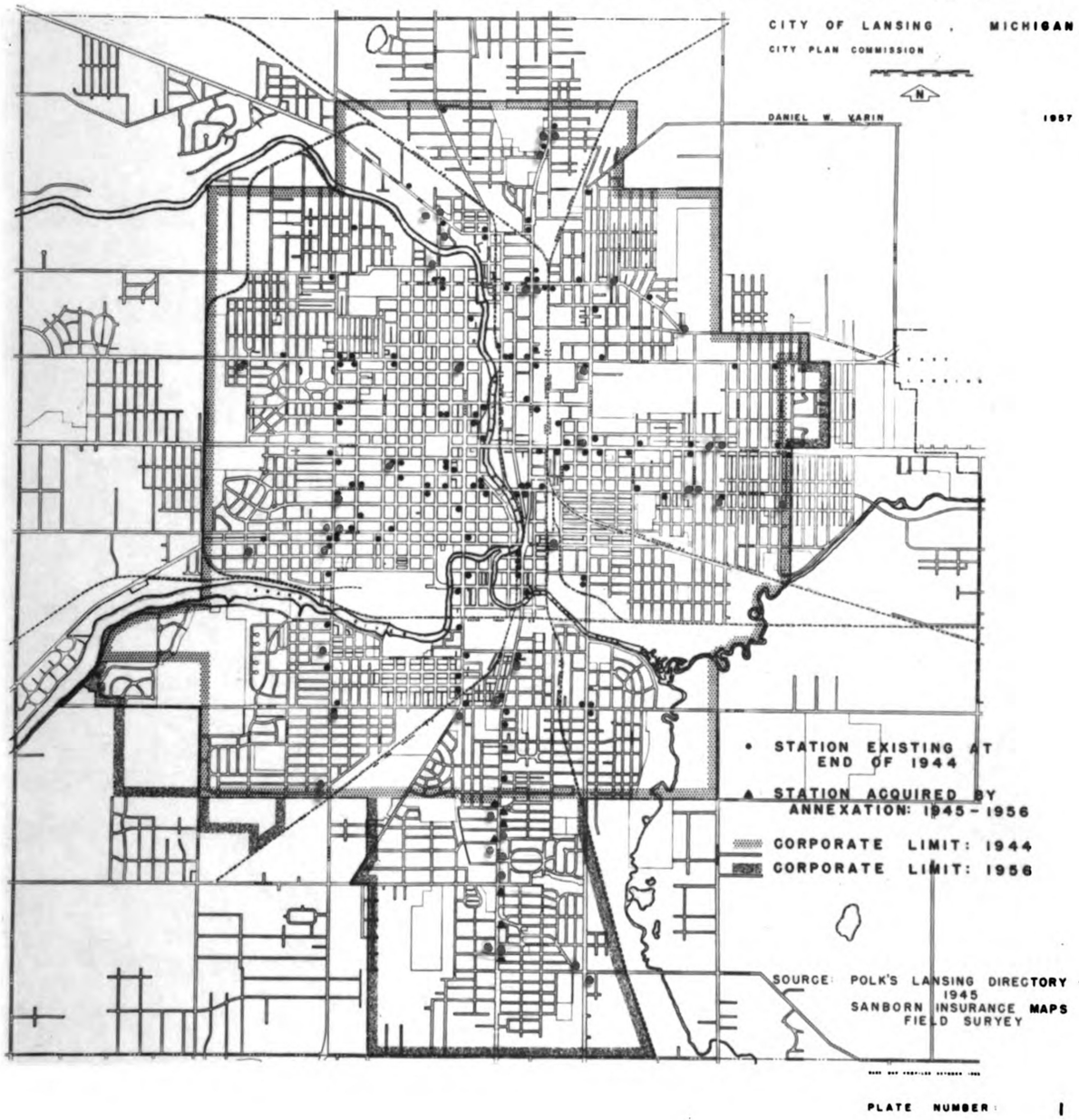
In order to evaluate the validity of this attitude, the number and location of gasoline service stations existing and operating in Lansing at the end of 1944 must be compared with the construction of service stations from 1945 to the end of 1956. The accumulation of gasoline service stations through annexation, and the loss of stations through abandonment, must also be considered in establishing the changing pattern of this activity.

The Volume of Gasoline Service Station Construction

The location of each of the 144 gasoline service stations operating within the city at the end of 1944 is shown on Plate 1. Also shown on this plate are the locations of eight stations brought into the city by annexation of two areas from Lansing Township in 1949 and 1950. Data on the number and location of gasoline service

GASOLINE SERVICE STATIONS CONSTRUCTED: 1945 TO 1956

EXISTING GASOLINE SERVICE STATIONS: 1944



• LOCATION OF A SERVICE STATION COMPLETED OR UNDER CONSTRUCTION

GASOLINE SERVICE STATIONS
CONSTRUCTED: 1945 TO 1956

• LOCATION OF A
SERVICE STATION
COMPLETED OR
UNDER CONSTRUCTION

EXISTING GASOLINE SERVICE STATIONS: 1944

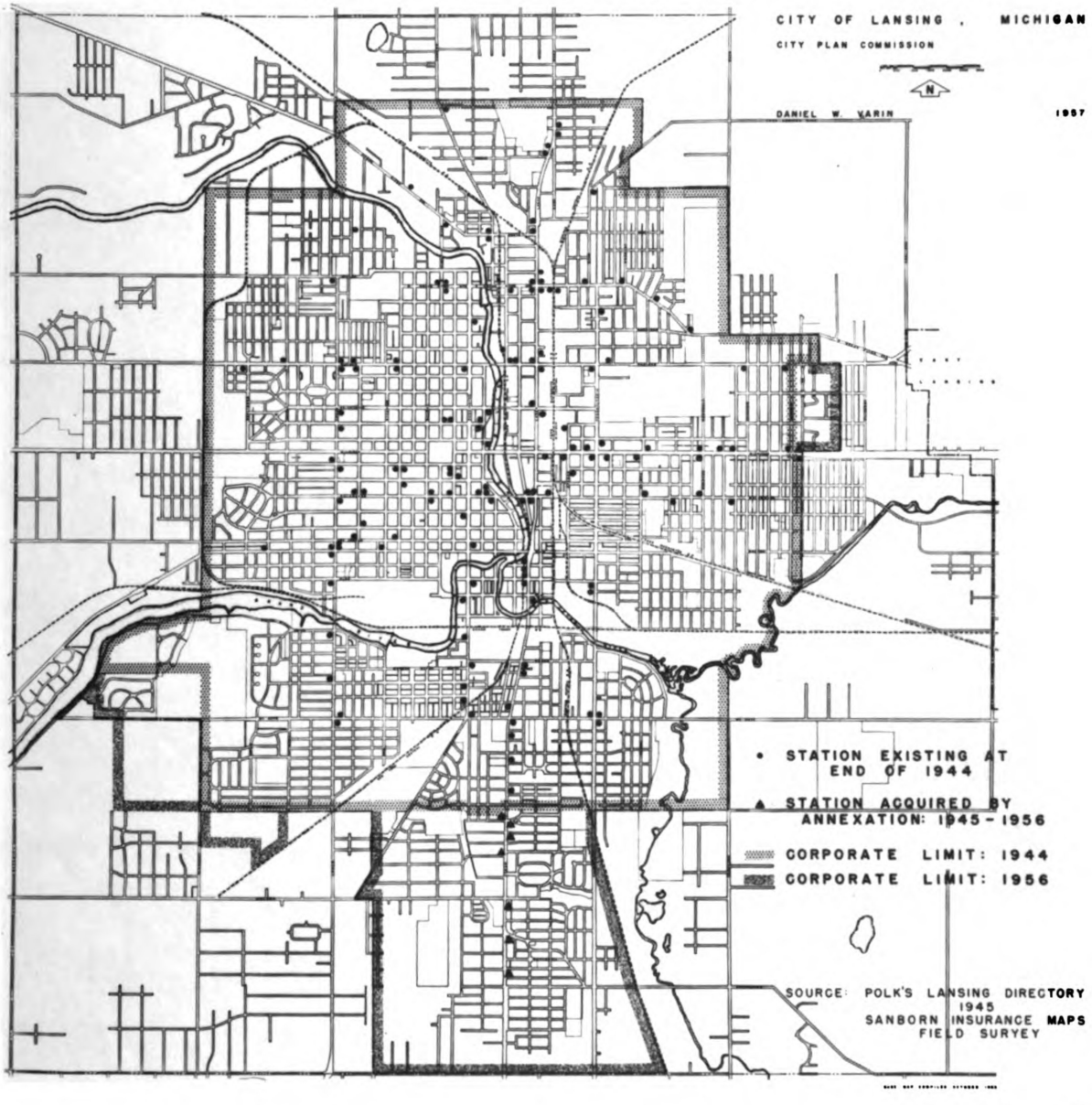


PLATE NUMBER: 1

stations operating at the end of 1944, as well as for the stations annexed to the city, were obtained from the 1945 edition of Polk's Lansing City Directory and from maps published by the Sanborn Map Company. These sources were checked by field surveys.

Information obtained from official building permit records of the city of Lansing shows that forty-four service stations were completed or were under construction in Lansing during the years 1945 to 1956. As shown in Table 1, the total construction for this period is divided into two categories: stations constructed on sites previously occupied by a service station, but so completely reconstructed as to involve all of the aspects of a "new" station; and installations constructed on sites not previously occupied by a service station. This latter group, comprising twenty-seven stations, represents an actual addition to the number of stations operating at the end of 1944.

Abandonment of existing service stations was as important as the construction of stations in "new" locations during the study period. Between 1945 and 1956 a total of twenty-six stations went out of operation, were converted to another use, or were destroyed. The effect of this factor upon the total picture for Lansing can be readily ascertained by briefly summarizing the above figures:

TABLE 1

GASOLINE SERVICE STATIONS CONSTRUCTED IN LANSING, MICHIGAN, BY YEAR: 1945-1956

Year	Re-constructed on a Site Used Previously	Constructed on a New Site	Total Constructed
1945	0	0	0
1946	0	0	0
1947	1	0	1
1948	1	0	1
1949	0	0	0
1950	4	1	5
1951	0	3	3
1952	3	2	5
1953	2	2	4
1954	2	3	5
1955	1	7	8
1956	3	9	12
Total	17	27	44

Source: Building Department, Lansing, Michigan.

Number of stations operating at the end of 1944	144
Stations acquired through annexation	8
Stations added by new construction	27
Stations abandoned	26
Number of stations operating at the end of 1956	153

In short, the entire volume of gasoline service station construction between 1945 and 1956 added only one station to those existing in 1944, while eight more were gained through annexation.

Abandonment of Gasoline Service Stations

Although very little information is available concerning the twenty-six stations which were abandoned during the study period, some general conclusions can be drawn from the physical pattern established by abandonment. Of the twenty-six stations abandoned, twenty-one were converted to some other use. Conversion to a commercial use predominates, with fifteen former service station structures or sites now utilized by some commercial use. Three of the abandoned stations were subordinate to a residential use, and have reverted to residential purposes, while four have been converted to bulk petroleum distributing centers, and are classified as an industrial activity. The remaining four service stations which

were abandoned were removed for either construction of highways or the Lansing Civic Center.

The pattern of abandoned gasoline service stations is also significant in the light of certain locational tendencies of this use. Three of the abandoned stations were located in the central business district, while five were not located on a major street. These abandonments represent 21.4 per cent of the stations operating in the central business district and 41.7 per cent of the stations not located on a major street in 1944, indicating a significant trend away from both of these types of location.

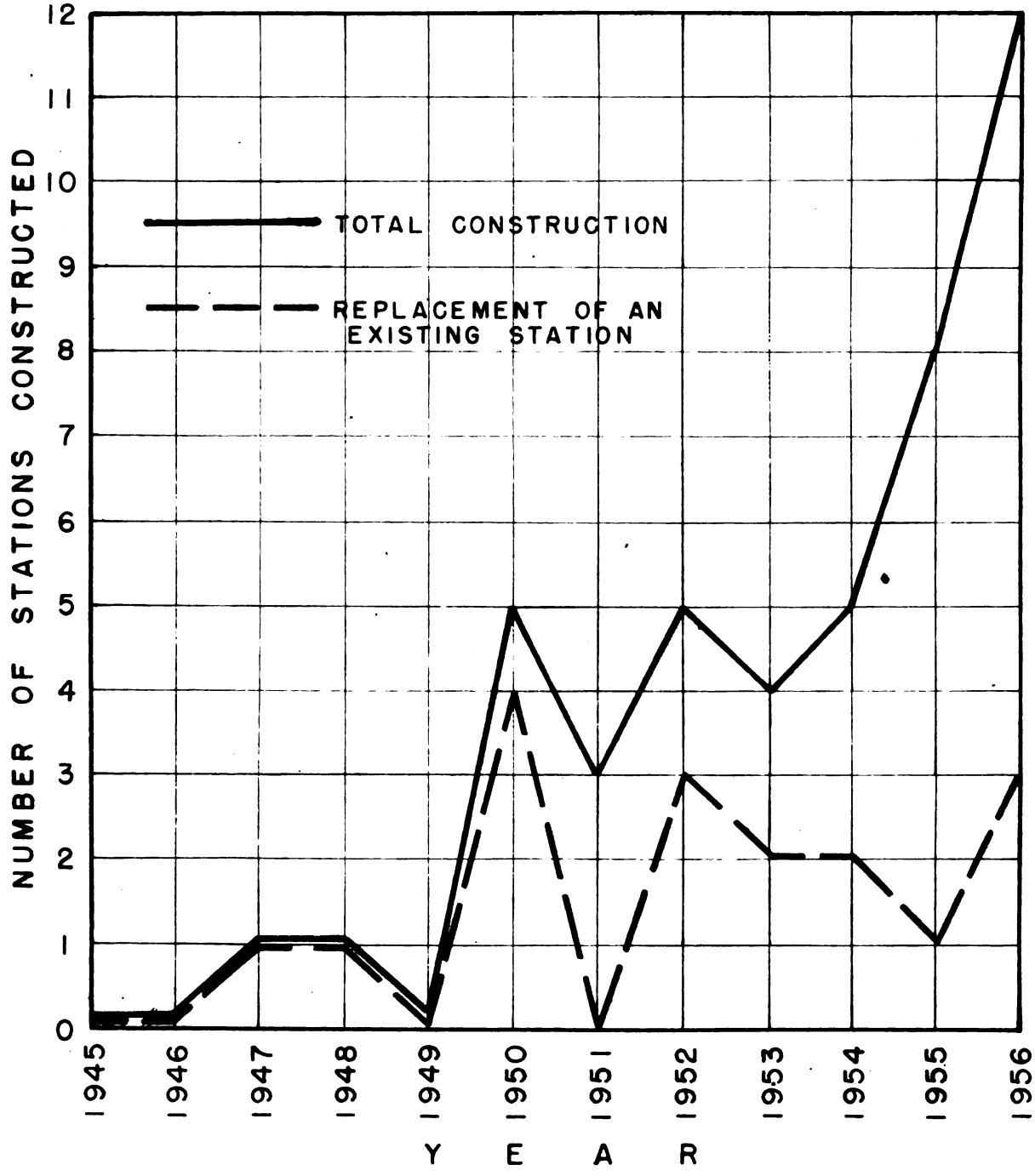
The Significance of Gasoline Service Station Construction

Although gasoline service station construction between 1945 and 1956 has been insignificant in terms of increase in the number of stations serving the city, this construction has had an impact upon the physical pattern and upon the planning of the city. Those stations constructed as a replacement of a station formerly occupying the same site, as well as those constructed on sites previously vacant or used for some other purpose, are included in this analysis. Demolition of an existing gasoline service station and reutilization of the site reflects all of the factors involved in selecting a location

for a new service station except for land acquisition. Reconstructing an existing station requires an investment that in Lansing averaged more than $600 more than that for a station on a new site, and so this activity can be considered in the same light as construction on new sites for purposes of this study. Construction involving only repair or addition to an existing building is not included, since the value and investment in the existing structure may dictate the decision to repair or add to the building, even though its location may not be completely desirable.

Graph 1 portrays the information contained in Table 1, illustrating the trend in service station construction during the period 1945 to 1956, and the relationship of replacement to construction in new locations. Construction from 1945 to 1950 emphasized replacement at existing locations, as denoted by the fact that 85.7 per cent of the stations constructed during this period utilized a site previously occupied by a service station. From 1951 to 1956, however, 70.3 per cent of the stations constructed were built on new sites. This period is characterized by erratic construction from 1951 to 1953, followed by greatly increased activity after the expiration of controls over construction adopted during the Korean War.

GASOLINE SERVICE STATION CONSTRUCTION LANSING, MICHIGAN: 1945-1956



SOURCE: TABLE I

GRAPH NUMBER: I

Gasoline Service Station Ownership

The degree to which the policies and locational criteria of the oil companies have influenced this construction is indicated in Table 2, which shows that 75 per cent of the stations built during the study period were owned by an oil company, while 25 per cent were constructed by an individual owner. The increasing proportion of stations constructed by oil companies parallels a nationwide trend in service station ownership.[1]

Oil companies can make a more extensive market analysis and develop comprehensive site selection techniques in evaluating potential locations for service stations, while the individual owner has only limited knowledge of these factors. The oil companies may also draw upon their legal divisions and public relations staffs in obtaining rezonings or favorable public opinion for a contemplated location.

Gasoline Service Stations and Planning Problems

Any planning problems resulting from the construction of service stations stem not from the volume of such construction, but

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[1] American Society of Planning Officials, Regulation of Filling Stations, Report Number 67 (Chicago: American Society of Planning Officials, 1954), p. 3.

TABLE 2

OWNERSHIP OF GASOLINE SERVICE STATIONS
IN LANSING, MICHIGAN: 1945-1956

Year	Number Built	Number Owned by an Oil Company	Number Owned by a Private Individual
1945	0	-	-
1946	0	-	-
1947	1	0	1
1948	1	0	1
1949	0	-	-
1950	5	5	0
1951	3	2	1
1952	5	4	1
1953	4	2	2
1954	5	4	1
1955	8	6	2
1956	12	10	2
Total	44	33	11
Per cent	100	75	25

Source: Building Department, Lansing, Michigan.

from the adjustment of the locational pattern of service stations to the urban area, and the conflicts between this process and the objectives of the planning agency. The points at which such conflict have occurred in Lansing are analyzed in the following sections of the case study. This process of adjustment is not limited to the city, but is taking place throughout the metropolitan area. In the Lansing metropolitan area, however, the central city is the only political unit which has attempted to influence the character of community development through use of a master plan, zoning ordinance, building code, and major street plan. The relationship of service station construction to these instruments of public policy is examined in this chapter.

The Master Plan

The purpose of the master plan is to guide the physical development of an area, and so it should be one of the determining factors in the location and development of any component activity of an urban area. The city of Lansing has adopted a master plan designed to accomplish this objective. The locational pattern of gasoline service stations constructed during the period 1945 to 1956 as influenced by this master plan is analyzed and evaluated in this section.

The Background of Planning in Lansing

Official urban planning in Lansing began on June 14, 1920, when the City Council contracted with a private planning consulting firm for the preparation of a "comprehensive city plan." In September of the same year the council authorized the Mayor to appoint a temporary City Plan Commission to work with the consultant in preparing the master plan.[2]

The comprehensive city plan was completed and was adopted by the Plan Commission in October, 1921. This plan included a major street plan, recreation plan, transit plan, transportation plan, a section on "Lansing's Appearance," and a zoning proposal.[3] A zoning ordinance closely adhering to this proposal was adopted in 1927, but the temporary planning commission was allowed to expire, and planning was not given permanent, continuing status by the council.[4]

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[2]Harland Bartholomew, City Planning Engineer, The Lansing Plan, A Report to the City Plan Commission (Lansing: City Plan Commission, 1921).

[3]Ibid.

[4]City of Lansing, Zoning Ordinance (1927).

The Lansing Master Plan

In 1935 the City Council recognized that the original city plan needed revision, and on June 3 of that year that body again authorized the Mayor to appoint a City Plan Commission. This commission again obtained the services of the same consulting firm which prepared the 1921 city plan. The state of Michigan simultaneously retained this firm to prepare a capitol development plan.[5]

The revised comprehensive plan was presented to the City Plan Commission in November, 1937. This plan, much broader in scope than the 1921 plan, included a population study, land-use plan and zoning proposal, and plans for major streets, transportation, transit, recreation, civic center development, and state capitol development. The planning area extended beyond the city limits at that time in all directions to East Lansing and the Michigan State College campus on the east, Cavanaugh Road on the south, the Eaton County boundary on the west, and the Clinton County boundary on the north.[6]

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[5]Harland Bartholomew and Associates, City Planning Consultants, A Report upon the Comprehensive City Plan: Lansing, Michigan (Lansing: City Plan Commission, 1938).

[6]Ibid.

The City Plan Commission published the plan in 1938, and recommended that the plan be "adhered to as closely as possible." This commission had not been created under provisions of Michigan planning enabling legislation, however, and so could not officially adopt the plan. Both the commission and the consultant strongly urged formation of a city plan commission under the Municipal Planning Commission Act.[7]

The City Council created a City Plan Commission pursuant to state enabling legislation on November 12, 1940. This commission was empowered and directed to "make and adopt a master plan for the physical development of the municipality, including any areas outside of its boundaries which, in the commission's judgement, bear relation to the planning of such municipality."[8]

The City Plan Commission adopted an "Official City Plan" on December 29, 1942. The plan as adopted consisted of the material previously prepared by the consultant, with amendments to the major street plan and the recreation, parks, and schools plan. Plate 2 is a reconstruction of the major graphic elements of this plan, which has been in effect from 1942 to the present, and which

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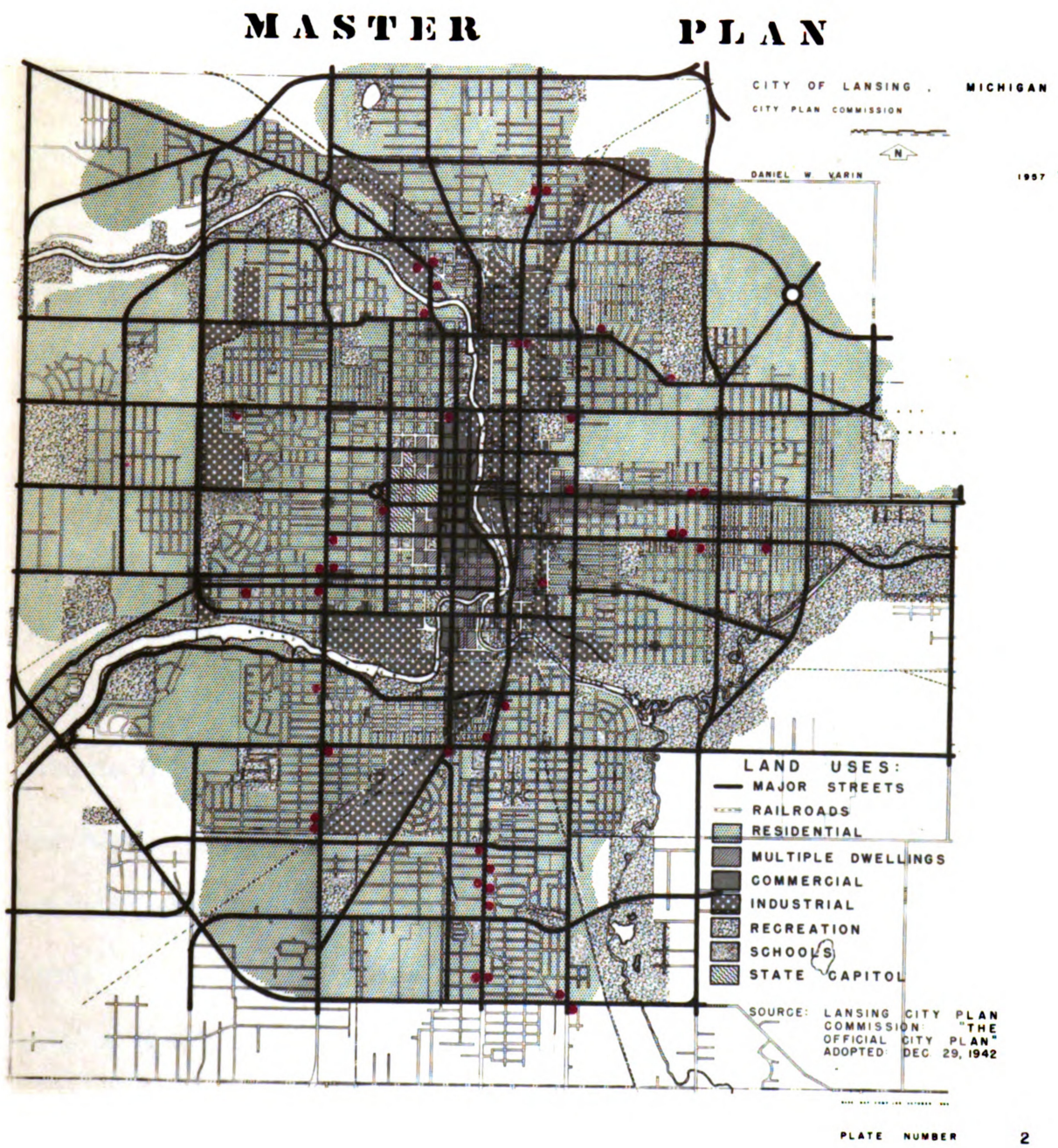
[7] Michigan, Compiled Laws (1948), secs. 125.31-125.45.

[8] City of Lansing, City Plan Ordinance (1940).

GASOLINE SERVICE STATIONS CONSTRUCTED: 1945 TO 1956



• LOCATION OF A SERVICE STATION COMPLETED OR UNDER CONSTRUCTION

GASOLINE SERVICE STATIONS
CONSTRUCTED: 1945 TO 1956

LOCATION OF A
SERVICE STATION
COMPLETED OR
UNDER CONSTRUCTION

MASTER PLAN

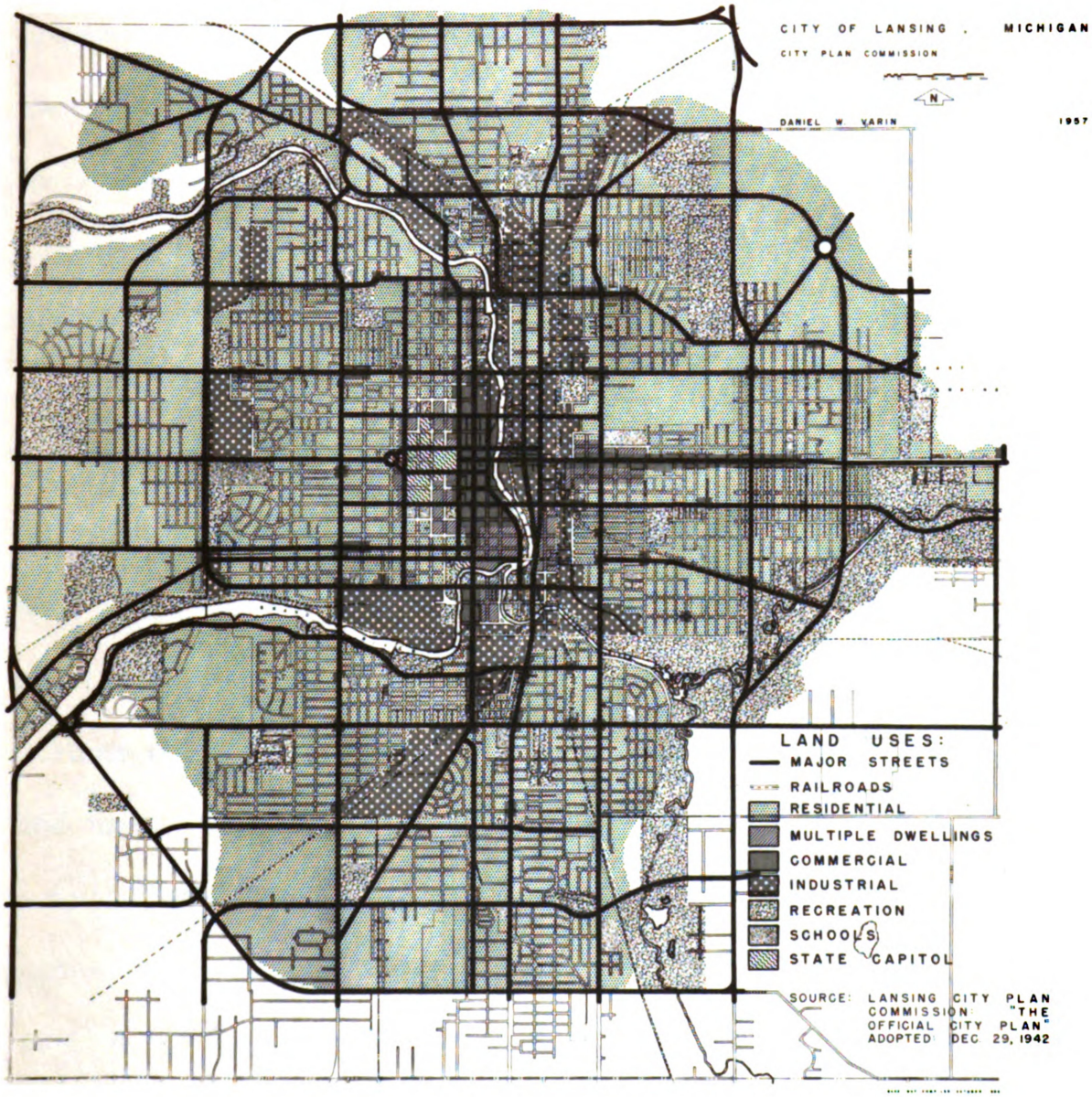


PLATE NUMBER 2

has served as a guide to the Plan Commission in making recommendations to the City Council and other public agencies concerning property acquisition, major streets, river front development, fire protection, off-street parking, public buildings, alleys, and amendments to the zoning ordinance and map.[9] This master plan forms the framework within which the city has developed since 1942. Presumably, all elements of the community, including gasoline service stations, have been affected in some way by this master plan.

The master plan allocates the areas in and surrounding Lansing to various activities, including residential, commercial, industrial, and public uses, and contemplates that commercial uses will be located only within the designated commercial areas. Introduction of uses into areas allocated to other purposes seriously obstructs the efforts of the master plan in guiding the development of the area. The master plan is a flexible instrument which must be amended whenever necessary to meet the changing needs of the community. However, if the plan is based on an accurate evaluation of the future needs of the community, it cannot be violated at the whim of any individual desiring to do so and still function as a

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[9]Lansing City Plan Commission, Planning Lansing--Past, Present, Future (Lansing: City Plan Commission, 1951).

plan. An orderly and efficient urban complex can be created only by adhering to a preconceived plan.

The Relationship of Gasoline Service Station Construction to the Master Plan

The location of each gasoline service station constructed during the study period is classified in Table 3 according to its relationship to the master plan. A station is classified as "conforming" if it is located in a commercial area, and "nonconforming" if located in an area planned for residential, industrial, or public use.

The high degree of nonconformity of service station locations represents a serious problem, in that it strongly indicates that, at least as far as this use is concerned, Lansing is not developing in accordance with the master plan. Graph 2 shows that the ratio of locations not conforming to the master plan increased steadily until, in 1956, 83.3 per cent of the stations constructed did not conform.

Twenty-one of the twenty-six locations which did not conform to the master plan were in areas planned for residential use. Three stations, occupying a total area of 1.7 acres, were located in areas planned for industrial use. In view of the approximately 720 acres planned for this purpose, these three do not represent a serious encroachment. This problem is discussed further in the following

TABLE 3

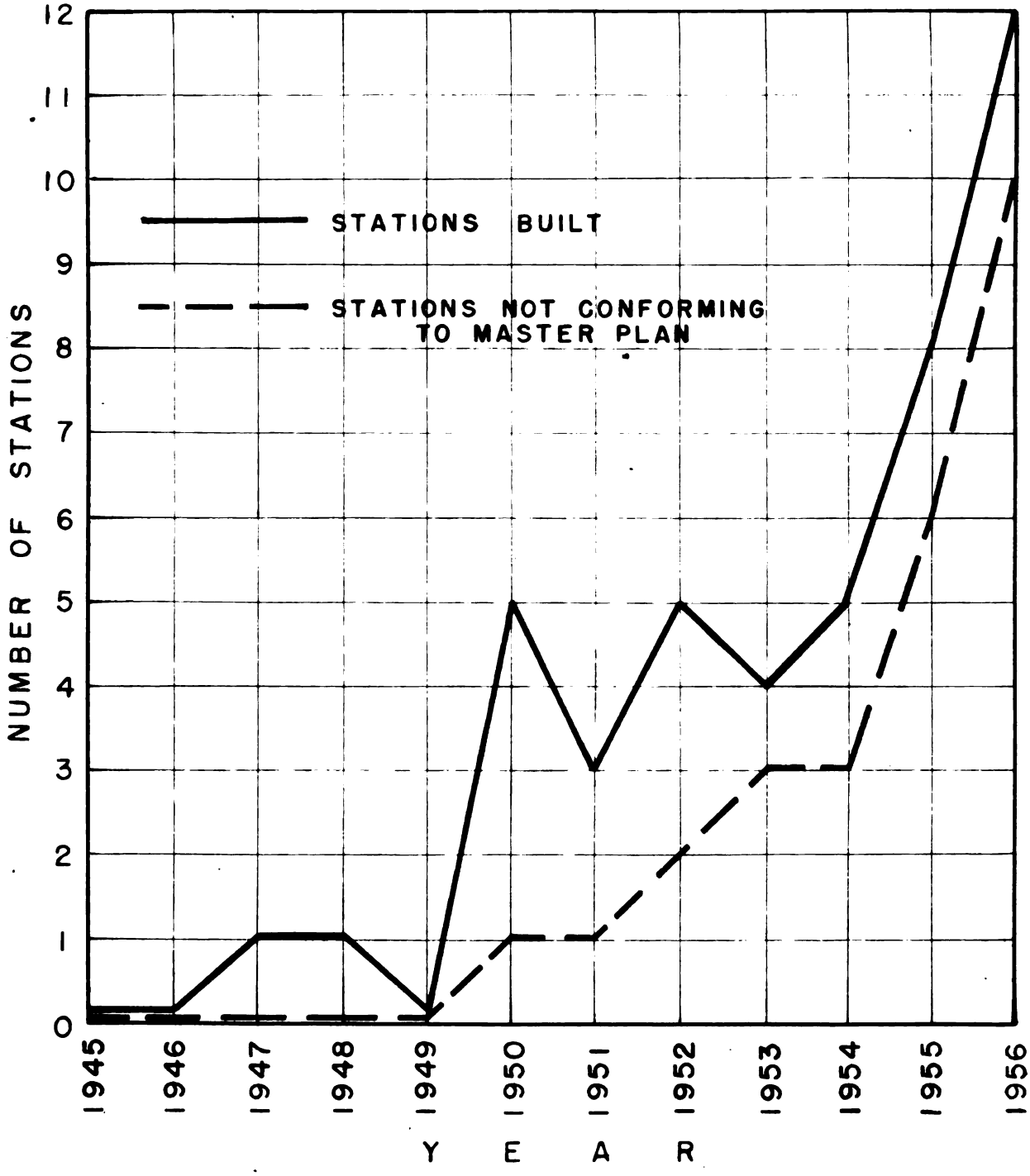
CONFORMITY OF GASOLINE SERVICE STATIONS TO THE MASTER PLAN IN LANSING, MICHIGAN: 1945-1956

Year	Number Built	Number Conforming to Master Plan	Number Not Conforming to Master Plan
1945	0	-	-
1946	0	-	-
1947	1	1	0
1948	1	1	0
1949	0	-	-
1950	5	4	1
1951	3[a]	1	1
1952	5	3	2
1953	4	1	3
1954	5	2	3
1955	8	2	6
1956	12	2	10
Total	44[a]	17	26
Per cent	100	39.5	60.5

[a]One constructed in area not covered by master plan.

Source: Plate 2.

CONFORMITY OF GASOLINE SERVICE STATIONS TO THE MASTER PLAN LANSING, MICHIGAN: 1945 - 1956



SOURCE: TABLE 3

GRAPH NUMBER: 2

section on zoning. The remaining two nonconforming stations were located in areas planned for public use.

Summary

This trend from complete conformity to almost complete nonconformity over a period of twelve years represents a basic area of conflict, and a failure of the master plan to consistently influence this use. If the land-use allocations of the master plan are based on a valid appraisal of future needs, both as to area and distribution, the city should be prepared to defend the plan against compromise.

The Zoning Ordinance

The master plan allocates areas to the functions and activities which make up an urban community, but the plan is advisory in nature, and can only suggest the uses to which private and public property should be put. Proposals for the use of private property are effectuated through the zoning ordinance. This instrument of public policy places controls upon the use of property which are legally enforceable. Ideally, then, the zoning ordinance is a direct reflection of the land-use provisions of the master plan.

The Background of Zoning in Lansing

The first Lansing zoning ordinance, adopted by the City Council on June 13, 1927, was based generally on the zoning proposal submitted by the planning consultant as part of the 1921 city plan.[10] The five districts included ("A" and "B" Residence, "C" Commercial, "D" Industrial, and "E" Unrestricted) were designed to carry out the objectives of the 1921 plan, and reflected the size and limited complexity of the city at that time.[11]

The Lansing Zoning Ordinance

In 1938 the city's planning consultant recommended that a new zoning ordinance be enacted to effectuate the proposed master plan, and a proposed zoning ordinance and map were submitted to the City Plan Commission.[12] The ordinance and map, with some changes, were enacted into law by the City Council on August 31, 1942.[13] Although enacted four months prior to the adoption of the master

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[10] Bartholomew, The Lansing Plan.

[11] City of Lansing, Zoning Ordinance (1927).

[12] Bartholomew, Comprehensive City Plan.

[13] City of Lansing, Zoning Ordinance (1942).

plan by the City Plan Commission, the zoning ordinance and map are based directly on, and are designed to effectuate, the master plan. This ordinance, as amended, is the one in force at the present time. The map accompanying the ordinance is shown as adopted on Plate 3.

The definitions section of the new ordinance divides the functions of automobile service and automobile repair as follows:

> Filling Station: Any building or premises used solely or principally for the storing, dispensing, sale or offering for sale at retail of any automobile fuels or oils.
>
> Garage, Public: Any premises, except those described as a private or storage garage, used for the storage or care of self-propelled vehicles, or where any such vehicles are equipped for operation, repaired or kept for remuneration, hire or sale.[14]

"Filling stations" are classified as a commercial use in this ordinance. The various commercial districts included in the ordinance were designed to provide for a central business district (zoned "G") and a number of neighborhood shopping districts (zoned "F" or "F-1"). These neighborhood districts were primarily extensions of existing facilities, located at major street intersections about one-half mile apart. The typical neighborhood district as zoned occupied four corners at a major intersection.[15] Filling stations are

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[14] Ibid., sec. 1.

[15] Bartholomew, Comprehensive City Plan, pp. 51-52.

GASOLINE SERVICE STATIONS CONSTRUCTED: 1945 TO 1956

ZONING MAP: 1942

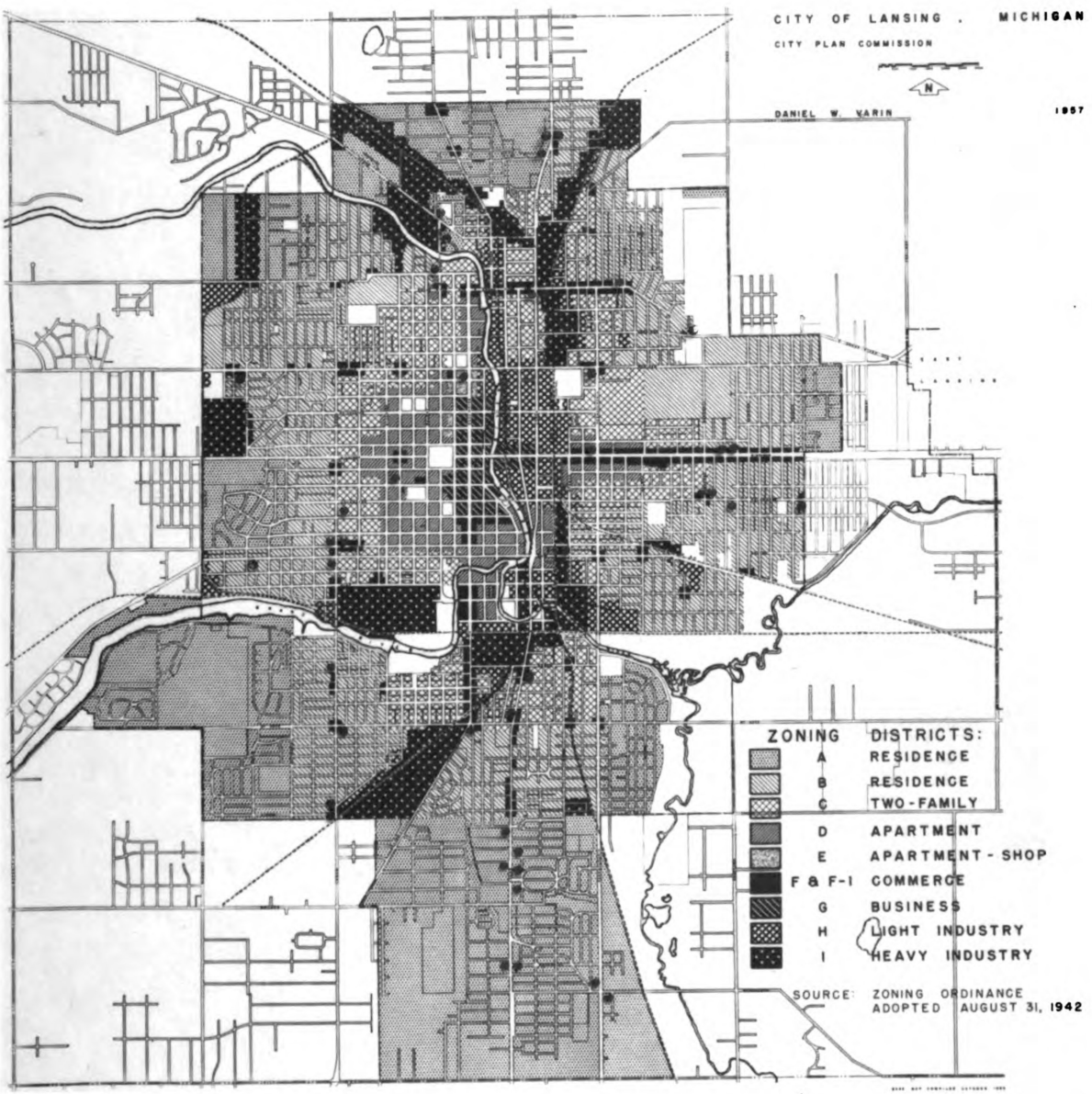

PLATE NUMBER: 3

• LOCATION OF A SERVICE STATION COMPLETED OR UNDER CONSTRUCTION

GASOLINE SERVICE STATIONS CONSTRUCTED: 1945 TO 1956

• LOCATION OF A SERVICE STATION COMPLETED OR UNDER CONSTRUCTION

ZONING MAP : 1942

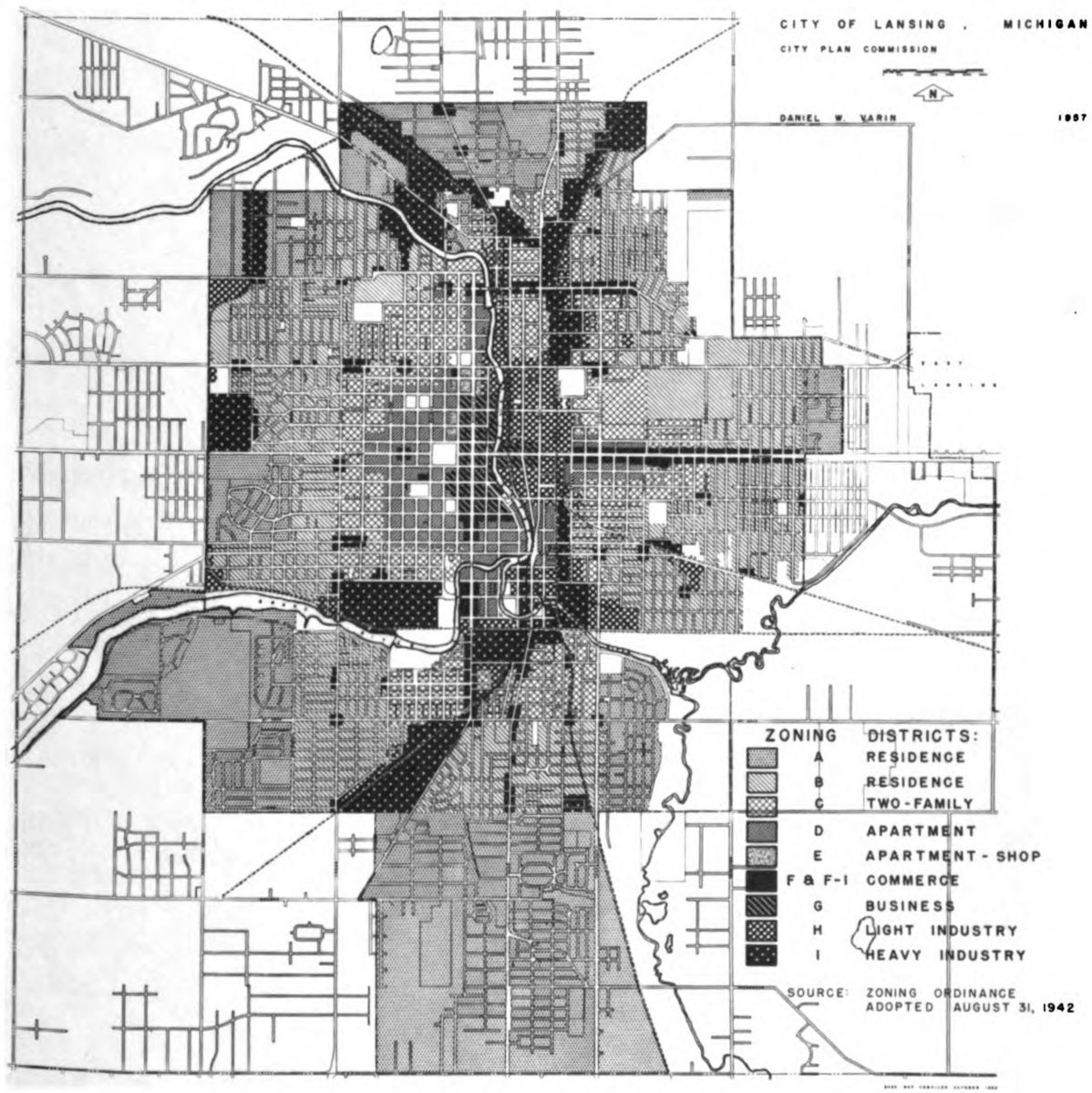

PLATE NUMBER 3

permitted in all of these commercial districts, and also in the "H" Light and "I" Heavy Industrial districts. Filling stations are prohibited in the "E" Apartment-Shop district, which permits other retail uses on the first floor, while "Public Garages" are prohibited in the "F" and "F-1" commercial districts, and permitted in all other commercial and industrial districts.[16]

The "F" and "F-1" Commercial districts, the most restrictive districts permitting a gasoline service station in the ordinance as originally passed, require a rear yard of not less than twenty-five feet for interior lots or fifteen feet for corner lots (measured from the center line of the alley, if present) and a side yard of not less than four feet if the side of the lot so zoned abuts upon a lot zoned for dwelling purposes. In the "F" district a front yard on each street side of not less than twenty feet is required, while in the "F-1" district no front yard is required. (The definition of a "required yard" is so interpreted that gasoline pumps or similar equipment may be placed in the front yard.) The height limitation of two and one-half stories or thirty-five feet poses no limitation to a gasoline service station.[17]

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[16] City of Lansing, Zoning Ordinance (1942), secs. 7-10.

[17] Ibid., secs. 16, 19.

In the "G" Business district commercial buildings are not subject to yard requirements. The height limitation of six stories of seventy-five feet, which may be increased by provision of increased setbacks, again presents no restrictions to a service station.[18]

Yards are not required in the "H" Light Industrial or "I" Heavy Industrial districts unless the district abuts upon a residence district, in which case a rear yard of not less than fifteen feet or a side yard of not less than four feet is required. A height limitation of three stories or forty-five feet, which may be increased by the provision of increased setbacks, is imposed.[19]

On January 22, 1951, the zoning ordinance was amended to included an "E-1" Drive-in Shop district. Uses permitted in this district include "gas stations" (not defined in the ordinance), dry-cleaning pick-up stations, auto-wash establishments, drive-in restaurants and refreshment stands, and drive-in banks. Commercial buildings in this district are limited to only one story in height, and must provide a rear yard of not less than twenty-five feet, a side yard on each side of the building of not less than 10 per cent

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[18] Ibid., sec. 17.

[19] Ibid., sec. 18.

of the width of the lot and not less than four feet, and a front yard of not less than twenty feet. A corner lot must provide a front yard on each street side, but the buildable width of the lot need not be reduced to less than twenty-five feet.[20] This district was specifically designed for uses primarily serving the automobile, and its use is presently confined to rezonings granted to individual petitioners.

The zoning ordinance of the city of Lansing, as amended through December 31, 1956, provides no other regulations or restrictions applying either generally or specifically to gasoline service stations.

The Relationship of Gasoline Service Station Construction to the Zoning Ordinance

Construction of gasoline service stations during the study period has resulted in a considerable amount of conflict with the zoning map. As shown by Table 4, more than one-half of the service stations constructed required a rezoning prior to construction. One station constructed during 1952 was permitted in a residential zone on a variance granted by the Board of Appeals. This action is classed as a rezoning in Table 4.

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[20] City of Lansing, Zoning Ordinance (1942, as amended to December 31, 1956), secs. 6(B), 15(A).

TABLE 4

CONFORMITY OF GASOLINE SERVICE STATIONS TO THE ZONING MAP IN LANSING, MICHIGAN: 1945-1956

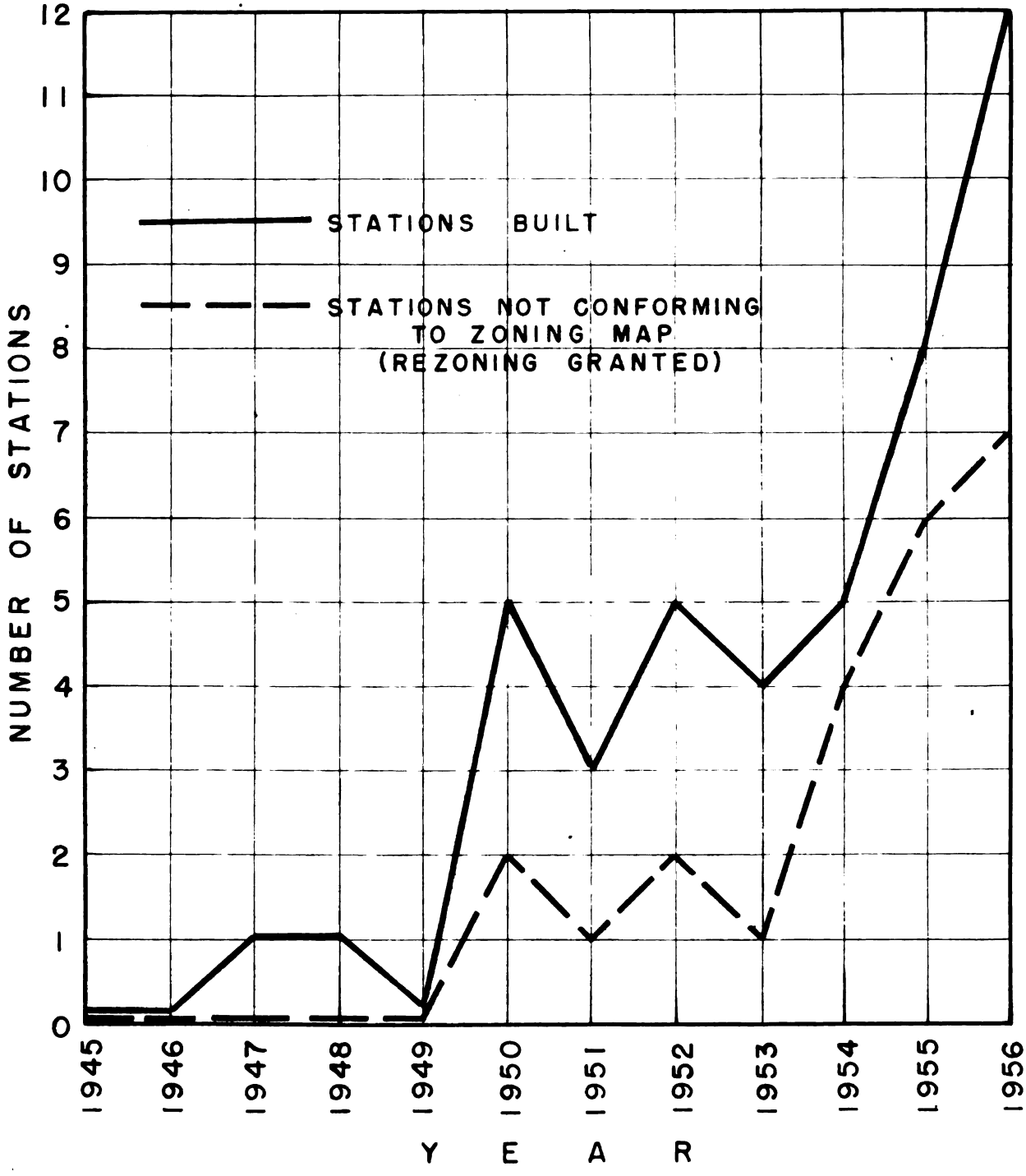
Year	Number Built	Number Conforming to Zoning Map	Number Not Conforming to Zoning Map
1945	0	-	-
1946	0	-	-
1947	1	1	0
1948	1	1	0
1949	0	-	-
1950	5	3	2
1951	3	2	1
1952	5	3	2
1953	4	3	1
1954	5	1	4
1955	8	2	6
1956	12	5	7
Total	44	21	23
Per cent	100	47.7	52.3

Source: Plate 3 and Lansing City Plan Commission.

Graph 3 portrays the number of service stations constructed and the number of rezonings for service stations granted during the study period. The trend exhibited is very similar to that indicated by Graph 2, showing the lack of conformity to the master plan. This similarity is the result of the close relationship between the master plan and the zoning ordinance, and indicates that the failure of these two instruments in guiding this use is actually one problem. The zoning ordinance is no stronger than the master plan, and the basic philosophy behind each is the same, and must be defended on the same grounds. The magnitude of this particular aspect of the problem is indicated by the fact that, of the 385 rezonings passed by the City Council during the study period, 22, or 5.7 per cent, were for gasoline service stations. From 1954 to 1956, 13.5 per cent of all rezonings passed were for this single use.

Lansing has so far escaped excessive encroachment of gasoline service stations upon areas zoned for industrial purposes, although the zoning ordinance permits buildings or land to be used for "any use permitted in the 'G' Business district" in the "H" Light Industrial district, and "any purpose whatsoever not in conflict with any ordinance of the City of Lansing regulating nuisances" in the "I" Heavy Industrial district. The ordinance contains no provisions regulating the type or location of commercial uses, or the amount

CONFORMITY OF GASOLINE SERVICE STATIONS TO THE ZONING MAP LANSING, MICHIGAN: 1945 - 1956



SOURCE: TABLE 4

GRAPH NUMBER: 3

of land utilized by commercial activities in industrial zones. This policy can result in extensive commercial use of the street frontage of areas zoned in depth for industry. Gasoline service stations frequently utilize this type of location, which may preclude the use of the remaining area for industrial purposes. The basic incongruity and legal aspects of this situation are discussed in Chapter II of this study.

The minimum front, side, and rear yards required for all commercial buildings in the "E-1" Drive-in Shop district aid to some extent in providing for safe and adequate vehicular access to gasoline service stations. A front yard is also required in the "F" Commercial district. However, service stations constructed in any other commercial or industrial zone are not subject to these or any other yard requirements by the zoning ordinance.

Summary

The close relationship between the master plan and the zoning ordinance has been paralleled in Lansing by a high degree of nonconformity of gasoline service station construction to both documents. This situation implies a need to either amend both instruments to reflect current needs or to determine that they are valid and to adhere to them.

The Lansing zoning ordinance attempts to handle the special problems associated with the gasoline service station and other uses catering to the automobile by creating a special zone for these uses. However, regulations established under this procedure can only be applied to service stations constructed in the special zone, whereas in actuality many are built in other zones. Use of the special zone technique in granting rezonings also tends to focus attention upon a particular parcel of property under consideration, instead of upon the problems and needs of the entire urban area.

The Building Code

Building codes normally contain many provisions of interest to planners in that they affect or control certain aspects of the physical development of an area. Among the uses frequently regulated on the basis of fire, explosion, and safety hazard are gasoline service stations. Such provisions, although based on the police power, differ from zoning regulations in that they generally contain detailed provisions governing the methods and materials of construction and the safe use of buildings and structures, rather than the location and intensity of use; and that in some cases they apply uniformly to buildings, structures, and uses existing at the time of enactment, as well as to those constructed or introduced following enactment.

The Lansing Building Code

The building and safety code of the city of Lansing establishes fire limits for Fire Districts 1 and 2, and places the remainder of the city in District 3.[21] Gasoline service stations meeting the established construction requirements are permitted in any district.[22] Service stations throughout the city must have enclosing walls, bearing walls, and bearing partitions of masonry if they exceed 800 square feet in floor area. (The typical two-bay service station contains more than 1,000 square feet of floor area.) Stations of 800 square feet or less in floor area may be of all-metal or frame construction.[23] These construction types, however, are not permitted in Fire Districts 1 or 2.[24]

Special regulations are included for Class B-1 buildings, which include gasoline service stations. These controls apply to stations located in any fire district. Under these provisions, service station buildings are prohibited within fifty feet of any public

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[21] City of Lansing, Building and Safety Code (1928), sec. 3.01.

[22] Ibid., sec. 3.06.

[23] Ibid., sec. 7.01.

[24] Ibid., secs. 3.02, 3.04.

building, theater, or a hospital, sanitorium, or other medical institution providing more than ten sleeping rooms, or a prison, reformatory, jail, asylum, or other place of detention for human beings. Service station buildings with solid masonry walls without openings within five feet of any property line may be erected on the adjacent property line. If the walls are of some other type of construction, however, they are prohibited within ten feet of any adjacent property line.[25]

Provisions governing the storage of inflammable liquids (including gasoline) require that such liquids be stored outside the building and underground if within Fire Districts 1 or 2. Storage aboveground may be permitted in the remainder of the city by the Board of Appeals provided for in the state housing code.[26]

All of the gasoline service stations constructed within the study period conform to the requirements of the building and safety code. Stations were built within each of the three fire districts.

Summary

These requirements of the building and safety code supplement the provisions of the zoning ordinance in that they provide for

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[25] Ibid., sec. 7.05.

[26] Ibid., sec. 25.02.

greater yard requirements in some cases, and prohibit service stations within a specified distance of several enumerated uses. However, storage of gasoline above the ground in most of the city, one of the most objectionable aspects of a service station, is not prohibited by either the building and safety code or the zoning ordinance.

The three fire districts established in the building code are not coordinated with the zones delimited on the zoning map. If these two documents were more closely related, the effectiveness of both the zoning ordinance and the building code would be improved.

Streets and Traffic

Existing and proposed major streets have provided a natural focus for the location of gasoline service stations throughout their development from the curbside pump in front of the grocery or hardware store to the modern service station. This factor has become increasingly important as the service station emerged as a specialized activity, depending upon the retailing of motor fuels, oils, and lubricants as the major or sole source of income. The natural tendency of most commercial activities is to locate near the greatest number of consumers, which for the gasoline service station are usually found on the major streets. More far-sighted oil companies and operators consider future major streets as well

as the existing ones. This aspect of location, unguided and uncontrolled, can easily result in the conversion of major streets into a succession of closely spaced intersections, no longer able to perform their primary function of movement of traffic. The following analysis of the location of gasoline service stations as influenced by streets and traffic is based upon a consideration of the types of sites actually utilized, rather than upon an evaluation of the sites selected from the number of various kinds of sites available. Although availability is an important determinant of choice, the construction of service stations in Lansing indicates that availability is by no means limited to vacant sites. Therefore, the number of available sites of any given type cannot be accurately determined.

The Major Street Plan

The major street plan is ideally a component of the comprehensive master plan, and should be designed to further the objectives of the master plan. The zoning ordinance should be used to help maintain the ability of major streets to move the volume of traffic for which they are designed, thus protecting the public investment in a facility which is becoming increasingly expensive to provide, and to guide the development and location of the traffic generating land uses and areas which the major streets serve. This interlocking

action is but one example of the close relationship of the various elements of public policy which are based upon the master plan, and which must exist if the master plan is to effectively guide and direct physical development.

During the period covered by this case study, two major street plans have been placed into effect in the city of Lansing. The "Official City Plan" adopted by the City Plan Commission on December 29, 1942, included a major street plan. This plan was prepared by the planning consultant and amended by the Plan Commission prior to adoption.[27] The major street plan, as shown by Plate 4, included a system of existing and proposed radial and by-pass routes and major streets. This plan was superseded by the adoption of a plan entitled the "Arterial Streets System" by the City Plan Commission on May 7, 1953. The new plan, as reproduced on Plate 5, includes only routes within the corporate limits, and provides for existing and proposed "arterial streets" only. These two major street plans span the entire period considered in this study.

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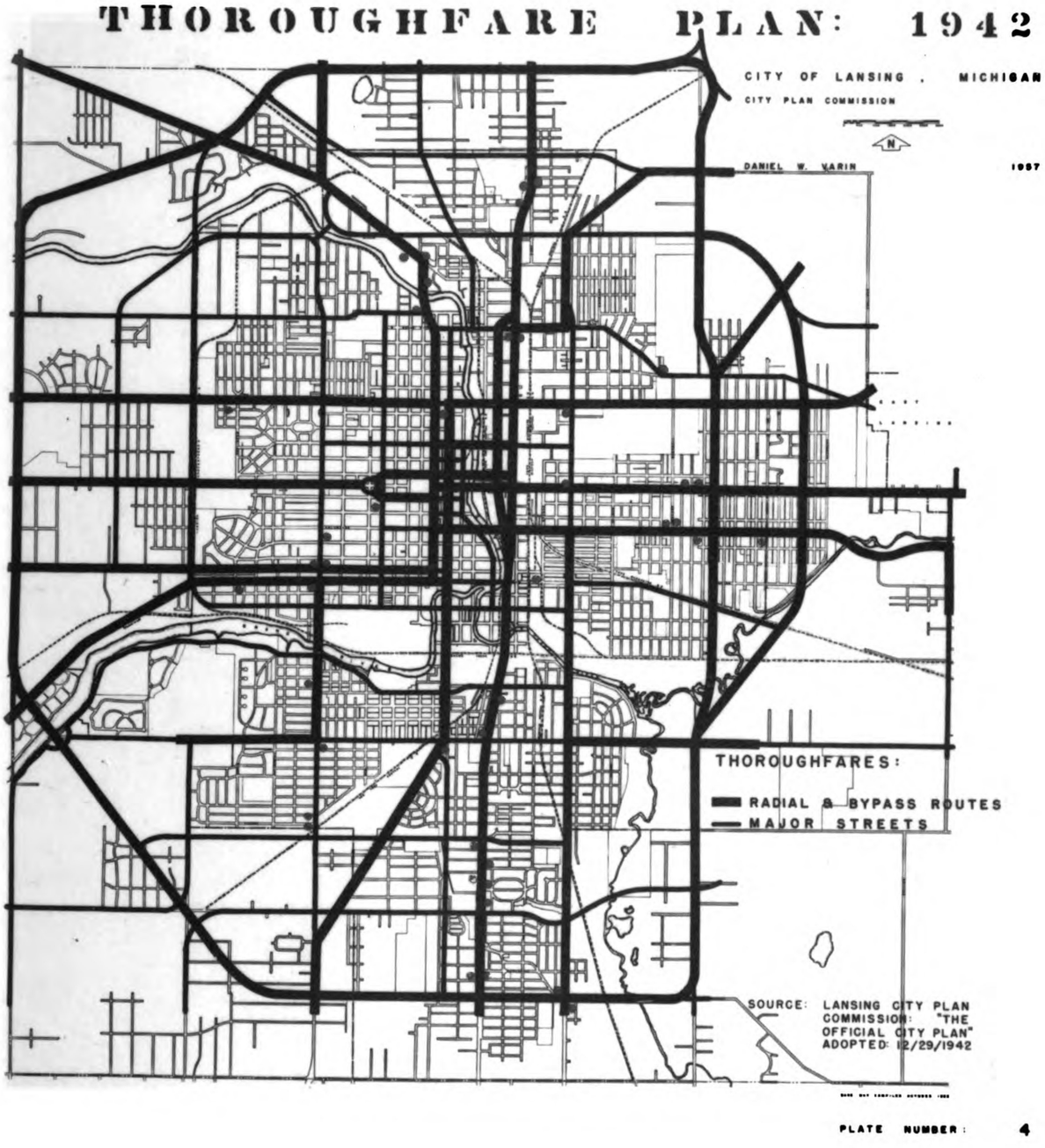
[27] Bartholomew, Comprehensive City Plan, pp. 23-37; and Lansing City Plan Commission, Amendments to 1938 Report upon the Comprehensive City Plan: Lansing, Michigan (Lansing: City Plan Commission, 1942), pp. 3-4.

GASOLINE SERVICE STATIONS CONSTRUCTED: 1945 TO 1956



• LOCATION OF A SERVICE STATION COMPLETED OR UNDER CONSTRUCTION

GASOLINE SERVICE STATIONS
CONSTRUCTED: 1945 TO 1956

LOCATION OF A
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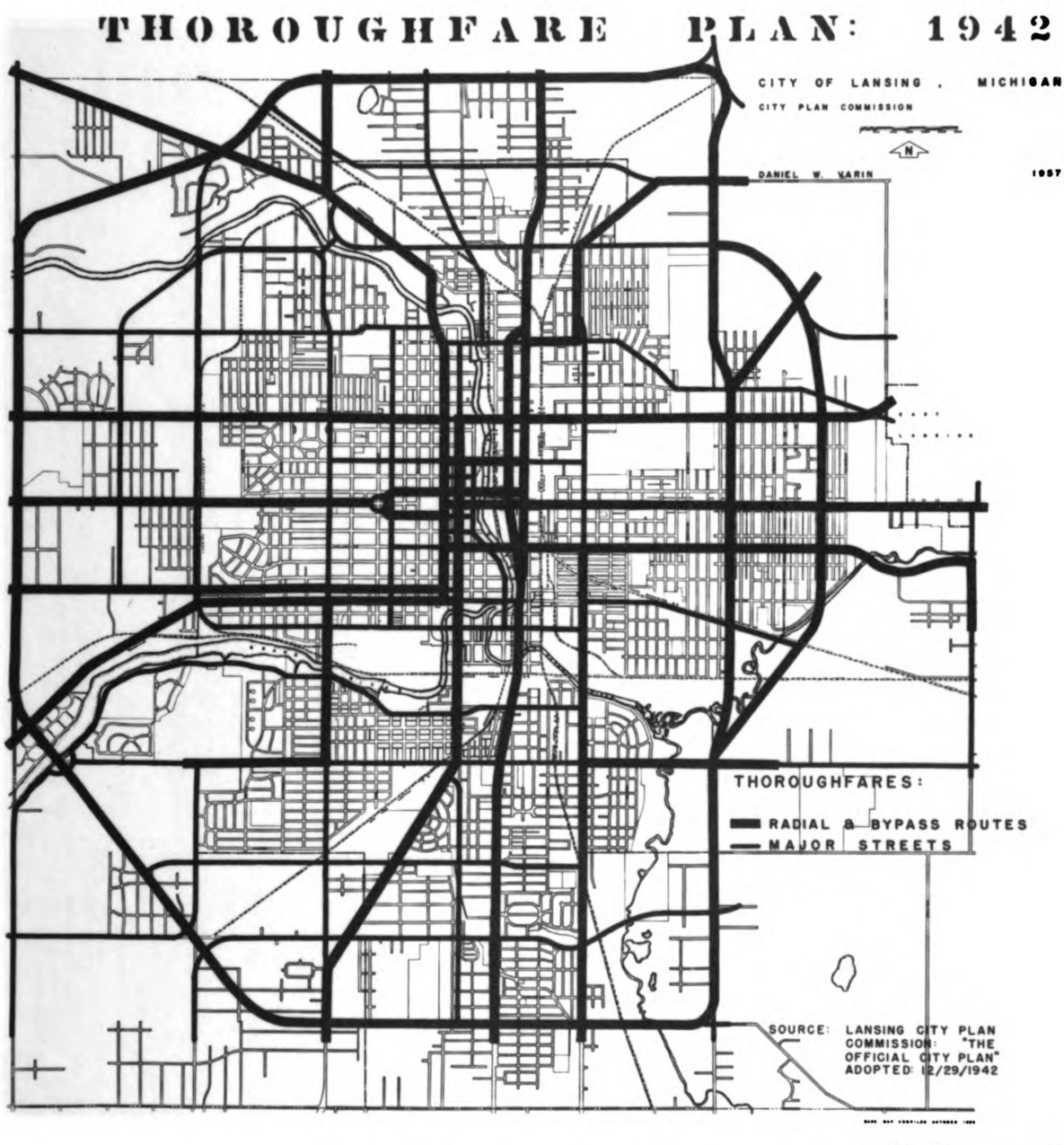

THOROUGHFARE PLAN: 1942
CITY OF LANSING , MICHIGAN
CITY PLAN COMMISSION
N
DANIEL W. VARIN
1957
THOROUGHFARES:
RADIAL & BYPASS ROUTES
MAJOR STREETS
SOURCE: LANSING CITY PLAN COMMISSION: "THE OFFICIAL CITY PLAN" ADOPTED: 12/29/1942
PLATE NUMBER: 4

GASOLINE SERVICE STATIONS CONSTRUCTED: 1945 TO 1956

ARTERIAL STREETS PLAN: 1953

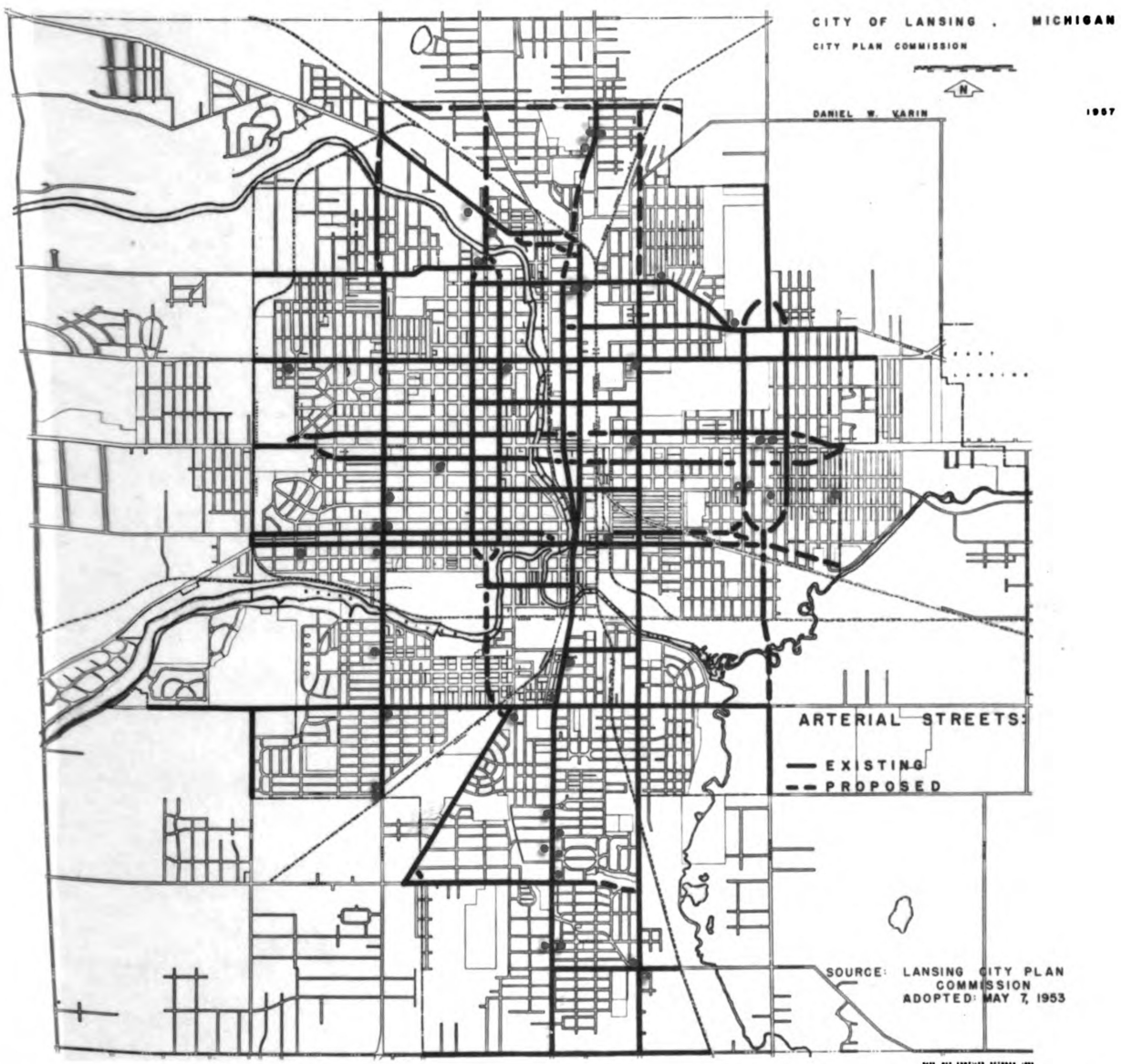


PLATE NUMBER: 5

• LOCATION OF A SERVICE STATION COMPLETED OR UNDER CONSTRUCTION

GASOLINE SERVICE STATIONS CONSTRUCTED: 1945 TO 1956

• LOCATION OF A SERVICE STATION COMPLETED OR UNDER CONSTRUCTION

ARTERIAL STREETS PLAN: 1953

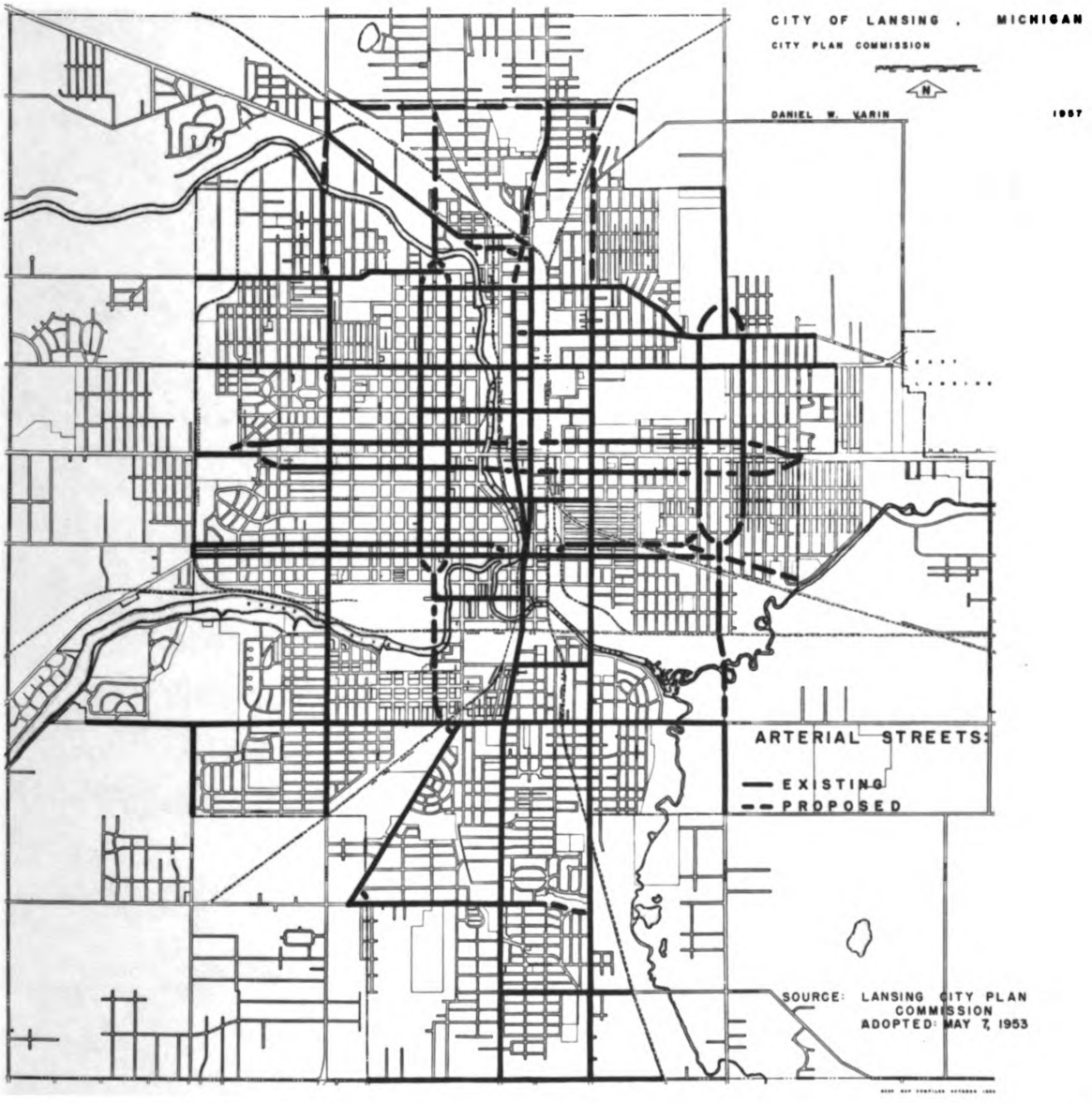


PLATE NUMBER: 5

The location of each of the gasoline service stations constructed in Lansing between 1945 and 1956 is analyzed in terms of the major street plan in effect at the time of construction by Table 5. Each station is classified according to its location into one of four categories.

This analysis shows that a site at the intersection of a major street and a secondary or minor street was the location most frequently selected. A location of this type provides a good combination of business from traffic passing the station and from nearby residential areas. Access to the station from the major street is usually easier at this type of location than at an intersection of two major streets.

Although a location at the intersection of two major streets usually insures a large volume of traffic passing the station, this type of location was utilized by less than one-third of the stations constructed during the study period. This type of intersection may actually have too much traffic, so that the resultant congestion and "backing-up" of automobiles at traffic signals discourages the use of a service station located there.

Only 6.8 per cent of the stations analyzed were located on an interior or mid-block site on a major street. Stations of this type usually require 25 to 50 per cent more frontage than for a location

TABLE 5

GASOLINE SERVICE STATION LOCATION AND THE MAJOR STREET PLAN IN LANSING, MICHIGAN: 1945-1956

Year	Number Built	Type of Location[a]			
		(1)	(2)	(3)	(4)
		Major Street Plan--1942			
1945	0	-	-	-	-
1946	0	-	-	-	-
1947	1	-	1	-	-
1948	1	-	1	-	-
1949	0	-	-	-	-
1950	5	2	3	-	-
1951	3	1	1	1	-
1952	5	2	3	-	-
		Arterial Streets Plan--1953			
1953	4	1	3	-	-
1954	5	3	-	1	1
1955	8	2	5	-	1
1956	12	3	6	1	2
Total	44	14	23	3	4
Per cent	100	31.8	52.3	6.8	9.1

[a]Column headings--gasoline service stations are classified according to location as follows: (1) at the intersection of two major streets; (2) at the intersection of a major and a minor or secondary street; (3) on a major street but not located at an intersection; (4) at the intersection of two secondary or minor streets.

Source: Plates 4 and 5.

at a corner, and the high cost of major street frontage may help discourage such locations. Uses on adjoining property which may reduce the visibility of the station from the major street also detract from this type of site.

The four stations located at the intersection of two secondary or minor streets result from a change in classification of two streets in the 1953 arterial streets plan. Under the 1942 plan all of these would be classified as being located at the intersection of a major and a secondary or minor street.

Major streets must be considered a major factor in the location of service stations, as shown by this analysis. The high percentage of stations constructed at some type of location along a major street (90.9 per cent) indicates the scope of the problem of multiplication of the potential points of traffic conflict along major streets. The typical station provides two points of access on the major street and, if located at an intersection, one access point on the intersecting street. Every point at which automobiles may enter or leave the main traffic flow further reduces the capacity of the major street, unless such access is carefully designed, and acceleration and deceleration lanes provided. The maximum allowable marginal access which will still permit the street to perform its primary

function of traffic movement should govern the number of marginal access points permitted.

State Trunkline Routes

State trunkline routes differ from other major streets in that they are designed primarily to move traffic through the city, rather than within the city. These routes are constructed and maintained in part by the State Highway Department, which was established to provide routes for intercity, rather than intracity, movement. Nevertheless, these routes generally carry a large volume of local traffic in addition to through traffic.

In performing their major function, state trunkline routes naturally attract those roadside uses which serve the automobiles passing through the city, including gasoline service stations. An analysis of this attraction in Lansing is presented in Table 6. The state trunkline system in Lansing, as shown on Plate 6, includes four routes passing through the city, and three routes terminating within the city. Service stations constructed during the study period are classified according to their location into one of three categories.

This locational pattern closely parallels that exhibited in Table 5, in that 65.9 per cent of the service stations constructed were located at the intersection of a state trunkline route and a

TABLE 6

GASOLINE SERVICE STATION LOCATION AND THE STATE TRUNKLINE SYSTEM IN LANSING, MICHIGAN: 1945-1956

Year	Number Built	Type of Location[a]		
		(1)	(2)	(3)
1945	0	-	-	-
1946	0	-	-	-
1947	1	-	-	1
1948	1	-	1	-
1949	0	-	-	-
1950	5	-	5	-
1951	3	-	2	1
1952	5	-	4	1
1953	4	1	2	1
1954	5	1	2	2
1955	8	-	4	4
1956	12	1	9	2
Total	44	3	29	12
Per cent	100	6.8	65.9	27.3

[a]Column headings--gasoline service stations are classified according to location as follows: (1) at the intersection of two state trunkline routes; (2) at the intersection of a state trunkline route with another street, or on a trunkline route but not at an intersection; (3) not on a state trunkline route.

Source: Plate 6.

GASOLINE SERVICE STATIONS CONSTRUCTED: 1945 TO 1956

STATE TRUNKLINE ROUTES

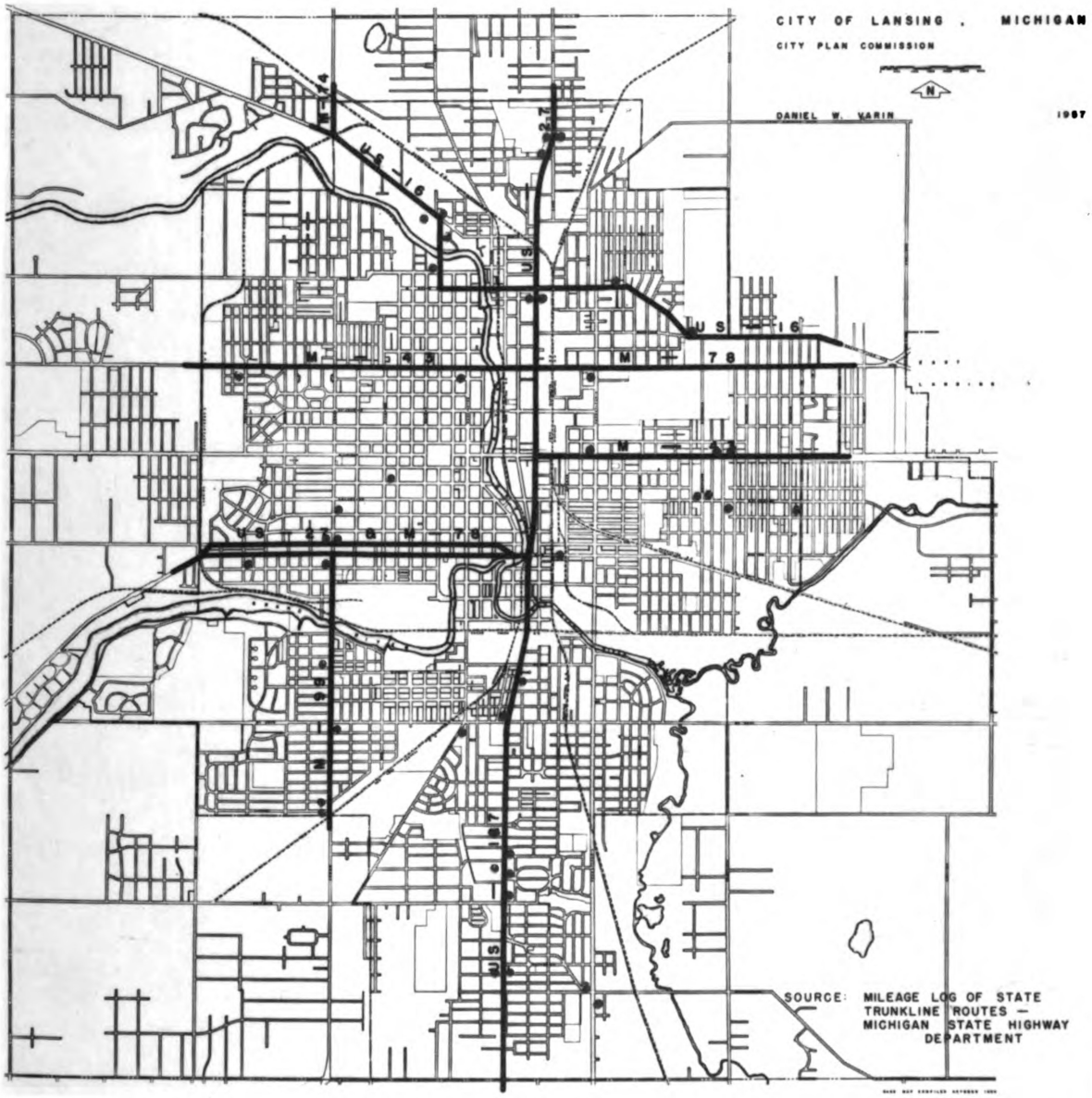


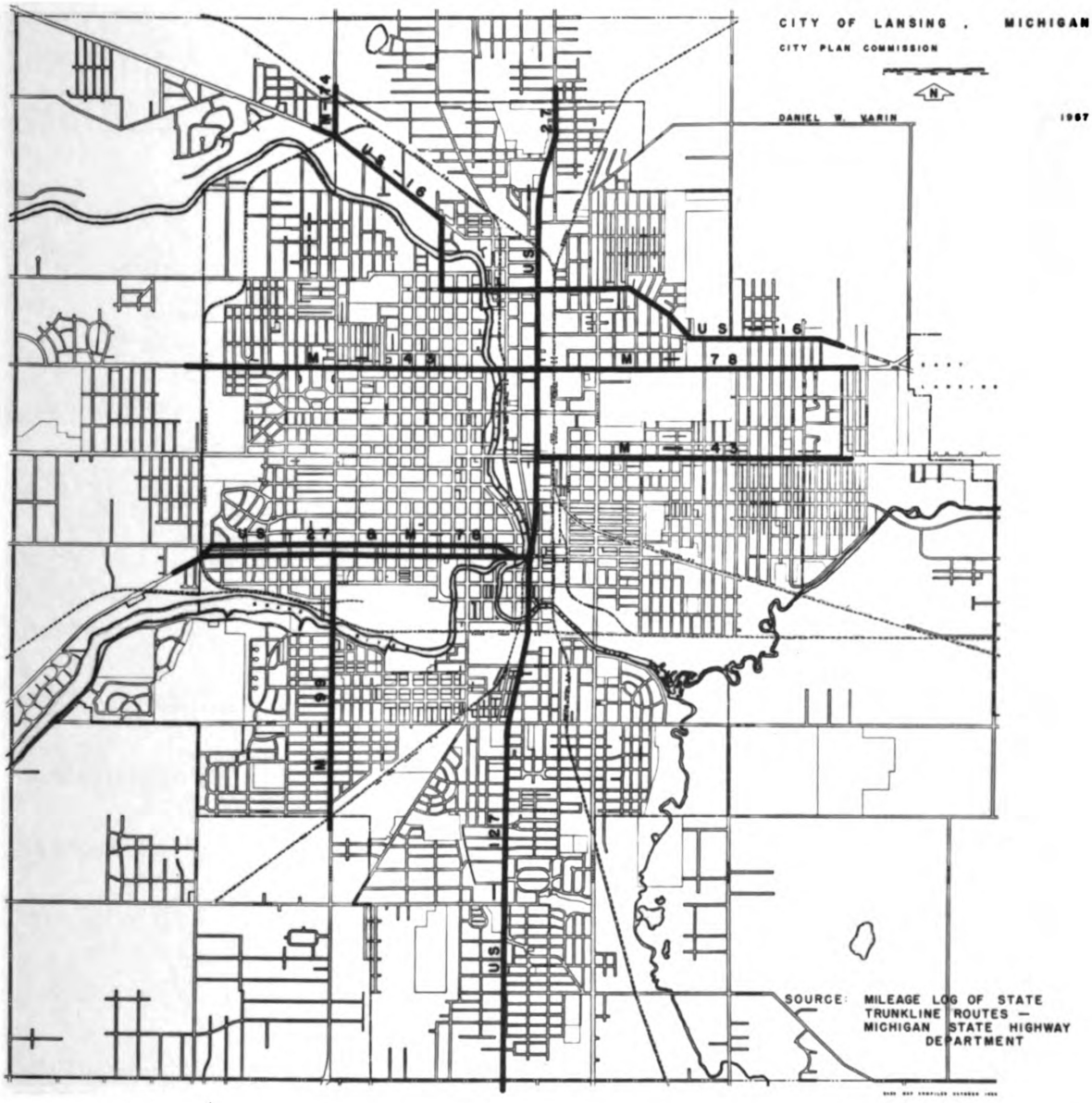
PLATE NUMBER: 6

• LOCATION OF A SERVICE STATION COMPLETED OR UNDER CONSTRUCTION

GASOLINE SERVICE STATIONS CONSTRUCTED: 1945 TO 1956

LOCATION OF A SERVICE STATION COMPLETED OR UNDER CONSTRUCTION

STATE TRUNKLINE ROUTES



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major street, or on a state trunkline but not at an intersection. The intersection of two state trunkline routes is apparently an unpopular location, as only 6.8 per cent of the stations constructed during the study period utilized this type of location. These intersections are usually closely controlled by traffic signals, turn signals, channelized lanes, and other devices which discourage additional access points near the intersection.

Perhaps the most significant aspect of this tabulation is the fact that 27.3 per cent of the stations studied were not constructed on a state trunkline route. Projected bypass routes and a shift in emphasis to local or neighborhood business rather than transient business have influenced this pattern of development.

Problems of traffic conflict created by the location of uses involving vehicular access along major streets are intensified by the location of such uses along streets which carry both intercity and intracity traffic. This conflict must be balanced against the needs of the traffic using the street for gasoline service stations and other automobile services.

Traffic Volume

The volume of traffic using a street, rather than its classification as an "arterial," "radial," "major," "minor," or other

type of street, actually determines the transient business potential of any site at a given time. Designation of a street as a major street or state trunkline route is both a reflection of past traffic volume and a guide to future volume, but the existing volume on a street must be included as an important element in considering major streets as a factor influencing the locational pattern of gasoline service stations.

Plate 7 reproduces a traffic volume study conducted by the Michigan State Highway Department in November of 1946. Although this date precedes the construction of any gasoline service station during the study period, the data must be qualified by the fact that some of the streets have been removed from the state trunkline system, others have been designated one-way streets, and some new streets have been opened. Nevertheless, it is the most recent study available, and may be considered valid in portraying the relative volume of traffic on many streets.

Data tabulated from Plate 7 are presented in Table 7. This tabulation is necessarily incomplete due to the fact that eight of the stations constructed during the study period were located on streets on which no traffic count was made. Some generalized conclusions can be drawn regarding the other thirty-six locations, however. The service stations constructed during the study period are classified

GASOLINE SERVICE STATIONS CONSTRUCTED: 1945 TO 1956

24 HOUR WEEKDAY TRAFFIC FLOW: 1946

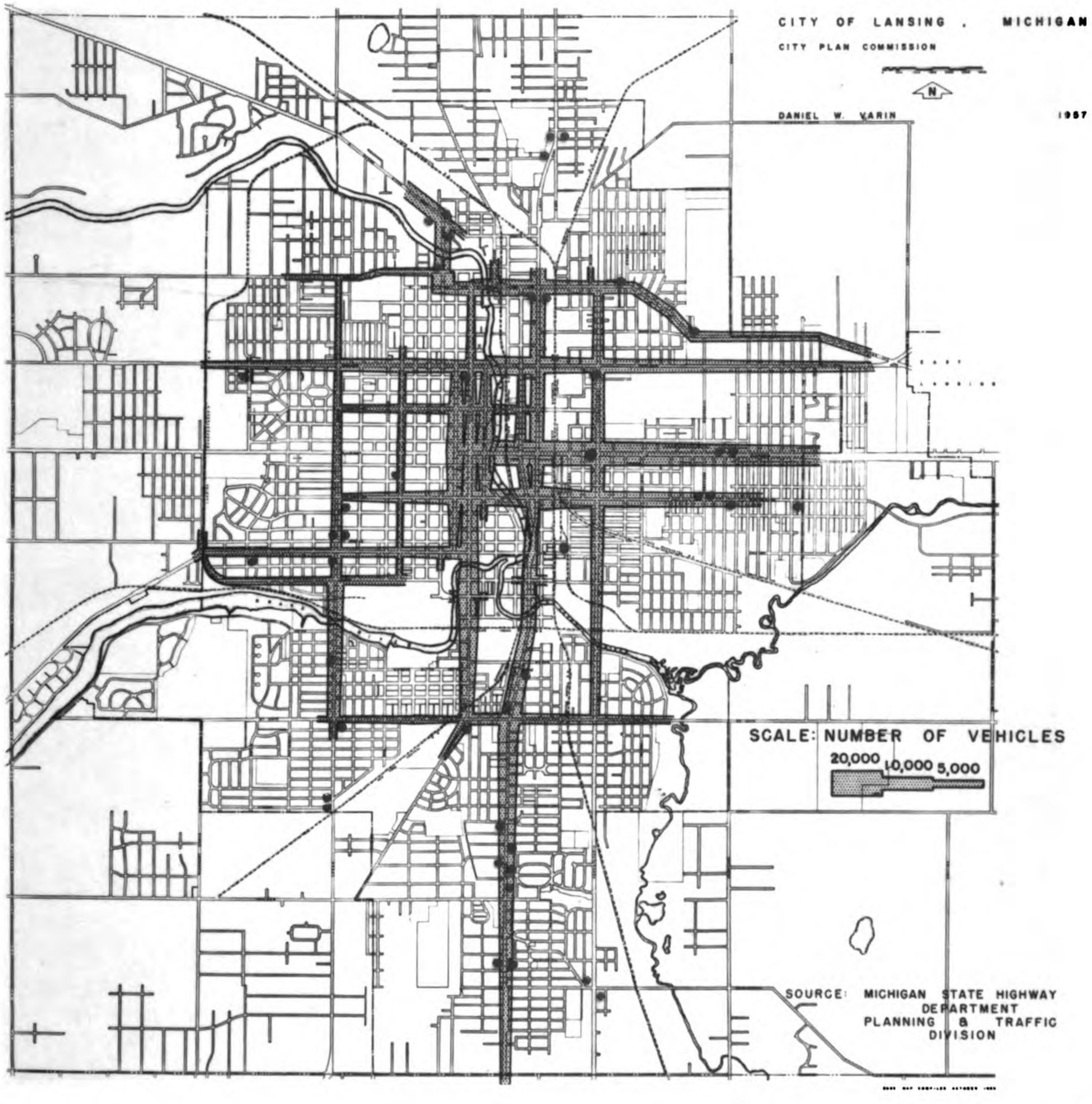


PLATE NUMBER: 7

• LOCATION OF A SERVICE STATION COMPLETED OR UNDER CONSTRUCTION

GASOLINE SERVICE STATIONS CONSTRUCTED: 1945 TO 1956

• LOCATION OF A SERVICE STATION COMPLETED OR UNDER CONSTRUCTION

24 HOUR WEEKDAY TRAFFIC FLOW: 1946

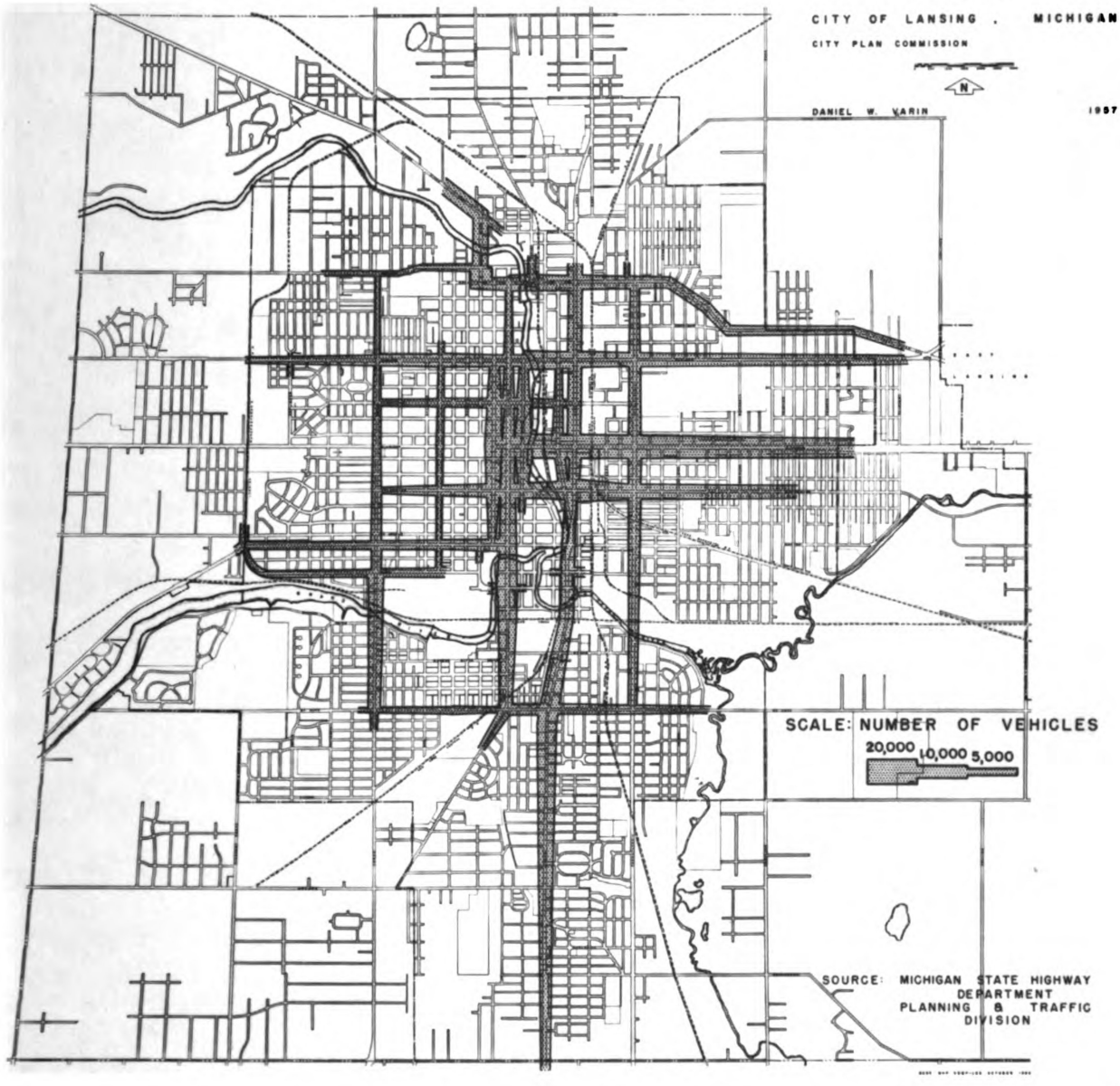


PLATE NUMBER: 7

TABLE 7

GASOLINE SERVICE STATION LOCATION AND TRAFFIC VOLUME IN LANSING, MICHIGAN: 1945-1956

Volume: Vehicles per 24-Hour Day	Type of Location[a] (1) No.	(1) Pct.	(2) No.	(2) Pct.	(3) No.	(3) Pct.	Total
0-5,000	0	0	0	0	-	-	0
5,000-10,000	8	30.8	2	20.0	-	-	10
10,000-15,000	15	57.7	1	10.0	-	-	16
15,000-20,000	3	11.5	4	40.0	-	-	7
20,000-25,000	0	0	2	20.0	-	-	2
25,000-30,000	0	0	1	10.0	-	-	1
Total	26	100	10	100	8	100	44

[a]Column headings--gasoline service stations are classified according to location as follows: (1) stations located on one street included in traffic count; (2) stations located on two streets included in traffic count; (3) stations located on streets not included in traffic count.

Source: Plate 7.

according to their location into one of three categories for this tabulation.

Traffic volume on Lansing streets apparently has influenced the locational pattern of gasoline service stations to this extent:

1. No stations were located on a street or streets with a traffic count of less than 5,000 vehicles in a 24-hour day.
2. In locations where a count of the traffic on the principal street was made, more than one-half of the stations were constructed on a street with a 24-hour volume of 10,000 to 15,000 vehicles. Streets carrying more than 15,000 vehicles per day were not widely utilized for service stations.
3. Stations located at the intersection of two streets, both of which were included in the traffic count, favored a site on streets carrying a combined total of 15,000 to 20,000 vehicles per day. Traffic volumes of less than 10,000 or more than 25,000 vehicles per day did not attract a significant number of stations.

A traffic volume of 10,000 to 20,000 vehicles per 24-hour day apparently is the most favored range for location of a gasoline service station. A traffic volume of less than 10,000 vehicles per day may be considered too small to provide sufficient transient business

for a service station, while streets carrying more than 20,000 vehicles per day may be so congested, and so controlled through traffic lights, turn restrictions, or other measures, that a service station could not benefit from the number of vehicles passing a potential site.

Counts of traffic volume must be further qualified by considerations which are not readily adaptable to objective evaluation, but which exercise a definite influence upon service station location. Most important of these are the speed of traffic and the competitive situation. The average speed of traffic past a potential site may be so high as to deter attempts to leave and re-enter the street. Competitive considerations recognize the fact that one station will receive approximately as much business from 5,000 vehicles passing the station in twenty-four hours as three stations will receive from 15,000 vehicles during the same period. Traffic volume must also be balanced against an evaluation of the residential area forming the "trade area" of the location, as most service stations depend upon a combination of "neighborhood" and "transient" business.

Summary

The attraction which traffic exerts upon gasoline service stations can create many problems, either singly or in combination with each other. The major problems are:

1. Creation or extension of "strip" commercial development along major streets.
2. Multiplication of the potential points of conflict between vehicles along major streets.
3. Reduction of the ability of the street to perform its major function of traffic movement, destroying the investment of the community in the street and ultimately requiring replacement of the facility in another location.

Application of remedial action to these problems is a responsibility of planning, and must be accomplished through sound and reasonable regulation based on an accurate evaluation of the problems manifested in a given area. The influence of traffic upon the locational pattern, however, must be considered in the light of other factors discussed in the sections following, as traffic is by no means the most important locational factor guiding the construction of gasoline service stations.

The Land-Use Aspects of Gasoline Service Stations

The location of individual gasoline service stations, and the locational pattern produced, is influenced by and exerts an influence upon many factors which can be grouped under the general heading

of land-use aspects. Five land-use factors have been selected for analysis in this section:

1. The degree of concentration of gasoline service stations.
2. The status of development of the residential trade area.
3. The quality of housing in the residential trade area.
4. The relationship to patterns of general commercial development.
5. The potential degree of conflict with pedestrian traffic.

Resultant problems are summarized at the end of each analysis, as each represents a distinct aspect of land use.

Data for this study were obtained from land-use studies made by the Lansing City Plan Commission, from housing-quality studies made by senior and graduate classes in urban planning at Michigan State University during 1955 and 1956, and from official building permit records. Supplementary field surveys were made to bring all information up to date as of the end of 1956.

The Degree of Concentration of Gasoline Service Stations

The commonly observed situation of three or four gasoline service stations located at the same intersection leads to the subjective conclusion that existing stations attract new stations. Such

an attraction, if actually exerted, could be an important counter-influence to the previously observed tendency to string out along major streets. A similar shift in locational pattern has been going on for some time for other retail activities, and has resulted in the extensive development of planned shopping centers. Gasoline service stations have been slow to enter such centers, while surveys conducted by the Urban Land Institute indicate that center developers have been undecided as to whether to invite them. Development of a similar pattern by service stations, if such development is taking place, has been obscured by the problems of master plan and zoning conflict and traffic congestion created.

Building permit records and land-use data were used to determine the location of the nearest operating gasoline service station at the time of construction of each of the forty-four stations built during the study period in an effort to determine whether the new construction is being directed toward areas which are not served by existing stations, or whether they are being located close to existing stations, establishing a pattern of concentration. Table 8 presents the information obtained.

Construction of one-half of the stations studied at the same intersection, directly opposite, or on the same block as an existing service station, as shown by this analysis, indicates that concentration

TABLE 8

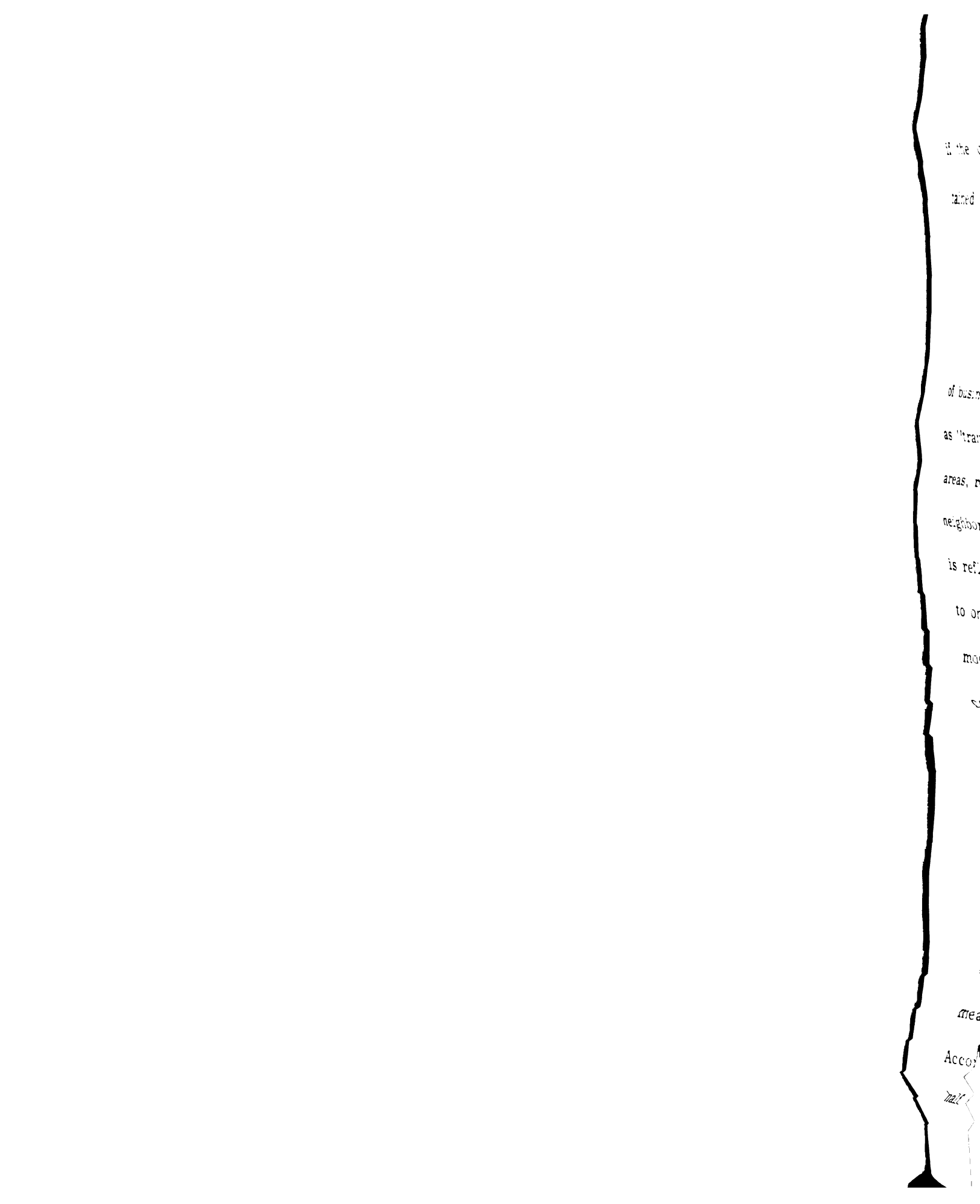
THE DEGREE OF CONCENTRATION OF GASOLINE SERVICE STATIONS IN LANSING, MICHIGAN: 1945-1956

Year	Number Built	Location of Nearest Service Station at Time of Construction			
		At Corner, Across Street, or on the Same Block	Within One Block	Within Two Blocks	Three or More Blocks Distant
1945	0	-	-	-	-
1946	0	-	-	-	-
1947	1	-	-	1	-
1948	1	-	-	1	-
1949	0	-	-	-	-
1950	5	1	3	1	-
1951	3	2	-	-	1
1952	5	3	-	1	1
1953	4	3	1	-	-
1954	5	2	1	2	-
1955	8	3	5	-	-
1956	12	8	4	-	-
Total	44	22	14	6	2
Per cent	100	50.0	31.8	13.7	4.5

Source: Plate 1; building permits; land-use data.

is a major locational factor. More than one-third of the stations were constructed at an intersection at which an existing station was located, and all but an insignificant percentage of the remaining stations were constructed within two blocks of an existing station. Plate 1 and the overlay indicate graphically the high degree of concentration. This concentration must be considered in conjunction with the influence of major streets and traffic. As Plate 1 and the 1945-1956 overlay indicate, the difficulty of finding a location on many of the major streets which is not within two blocks of an existing station may be a factor influencing concentration. At any rate, concentration obviously does not discourage construction of a gasoline service station, and so may become an important factor in planning for this use.

The combination of tendencies to locate on major streets and to concentrate near existing stations intensifies a problem previously observed. Traffic congestion at an intersection of major streets or of a major and a secondary or minor street can be increased greatly by the construction of two, three, or four service stations at the intersection. This problem is reduced to some extent in Lansing by the fact that new service stations are in general not being constructed at the intersection of two major streets. Nevertheless, this problem demands consideration by planners



if the optimum traffic capacity of major streets is to be maintained.

Development of the Residential Trade Area

Gasoline service stations normally depend upon two sources of business: that attracted from vehicles passing the site, known as "transient" business; and that generated from nearby residential areas, referred to as "neighborhood" business. The importance of neighborhood business to the operation of a gasoline service station is reflected in the evaluation of the potential of an area within one to one and one-half miles of a proposed site which is made by most oil companies or individual operators. This area is generally considered the "trade area" of the station. The type and status of this residential area, and the potential future development of the area, indicate the amount of business a service station can draw from this source during its operational lifetime.

Extensive consideration of this factor by both major and independent oil companies and by individual owner-operators indicates that the status of residential development may provide a measurable influence upon the location of gasoline service stations. Accordingly, the residential area within a one to one and one-half mile radius of each service station constructed during the

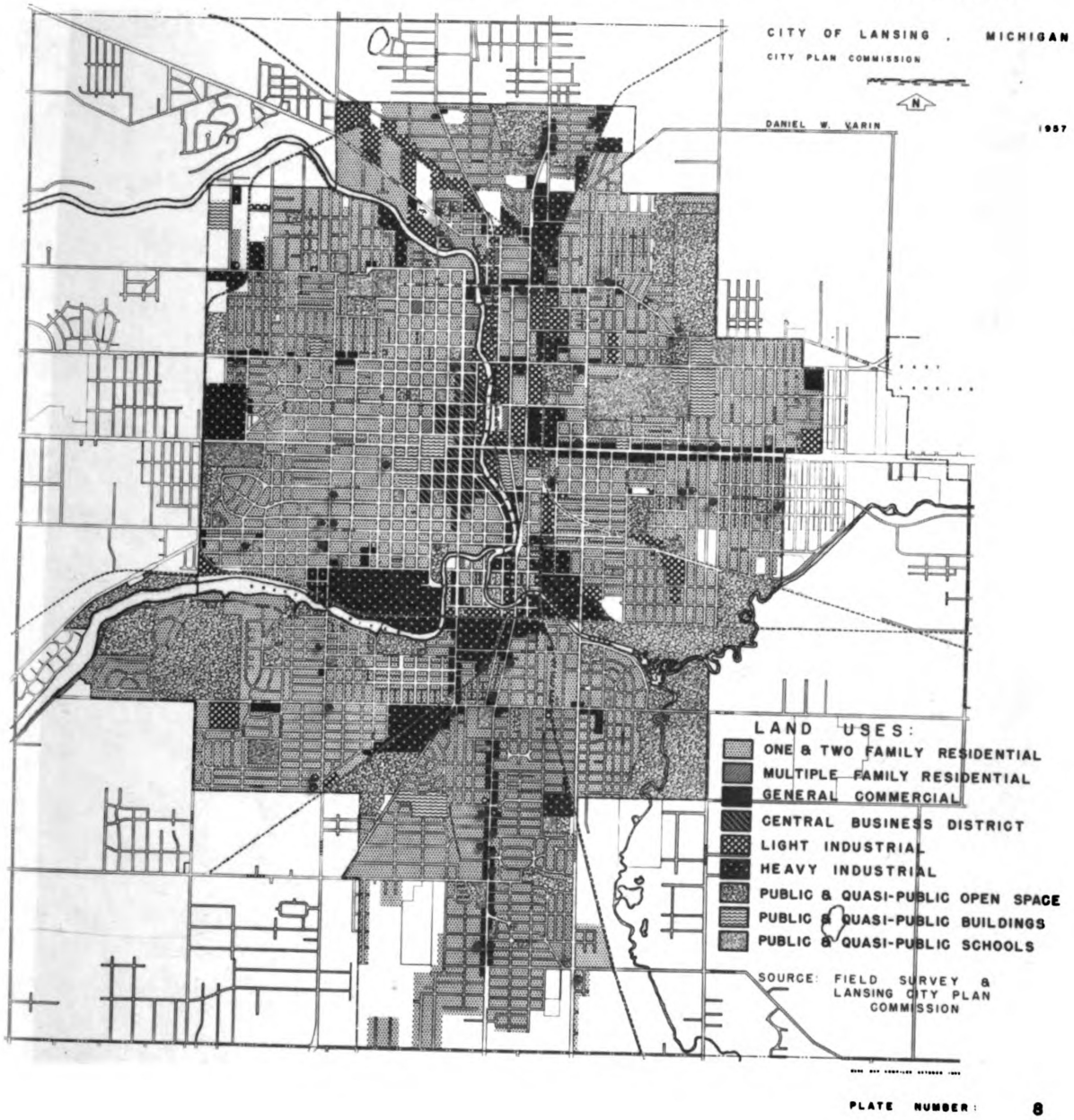
study period was classified into one of three general categories:

1. Built-up: The surrounding area is classified as "built-up" if the area is developed primarily for residential purposes, and if most of the area was in use for this purpose at the time of construction, with only a scattering of vacant residential lots.
2. New and developing: Areas which are largely platted and improved to some extent with utilities, and in which a significant amount of residential construction is taking place are classified as "new and developing." Unplatted parcels zoned for residential use are also included in this category.
3. Undeveloped and static: Widely scattered residential development in which there is little or no recent residential construction are classified as "undeveloped and static."

The existing land-use pattern in Lansing in 1956 is mapped in generalized form on Plate 8. Although this plate illustrates the land-use pattern at a given time, the classification of each "trade area" for this analysis is based upon the pattern existing at the time of construction of the station concerned, as determined from a series of land-use studies and from official building permit

GASOLINE SERVICE STATIONS CONSTRUCTED: 1945 TO 1956

EXISTING LAND USE: 1956



• LOCATION OF A SERVICE STATION COMPLETED OR UNDER CONSTRUCTION

GASOLINE SERVICE STATIONS
CONSTRUCTED: 1945 TO 1956

LOCATION OF A
SERVICE STATION
COMPLETED OR
UNDER CONSTRUCTION

EXISTING LAND USE: 1956

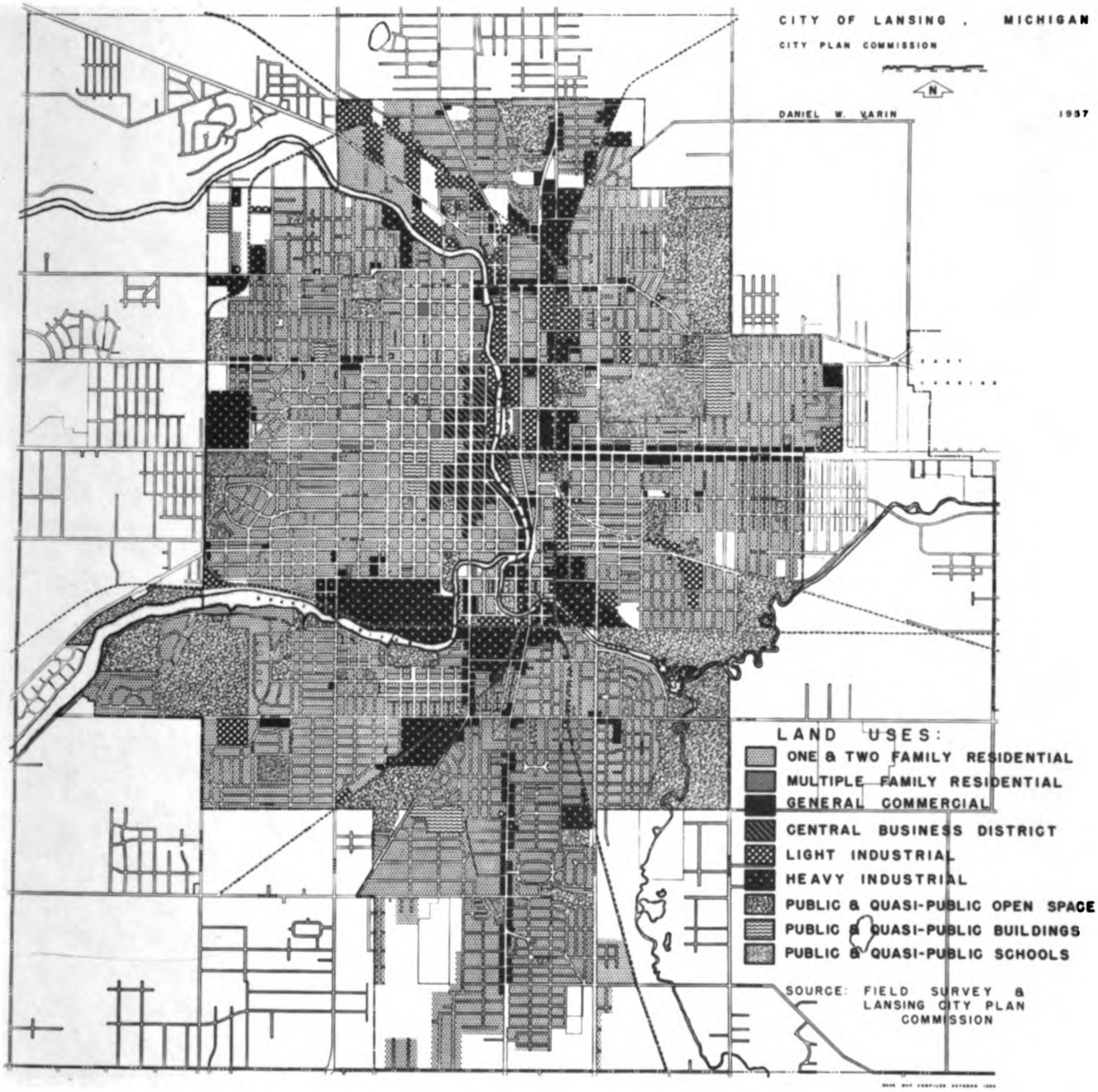


PLATE NUMBER: 8

records. Table 9 presents a classification of the trade area of each of the forty-four service stations constructed during the study period into one of these three categories.

This tabulation suggests that a developed or almost completely developed residential trade area presents the most favorable location for a gasoline service station. Although there are few undeveloped areas within the city itself, there are several such areas outside the city which were included in the tabulation if within the trade area of a service station constructed during the study period. The small percentage of stations constructed in new and developing residential areas suggests that the service station is not a "pioneering" use, but rather that the residential development and character must be well established before many service stations will be attracted.

The influence which the developed, potentially stable neighborhood exerts upon the pattern of gasoline service stations has certain planning ramifications. Within a city, service station construction may be expected to be concentrated in those neighborhoods which are almost fully developed, and which appear to be the most stable in terms of maintaining the established economic level. Gasoline service stations apparently will not attempt to "get in on the ground floor" in new residential areas, as shopping centers now are tending

TABLE 9

GASOLINE SERVICE STATIONS AND THE DEVELOPMENT OF SURROUNDING RESIDENTIAL AREAS IN LANSING, MICHIGAN: 1945-1956

Year	Number Built	Status of Residential Trade Area		
		Built-up	New and Developing	Undeveloped and Static
1945	0	-	-	-
1946	0	-	-	-
1947	1	1	-	-
1948	1	1	-	-
1949	0	-	-	-
1950	5	4	1	-
1951	3	1	1	1
1952	5	5	-	-
1953	4	3	-	1
1954	5	4	1	-
1955	8	7	-	1
1956	12	8	1	3
Total	44	34	4	6
Per cent	100	77.3	9.1	13.6

Source: Land-use data; building permits; field survey.

to do, but instead will wait until the potential business to be drawn from an area can be estimated. This pattern cannot be considered universally applicable, but will indicate a general trend in location.

The Condition of Housing in the Residential Trade Area

As a corollary to the status of development of the service stations' residential trade area, the condition of housing in the trade area can be analyzed in an attempt to determine whether a relationship exists between the location of gasoline service stations and housing quality. No attempt is made here to relate housing quality to economic status, and thus to automobile ownership or gasoline consumption, because housing quality reflects many environmental as well as structural factors. Instead, the physical, rather than the economic aspects of housing quality, are considered in their relationship to the locational pattern of gasoline service stations.

Residential areas of Lansing have been classified into one of three categories of housing quality on a block-average basis:

1. Stable: An area characterized predominately by dwellings distributed at a reasonable density, in no need of major repair, with no deteriorating intrusion of nonresidential uses or heavy traffic on residential streets; but having

adequate open areas, recreation space, and utility systems. These areas currently require no extensive measures to maintain their present status.

2. Conservation: An area characterized by the beginnings of blight, resulting from the lack of some essential community service in adequate quantity or quality, high or increasing residential density, gradual intrusion of nonresidential uses, or a combination of these and other factors reflecting poor community planning. Such areas require immediate measures to conserve the best aspects of the neighborhood and to eliminate the undesirable elements that will otherwise continue to exert a blighting influence.
3. Blighted: A blighted area is one which, because of obsolescence or deterioration of structures, existence of nonconforming uses of nuisances, overcrowding of structures on the land or of people in dwellings, lack of open space, congestion, lack of essential community facilities and services, or other factors, has become an economic and social liability to the community. These areas may require major repair and rehabilitation, or may have deteriorated to the point where clearance and redevelopment is necessary.

The classification of each residential block in the city of Lansing into one of these three categories is shown on Plate 9. The location of each gasoline service station constructed during the study period was analyzed in terms of the quality of housing within the trade area of the station. Data obtained from this analysis are presented in Table 10.

Location of 54.5 per cent of the service stations constructed during the study period in an area in need of conservation poses an important planning problem in that all new construction in such an area for any use, whether undertaken by a public or a private agency, must be carefully evaluated and handled if the area is to be conserved and improved. Nonresidential uses, if not effectively guided and controlled, can result in traffic congestion, noise, glare, and other conditions which push a residential area in need of conservation further toward blight.

Stable residential areas, in which 34.1 per cent of the service stations studied were constructed, may be better prepared to handle such construction through adequate physical planning and public and private controls. A high degree of planning adequacy cannot be assumed, however, and the physical development of such areas must be carefully guided in order that it may contribute to residential stability. A stable residential area is naturally considered a desirable location

GASOLINE SERVICE STATIONS CONSTRUCTED: 1945 TO 1956

HOUSING QUALITY: 1956

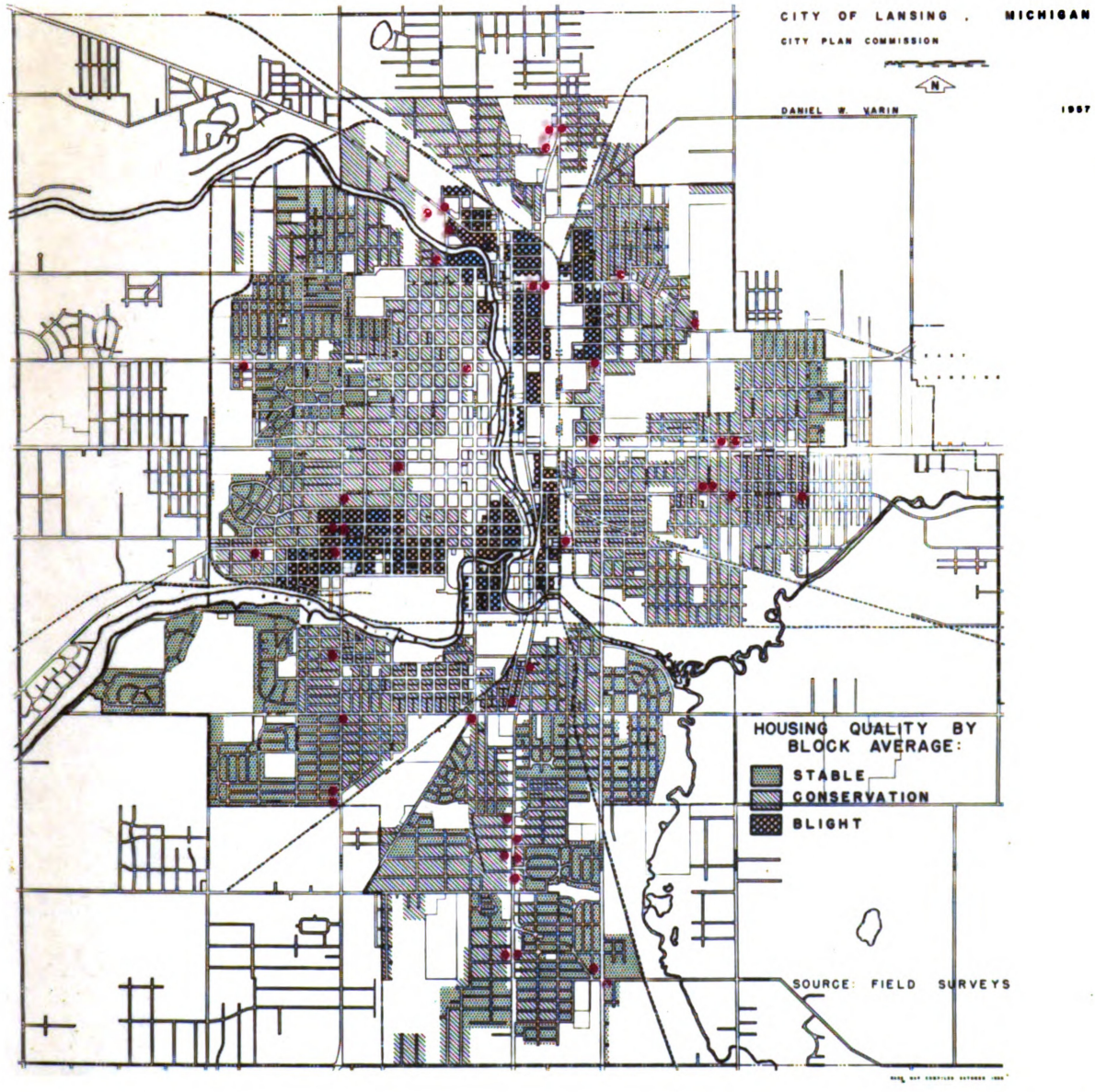


PLATE NUMBER: 9

• LOCATION OF A SERVICE STATION COMPLETED OR UNDER CONSTRUCTION

GASOLINE SERVICE STATIONS CONSTRUCTED: 1945 TO 1956

• LOCATION OF A SERVICE STATION COMPLETED OR UNDER CONSTRUCTION

HOUSING QUALITY: 1956

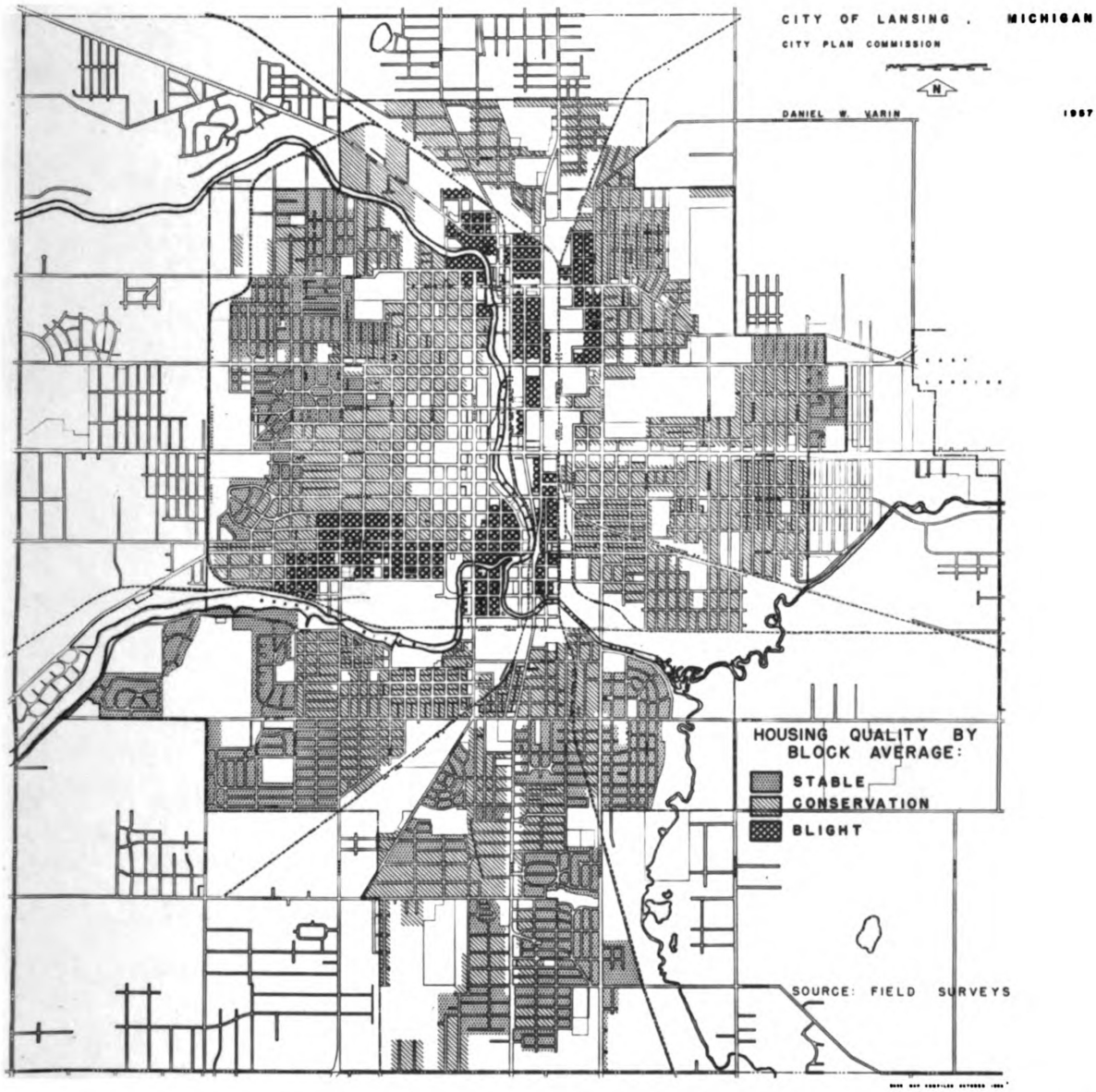


PLATE NUMBER: 9

TABLE 10

GASOLINE SERVICE STATIONS AND THE QUALITY OF HOUSING IN SURROUNDING AREAS IN LANSING, MICHIGAN: 1945-1956

Year	Number Built	Quality of Housing in Trade Area		
		Stable	Conservation	Blight
1945	0	-	-	-
1946	0	-	-	-
1947	1	-	1	-
1948	1	1	-	-
1949	0	-	-	-
1950	5	2	3	-
1951	3	2	1	-
1952	5	2	3	-
1953	4	1	2	1
1954	5	2	2	1
1955	8	3	5	-
1956	12	2	7	3
Total	44	15	24	5
Per cent	100	34.1	54.5	11.4

Source: Housing qualities studies, 1955 and 1956.

for any commercial activity depending wholly or largely upon business attracted from the surrounding area, and such an activity should be interested in maintaining the stability of the area.

Low business potential and uncertainty concerning the future of a blighted or slum area are probably the major reasons why gasoline service stations generally avoided these areas during the study period, again emphasizing the economic liability of these areas to the city. Four of the five stations constructed in blighted areas are located in areas under strong pressure for conversion to industrial use, which may take the place of the residential area in providing a trade area, while one station is located in a deteriorated residential area influenced by divided governmental jurisdiction, annual flooding, lack of essential services, and extremely high residential density.

The Pattern of Commercial Development

Gasoline service stations, in their capacity as a commercial activity, exert an influence upon the pattern of commercial development within an area, and in turn are influenced by the pattern of commercial development which exists at the time of construction. No clear-cut distinction can be made between these two; they must be considered as mutually operating forces.

In order to determine the approximate effect or influence of the locational pattern of gasoline service stations and general commercial development upon each other, the commercial pattern has been divided into four categories, based on certain readily observable differentiating characteristics.

1. The central business district: This area, the "core" commercial area of the city as well as of the metropolitan area, has been delimited for study purposes by the Lansing City Plan Commission. The central business district has been characterized as having the greatest concentration of offices and retail stores, the highest land values, and the tallest buildings, and as forming the focus of pedestrian and vehicular traffic for the urban area.[28]
2. Shopping centers: The term "shopping center" as used in this study includes those commercial areas developed by individual store owners and real estate developers in the general locations suggested by the master plan and expressing some degree of unity, as well as those centers planned, developed, and managed as a single operation.

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[28] Raymond E. Murphy and J. E. Vance, Jr., "Delimiting the C.B.D.," Economic Geography, XXX (July, 1954), 189-222.

3. Strip commercial development: Commercial use of property along one or both sides of a street extending for more than one block is referred to as "strip development." These areas are characterized by uses only one lot or building in depth, extended laterally, usually along a major street.

4. Spot locations: Location of a commercial use in an area used almost exclusively for some other purpose (usually residential) are termed "spot locations." The typical spot use adjoins the major use occupying the area on two or three sides, and is the only use of its classification in the immediate area.

The location of each of the gasoline service stations constructed during the study period is analyzed in terms of the type of commercial area in which it is located, or which it forms of itself, in Table 11. This tabulation is based upon the land-use study shown on Plate 8.

Central business district locations, as illustrated by construction in Lansing, hold little attraction for gasoline service stations. Factors influencing this pattern include traffic congestion on downtown streets and the high cost of land in the central business district. Shopping centers, as defined for purposes of this study, were

TABLE 11

GASOLINE SERVICE STATIONS AND THE PATTERN OF COMMERCIAL DEVELOPMENT IN LANSING, MICHIGAN: 1945-1956

Year	Number Built	Type of Location			
		Central Business District	Shopping Center	"Strip"	"Spot"
1945	0	-	-	-	-
1946	0	-	-	-	-
1947	1	-	1	-	-
1948	1	-	-	-	1
1949	0	-	-	-	-
1950	5	1	1	3	-
1951	3	-	-	2	1
1952	5	-	-	1	4
1953	4	-	-	2	2
1954	5	-	1	1	3
1955	8	-	-	2	6
1956	12	-	-	7	5
Total	44	1	3	18	22
Per cent	100	2.3	6.8	40.9	50.0

Source: Land-use data; building permits.

also widely avoided by service stations, although their design, location, and distribution, as discussed in the section on the Lansing zoning ordinance, encourages the location of service stations within such centers. The only center within the city which was planned and developed and which is managed as a unit does not include a service station.

The selection of a location in a "strip" commercial area by 40.9 per cent of the service stations constructed during the period reflects the tendency of both service stations and commercial uses generally to assume this pattern along major streets. Although a reversal of this form of development is now taking place to some extent for other commercial activities, service stations still locate almost exclusively on major streets, as noted by this study, and so continue to fall into a strip pattern. The location of gasoline service stations in strip developments of a retail-commercial nature creates "dead spots" along the street, breaking the retail complex into a number of subunits. This pattern further reduces the ability of the strip-commercial area to compete with the more unified and efficient shopping center. Extensive construction of service stations in strip commercial areas is now receiving belated recognition as a blighting influence upon these areas.

One-half of the service stations constructed during the study period are located in a "spot" location, not related to any other commercial area. These locations are the most controversial, and are primarily responsible for the high degree of conflict with the master plan and zoning ordinance discovered previously. Each spot location represents a failure of the community to bring about the type of development planned for and generally adhered to in a given area.

Construction of 90.9 per cent of the stations built during the study period in either a strip or a spot location, both of which must be considered detrimental to efficient and economic community development, poses one of the major problems resulting from the construction of service stations, and a problem which Lansing has failed to handle through any of the instruments of public policy available.

Vehicle-Pedestrian Conflict

The location of every use which involves motor vehicles crossing the sidewalk or street lot line results in potential conflict between vehicles and pedestrians. This conflict ranges in degree from that caused by the driveway for a private dwelling, used only once or twice per day, to that occurring at the entrance to or exit

from a large parking lot or similar use, used by hundreds or thousands of vehicles in a day. A typical gasoline service station, with two or three sidewalk crossings, is a significant source of vehicle-pedestrian conflict.

Elimination of every source of conflict between vehicles and pedestrians is neither practical nor desirable. Careful planning can, however, reduce the potential conflict to a minimum level consistent with the needs of each use and of the community as a whole by maintaining sufficient distance between the major sources of conflict and the areas of major pedestrian traffic to permit the volume of pedestrians attracted to certain uses to be dispersed prior to reaching a point of conflict. Such a separation is accomplished between gasoline service stations and the concentration of pedestrians in the central business district by the fact that new service stations are not generally locating in the central business district. This process of "natural" separation does not occur automatically outside the central business district, however, but must be accomplished through sound planning.

In order to determine whether the gasoline service stations constructed in Lansing during the period 1945 to 1956 are actually creating a high degree of potential conflict between vehicles and pedestrians, the location of each station has been analyzed in terms

of its relationship to two uses which normally generate a large volume of pedestrian traffic, which uses the sidewalks in the area surrounding the use for a significant number of hours during the week. Facilities selected for study include elementary, junior, and senior high schools, recreational areas providing play equipment and developed play areas, and shopping areas consisting of a number of retail stores. Uses such as churches, which usually generate pedestrian traffic for a period of a few hours one day a week, and industrial establishments, which attract a large number of pedestrians twice or three times a day for short periods of time, were not considered significant uses for purposes of this analysis. This analysis is illustrated graphically by Plate 8.

The degree of potential conflict caused by the relationship of a gasoline service station to one of the uses studied was determined by classification of the distance between the source of pedestrian traffic and the source of conflict into one of three radial zones:

1. If the service station is located within a radius of 250 feet of a use attracting a large volume of pedestrians, the potential conflict is classified as "major."
2. Location of a service station in the 250- to 500-foot zone is classified as causing "minor" conflict.

3. A distance of more than 500 feet between the source of traffic and the point of conflict will probably result in the pedestrian traffic being so dispersed as to time interval and volume as to render the potential conflict negligible.

The degree of potential conflict between pedestrian traffic generated by a school or play area and the gasoline service stations constructed in Lansing during the study period is analyzed in Table 12.

More than one-half of the service stations constructed during the study period are so located as to cause no significant vehicle-pedestrian conflict, as far as schools and play areas are concerned. However, the 27.3 per cent which do produce major potential conflict, and the 20.4 per cent causing minor potential conflict, represent an important problem in view of the nature of these uses. Certainly the need for corrective planning action is indicated.

Retail shopping areas should be expected to produce a higher degree of potential vehicle-pedestrian conflict than would schools and play areas, since gasoline service stations are frequently associated with these areas. Table 13 presents the analysis for this use.

Contrary to expectations, only 11.3 per cent of the stations constructed caused major potential conflict between vehicles and

TABLE 12

POTENTIAL VEHICLE-PEDESTRIAN CONFLICT BETWEEN GASOLINE SERVICE STATIONS AND SCHOOLS OR PLAY AREAS IN LANSING, MICHIGAN: 1945-1956

Year	Number Built	Resulting Degree of Potential Conflict		
		Major	Minor	Not Significant
1945	0	-	-	-
1946	0	-	-	-
1947	1	1	-	-
1948	1	-	1	-
1949	0	-	-	-
1950	5	1	-	4
1951	3	2	-	1
1952	5	-	1	4
1953	4	1	1	2
1954	5	1	3	1
1955	8	2	1	5
1956	12	4	2	6
Total	44	12	9	23
Per cent	100	27.3	20.4	52.3

Source: Land-use data; building permits.

TABLE 13

POTENTIAL VEHICLE-PEDESTRIAN CONFLICT BETWEEN GASOLINE SERVICE STATIONS AND RETAIL SHOPPING AREAS IN LANSING, MICHIGAN: 1945-1956

Year	Number Built	Resulting Degree of Potential Conflict		
		Major	Minor	Not Significant
1945	0	-	-	-
1946	0	-	-	-
1947	1	1	-	-
1948	1	-	-	1
1949	0	-	-	-
1950	5	1	2	2
1951	3	-	-	3
1952	5	-	1	4
1953	4	-	1	3
1954	5	1	1	3
1955	8	1	2	5
1956	12	1	5	6
Total	44	5	12	27
Per cent	100	11.3	27.3	61.4

Source: Land-use data; building permits.

pedestrians, and less than 40 per cent caused any significant degree of conflict. This may be at least partially explained by the fact that only 6.8 per cent of the stations constructed were located in a shopping center or area, while 50 per cent were constructed in spot locations (see Table 11).

Possible or potential conflict between vehicles and pedestrians, rather than actual accident experience, is used as the basis of this study because the stations considered have not been operating long enough to establish a record over any number of years, and because planners are primarily interested in data which can be applied to future problems, rather than in devising corrective action for any particular service station. This analysis is not concerned with the question of whether any school, play area, shopping area, or gasoline service station is properly or improperly located, but with the locational pattern developed by each use and the relationship between these patterns.

Conclusions of the Lansing Case Study

The purpose of this chapter, as previously emphasized, is to determine what problems relating to physical planning, if any, have resulted from the construction of gasoline service stations in Lansing during the period 1945 to 1956. Before specific problems

could be pinpointed, however, the significance of the volume of service station construction which took place during the study period was ascertained. Contrary to popular belief, the forty-four service stations constructed between the beginning of 1945 and the end of 1956 added only one station to the total number operating within the city at the end of 1944. The problem, manifestly, has not been one of volume of construction, but rather of replacing obsolete buildings and structures and of adjusting the locational pattern of service stations to the constantly changing pattern of the city.

This shift in interpretation of the nature of the problem does not obviate the need to evaluate the relationship between gasoline service station construction and the patterns of physical development of the city, and to isolate the problems of physical planning resulting therefrom. The major problems encountered during the study can be recapitulated as follows:

1. Construction of gasoline service stations is not conforming to the land-use recommendations of the master plan, and the ratio of nonconformity to total construction is increasing each year, representing a serious encroachment upon areas planned for other uses.
2. Nonconformity to the master plan is paralleled by a high degree of nonconformity to the zoning ordinance, and an

increasing ratio of nonconformity to total construction. The zoning ordinance itself provides for some nonconformity with the master plan in that it permits commercial uses as a matter of right in industrial areas without providing additional controls.

3. The building and safety code contains several provisions which supplement requirements of the zoning ordinance, but no attempt is made to coordinate these two instruments. The building code does not prohibit the storage of gasoline aboveground at gasoline service stations in most of the city, certainly one of the most undesirable aspects of this use, and one in which the building code should supplement the controls found in the zoning ordinance.
4. The attraction which the volume of traffic using major thoroughfares exerts upon the locational pattern of gasoline service stations may have several effects:
   a. Strip commercial development along major thoroughfares.
   b. Multiplication of the number of marginal access points along major thoroughfares, each a potential accident site.

c. Reduction of the traffic capacity of the street, destroying its value as a means of moving traffic.

5. The difficulties created by the location of gasoline service stations along major thoroughfares are intensified by the tendency of service stations to concentrate in groups further reducing traffic capacity and increasing the number of points of potential traffic conflict.

6. The tendency of gasoline service stations to wait until a residential area is developed to the point that the business potential of the area can be accurately estimated will result in a delayed demand for land for this use. The rate of development of a given area will of course determine the time lag involved. Failure to plan for this demand will usually result in the location of service stations on sites which do not make a maximum contribution to sound community development.

7. The location of gasoline service stations in residential areas determined to be in need of conservation, if not carefully handled through advance planning, can result in the area deteriorating further, rather than improving to a point of stability.

8. Gasoline service stations are apparently prone to break away from the established or developing commercial pattern into spot locations, which are generally not considered conducive to a good community environment. Indiscriminate location in retail commercial development, on the other hand, constitutes a major blighting influence over these areas.
9. The locations selected by gasoline service stations have, through a combination of factors, resulted in a significant degree of potential conflict between vehicles and the pedestrian traffic generated by schools and play areas and, to a lesser extent, retail shopping areas.

Effective urban planning, especially as concerned with gasoline service stations, depends upon the solution of these conflicts and problems. The second chapter of this study discusses the efforts made by governmental units at all levels to handle these problems, while Chapter III outlines the policies of the oil companies concerned with the operational and locational aspects which these problems reflect.

CHAPTER II

LEGISLATION CONCERNED WITH THE PLANNING PROBLEMS OF GASOLINE SERVICE STATIONS

Introduction

The planning problems isolated in the initial phase of this study which stem from the relationship of the operation and locational pattern of gasoline service stations to the patterns of physical development of an urban area are not confined to Lansing, but are manifested in varying degrees in all urban areas. Particular problems may receive varying emphasis in a given area, depending upon local conditions, but each will present itself to the planning agency in some form or other.

Regulatory legislation has been enacted at all governmental levels in an effort to control some of the most undesirable aspects of gasoline service stations. These controls have appeared in the form of special laws and ordinances as well as in provisions included in zoning ordinances and building codes. The need for regulation of gasoline service stations was cited more than twenty years ago by Edward M. Bassett, Frank B. Williams, Alfred Bettman, and

Robert Whitten in Model Laws for Planning Cities, Counties, and States, a pioneering effort in this field.[29] Messrs. Bassett and Williams could state even then that:

> One of the great evils of unregulated growth is the defacement of the privately owned borders of major thoroughfares by ugly and misplaced billboards, filling stations, lunch stands, and amusement resorts.[30]

The authors believed also that zoning regulations alone would not be adequate in meeting this threat, but that other forms of control were needed.[31]

Robert Whitten, a planning consultant from New York, discussed further the background of the problem in support of the movement for special regulatory legislation. Whitten claimed that the uncontrolled development of the frontage along major thoroughfares had decreased the adequacy of many of the streets constructed within the previous ten years, and protested that highway expenditure could not be justified unless the investment was protected by continuing controls over the use of abutting land, including regulation

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[29] Edward M. Bassett et al., Model Laws for Planning Cities, Counties, and States ("Harvard City Planning Studies," Vol. VII; Cambridge, Massachusetts: Harvard University Press, 1935).

[30] Ibid., p. 29.

[31] Ibid., p. 30.

of marginal access, establishing setback lines, restriction of gasoline service stations and other automobile-service activities to specified areas, and the promotion of appropriate, orderly, and coordinated development of areas abutting upon major streets.[32]

A variety of methods of handling the problems of gasoline service stations have been evolved at various levels of government. These regulations differ widely because specific problems differ in intensity between areas, and because of varying state constitutions, enabling legislation, and cultural backgrounds. This study includes a number of examples of the types of controls enacted at various levels, but, with the exception of state statutes, could not hope to be complete, or to include every regulation yet devised to meet the problems associated with gasoline service stations. However, a reasonably representative sample of most types of regulation has been analyzed for this study. A number of court decisions are included to illustrate the operation of various provisions, and to establish the legality of the controls described.

State Statutes

Several states have enacted legislation regulating gasoline service stations. This study includes only those laws relating to

[32] Ibid., pp. 133-34.

physical problems, and does not include provisions concerned with licensing, taxation, or general grants of zoning authority. Entry of the state legislatures into this field gives some indication of the magnitude of the problem. This analysis is based upon a survey of the legislation of all forty-eight states, the District of Columbia, Alaska, and Hawaii. Only the following six states have enacted legislation directed toward the physical problems of gasoline service stations.

Connecticut

Connecticut law requires that the proposed location of any gasoline service station which adjoins a state trunkline route or state-aid highway, or which is located in a town or city of less than 10,000 population, be approved by the local authority having jurisdiction (the selectmen, town manager, mayor, or borough warden). In the case of a city or town having a zoning board of appeals, this board is designated as the approving authority.

The local authority concerned is required to hold a public hearing on each application for approval of a proposed gasoline service station. Consideration must be given to such factors as the proximity of schools, churches, or theaters, traffic conditions, the location of intersecting streets, and the width of the street on

which the proposed station is to be located. If the local authority determines that the proposed location is suitable for the sale of gasoline and other petroleum products, and does not imperil the public safety, a certificate of approval is issued.

This certificate does not in itself authorize construction of the gasoline service station, but only permits the applicant to petition the state Commissioner of Motor Vehicles for a certificate authorizing construction. This action is taken at the sole discretion of the commissioner, and any certificate issued may be revoked by him at any time.[33]

Several court decisions have affirmed the discretionary powers of the local authority in determining whether a proposed location should be approved, even though this authority may be vested in an individual. In two cases brought before the state supreme court in 1929, the court ruled that a mayor could refuse to grant a certificate of approval upon determining that the proposed location was not in the best interest of the community, and that the question of suitability was a decision to be made by the mayor, and not subject to judicial review.[34] A finding by a zoning board of appeals

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[33] Connecticut, General Statutes, c. 113, secs. 2535-2542.

[34] DeFlumeri v. Sunderland, Mayor, 145 A. 48 (1929). Appeal of Holley, 147 A. 300 (1929).

that a proposed location was "unsuitable" under the state statute was also upheld by the supreme court in reversing a lower court decision.[35]

Certificates of approval may be refused on grounds that the proposed location would increase traffic congestion and hazard.[36] Denial on this ground has been upheld by the state supreme court even though the property concerned was located in an area zoned for industrial purposes, permitting a gasoline service station, and a traffic engineer testified that he found no traffic hazard connected with the site. The board of appeals refusal was based upon a determination that the highway was too narrow and that the proposed site was concealed by a curve in the road.[37]

Illinois

The state of Illinois has enacted legislation which, although applying primarily to unincorporated areas, is also effective in cities or villages which do not themselves regulate gasoline service stations.

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[35] Herrup et al. v. City of Hartford et al., 103 A.2d 199 (1954).

[36] Atlantic Refining Co. v. Zoning Board of Appeals of Town of Milford, 111 A.2d 1 (1955).

[37] Silver Lane Pickle Co. v. Zoning Board of Appeals of Town of East Hartford, 122 A.2d 218 (1956).

The Illinois Department of Public Safety is empowered to make and adopt "reasonable rules and regulations governing the keeping, storage, transportation, sale or use of gasoline and volatile oils." This provision permits the department to regulate the design and location of gasoline service stations as an administrative function, rather than embodying specific regulations in legislation.[38]

Louisiana

Cities, towns, villages, and parishes in Louisiana may adopt by ordinance the provisions of state law regulating gasoline service stations. This legislation requires any person desiring to erect or operate a service station or repair garage to petition the town council or board of aldermen of the city, town, or village, or the police jury of the parish, in which the station is to be located, for permission to construct or operate a service station or repair garage. The petition must be accompanied by the written consent of the majority of owners of property within three hundred feet of the proposed location, measured along the street or road frontage.

The town council, board of aldermen, or parish police jury is vested only with the power to determine whether the consent

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[38] Illinois, Annotated Statutes (Smith-Hurd), title 32, secs. 352-353.

requirements of the law have been satisfied, unless the proposed site is located on a state highway and within three hundred feet of any bridge. In this situation the governing body may refuse permission if the operation of a service station at that location would, in their discretion, be dangerous to the public safety.[39]

Michigan

The state of Michigan has enacted legislation regulating the location of gasoline filling stations and public automobile garages in any city having a population of more than 50,000 and less than 100,000 persons, if the city has not enacted a building code or zoning ordinance. This law requires that any person desiring to construct a gasoline service station or automobile repair garage on any site where 80 per cent of the buildings within a radius of 400 feet of the proposed site are used exclusively for residential purposes must obtain the written consent of the owners of 60 per cent of the frontage on any public street within a radius of 400 feet of the proposed site.[40]

Michigan also permits incorporated cities to provide, in their city charter, for regulations restricting and limiting the number and

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[39] Louisiana, Revised Statutes, c. 3, pt. IX, secs. 531-34.

[40] Michigan, Compiled Laws, sec. 750.501.

location of oil and gasoline stations.[41] This is the only use which cities may regulate by number. A survey of the charters of 111 Michigan cities, including all of the ten largest cities, shows that seventeen charters contain provisions authorizing the governing body of the city to regulate, restrict, and limit the number and location of gasoline service stations. Two other cities reserve the power to regulate and restrict service stations, but not to control the number of stations.

Pennsylvania

Legislation concerning gasoline service stations enacted by the Pennsylvania state legislature is similar in method to that used in Illinois, in that the Pennsylvania State Police are empowered to adopt and enforce rules and regulations governing the "having, using, storage, sale, and keeping of gasoline. . . ." Although designed primarily to handle the safety aspects of petroleum products, gasoline service station design and location may also be regulated as contributing to that purpose.[42]

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[41] Ibid., sec. 117.4i.

[42] Pennsylvania, Statutes Annotated (Purdon), title 35, sec. 1181.

South Carolina

South Carolina has enacted regulations governing the location of gasoline service stations in Union County. This law prohibits operation of a gasoline service station within 100 feet of any school building or church.[43] Gasoline service stations are not controlled by state laws in any other county or other political subdivision.

Several states have enacted laws regulating signs at gasoline stations. Although these may have some application to planning problems in controlling what may be an aesthetically objectionable aspect of service stations, they are primarily designed to prevent fraudulent or misleading advertising.

Summary

Regulation of gasoline service stations through state statutes has been extremely erratic, with only six states enacting any type of legislation. The fact that six of the seven laws discussed above were enacted between 1927 and 1931 is significant in that this period coincides with the beginning of extensive use of the automobile and the construction of many service stations, or conversion of other structures to service stations, to meet the demand created.

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[43] South Carolina, Code of Laws, sec. 1324.

Special Ordinances

There are hundreds, if not thousands, of ordinances regulating gasoline service stations in effect in cities, villages, townships, and counties throughout the country. The following ten city ordinances have been selected from those available to illustrate some of the many types of controls exercised.

Blytheville, Arkansas

An ordinance enacted by the city of Blytheville provides that all permits for construction of gasoline service stations (and all other commercial buildings) outside of the fire limits shall be granted by the city council. Although the ordinance provides no standards for the council, the Arkansas supreme court upheld the council in refusing to grant a permit for a service station on the ground that such a use would be incompatible with the predominately residential character of the area.[44]

Clinton, North Carolina

The Clinton Town Council prohibited all new construction of gasoline service stations within the downtown area of the city. This

[44] City of Blytheville (Arkansas), Ordinance No. 422. Gammill et al. v. City of Blytheville et al., 291 S.W.2d 503 (1956).

ordinance was declared unconstitutional by the supreme court of North Carolina, which recognized the traffic problems created by gasoline service stations in central business districts, but which held that the ordinance as written created a monopoly for the stations existing in the area prior to the enactment of the ordinance.[45]

Grosse Pointe, Michigan

As far back as 1922, the city of Grosse Pointe prohibited the construction or operation of any "tank, pump, building, or other structure" in which gasoline or oil are stored for distribution or sale within fifty feet of any frame building or any occupied dwelling. Although this restriction is based upon a fire and explosion hazard which no longer exists in the same form as in 1922, the ordinance is still in force, and has exercised a direct effect over the location of service stations in strip developments along major streets, since the commercial property is usually not deep enough to permit a rear yard of fifty feet.[46]

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[45] Town of Clinton (North Carolina), Ordinance (1925). Town of Clinton et al. v. Standard Oil Co., 137 S.E. 183 (1927).

[46] City of Grosse Pointe (Michigan), Ordinance (1922).

Hazel Park, Michigan

The gasoline station ordinance of the city of Hazel Park prohibits the erection of a gasoline service station within 350 yards of any existing station. This provision prevents the location of more than one service station at any intersection, and, since street inersections along major streets are about 250 feet apart in this city, disperses service stations at three- to four-block intervals. The Hazel Park ordinance also prohibits construction of a service station within 400 yards of any church, hospital, school, or other public building.[47]

Ironwood, Michigan

An ordinance of the city of Ironwood vests discretion in the city manager to refuse to issue a building permit for any gasoline service station which would, in his opinion, be a nuisance or not in the best interest of the city. Applications for building permits for gasoline service stations must be accompanied by the written consent of the owners of 50 per cent of the frontage within 200 feet of the proposed location.[48]

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[47]City of Hazel Park (Michigan), Ordinance No. 193 (1955).

[48]City of Ironwood (Michigan), Ordinance No. 115 (1926).

Madison Heights, Michigan

Under the authority granted to Michigan cities to regulate the number of gasoline service stations, an ordinance of the city of Madison Heights limits the number of permits and licenses for the construction and operation of gasoline service stations to one permit or license for each one thousand persons residing within the city, as determined from the most recent school census. Any permit or license may be refused if, in the judgment of the city council, undue traffic congestion would result or the public safety be imperiled by the danger of fire or explosion by the construction or operation of a service station at any location.[49]

Norwalk, Connecticut

An ordinance enacted by the city of Norwalk provided that, before a license could be granted for the operation of a gasoline service station, the applicant must prove that the public convenience and necessity required the sale of gasoline at the proposed location. This ordinance was declared to be an unconstitutional use of the power to license by the court.[50]

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[49] City of Madison Heights (Michigan), Ordinance No. 6 (1956).

[50] Perdue et al. v. Zoning Board of Appeals of the City of Norwalk, 171 A. 26 (1934).

Parchment, Michigan

Gasoline service stations in Parchment, Michigan, may not be constructed or operated within 200 feet of any school, church, theatre, park, or other place of public assembly, or in any location where the public safety would be imperiled due to traffic hazards or danger from fire or explosion, as determined by the city commission. No gasoline service station may be operated on any block (both sides of a street between two intersecting streets) which is otherwise used exclusively for residential purposes, without the consent of 80 per cent of the property owners on the block.[51]

Pulaski, Tennessee

An ordinance of the city of Pulaski limited underground gasoline storage at new gasoline service stations to a total of 3,300 gallons, in underground tanks with a maximum capacity of 1,100 gallons each. The effect of this limitation was to ban all new gasoline service station construction in the city. The Tennessee supreme court held this provision to be invalid, because it applied

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[51] City of Parchment (Michigan), Ordinance No. 4 (1945).

only to new service stations, while existing stations continued to use tanks of a much larger capacity.[52]

Ypsilanti, Michigan

In Ypsilanti it is unlawful to construct or operate a gasoline service station or repair garage within 190 feet of the curb line of any street, which would require a lot at least 215 feet deep for a service station in an area where commercial property is usually platted in depths of about 100 feet. On a corner lot, a side yard of 190 feet would also be required.

Construction or maintenance of a driveway from a street to a gasoline service station or repair garage is prohibited if three-quarters of the buildings on both sides of the street for 500 feet in either direction are used exclusively for residential or educational purposes, unless a special permit is granted by the city council. Applications for a special permit must include the written consent of the owners of two-thirds of the frontage within 500 feet of the proposed driveway location.[53]

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[52] City of Pulaski (Tennessee), Code, title 2, sec. 9-0205. Consumers Gasoline Stations v. City of Pulaski, 292 S.W.2d 735 (1956).

[53] City of Ypsilanti (Michigan), Ordinance No. 107 (1922).

This ordinance has the effect of requiring very large lots for gasoline service stations (about 50,000 square feet for a corner lot), and makes it very difficult to obtain a permit for a driveway if one of the streets on which it is to be located is a residential street. This is usually the case for stations located at the intersection of a major street and a secondary or minor street.

Summary

These ordinances are representative of most of the special ordinances in use throughout the country. They vary widely in the methods used to meet specific problems, but each governs the location or design of gasoline service stations in some way. The controls used are very similar to those found in zoning, and the legal implications of some of the methods used are discussed in the following section on zoning ordinances.

Zoning Ordinances

The zoning ordinance is the primary method of controlling the use of private property, and so most of the controls and regulations relating to the location and design of gasoline service stations are found in zoning. The zoning ordinance is also frequently

used to apply special regulations to those uses which present special planning problems, including gasoline service stations.

This analysis is based upon a survey of 168 zoning ordinances, representing cities, townships, and counties in all parts of the country. The large cities of New York, Chicago, Philadelphia, Los Angeles, Detroit, Cleveland, Baltimore, Cincinnati, and Minneapolis are included, as well as many medium- and small-sized cities, villages, urban and rural townships, and urban and rural counties. This selection provides a reasonably complete picture of zoning practice throughout the country.

Because of the large number of ordinances considered, the analysis is presented as a series of provisions or methods of control, beginning with basic concepts and continuing into detailed regulations.

Classification of Gasoline Service Stations for Zoning Purposes

In 1940, Edward M. Bassett noted that in most zoning ordinances "gasoline filling stations" were permitted only in industrial zones as a matter of right, and that some ordinances gave the zoning board of appeals discretionary powers to permit service stations

in commercial zones as a special exception.[54] However, as the fire hazards of gasoline storage were reduced through use of better equipment, and the gasoline supply and automobile service functions were separated from vehicle repair activities, the gasoline service station came to be widely regarded as a commercial use. This change in attitude is reflected in a New York State supreme court decision handed down at about the same time that Mr. Bassett commented on the question, which held that "there is nothing inherently dangerous in a gasoline tank or filling station."[55]

This shift in classification is illustrated by the analysis of 168 zoning ordinances. Of the 163 ordinances which include a commercial zone, gasoline service stations are permitted as a matter of right in any commercial zone in seventy-seven ordinances. Service stations are also permitted in the "unrestricted" zone of four of the ordinances which do not have a commercial zone.

As gasoline service stations began entering commercial areas, several conflicts and problems emerged. These problems, which were enumerated in Chapter I, led many cities and other political

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[54] Edward M. Bassett, Zoning (New York: Russel Sage Foundation, 1940), p. 209.

[55] City of Little Falls v. Fisk et al., 24 N.Y.S. 2d 460 (1941).

units to place special restrictions upon gasoline service stations located in commercial zones. Sixty-two of the ordinances analyzed contain some type of special regulations for gasoline service stations in commercial zones. The specific content of these regulations is discussed in this chapter.

The development of commercial zones with specialized functions, such as multiple housing-shopping areas, neighborhood shopping centers, and central business districts, has resulted in gasoline service stations being prohibited from such "special purpose" zones in many ordinances. Twenty-three of the ordinances analyzed follow this practice. However, the status of the gasoline service station as a commercial activity has been firmly established in zoning, as indicated by Table 14.

Two ordinances in the group studied contain "highway service" zones which are designed for those uses which specialize in service to the automobile, such as motels, restaurants, and repair garages. One of the ordinances permits gasoline service stations in this zone, while the other prohibits them. Generally, however, service stations are permitted in highway service zones.[56]

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[56]American Society of Planning Officials, p. 21.

TABLE 14

CLASSIFICATION OF GASOLINE SERVICE STATIONS AS A COMMERCIAL USE IN ZONING ORDINANCES

Type of Classification of Gasoline Service Stations	Zoning Ordinances	
	Number	Per Cent
1. Permitted in all commercial zones as a matter of right	77	47.3
2. Permitted in all commercial zones under special provisions	62	38.0
3. Prohibited in "special purpose" commercial zones	23	14.1
4. Prohibited in all commercial zones	1	0.6
Total	163	100.0

Source: Survey of 168 zoning ordinances.

As a general rule, gasoline service stations are not permitted by right or special exception in any zone designed primarily for residential, agricultural, forestry, conservation, or resort purposes. However, three of the ordinances analyzed permit gasoline service stations in certain residential zones as a matter of right, and two ordinances vest discretion in the board of appeals to permit gasoline service stations in suburban residential or agricultural zones.

The common practice of permitting all commercial uses, including gasoline service stations, in all industrial zones is followed by 117 of the 154 ordinances containing an industrial zone. Another 33 ordinances permit gasoline service stations in industrial zones under the same restrictions that are placed upon them in commercial zones. The remaining four ordinances recognize the fact that the zoning ordinance should be based on and should conform to the objectives of the master plan. These ordinances limit industrial zones to industrial activities and uses, and prohibit all agricultural, residential, and commercial activities, including gasoline service stations. In this manner, those areas best suited to industrial use, in the amounts deemed necessary for the industrial needs of the community, can be protected from encroachment, and especially from commercial encroachment along the street frontage, which would tend to leave the interior areas unusable for industrial purposes.

Gasoline service stations and other uses serving the automobile are frequently guilty of this type of encroachment. This position has received strong support from two court decisions handed down recently. In a New Jersey decision, the state supreme court invalidated the exclusion of commercial uses from industrial zones, but by a four-to-three vote. The strongly worded dissenting opinion indicates that the thinking on this matter is changing.[57] A California supreme court decision upheld the zoning ordinance of Contra Costa County, and specifically that provision prohibiting nonindustrial uses in industrial zones. The court refused to recognize the claim that commercial uses represent a higher use of land than do industrial uses, and declared exclusive industrial zoning to be in the best interests of the community.[58]

There is, of course, a school of thought which contends that, because of the unique characteristics of the gasoline service station, it should be permitted as a matter of right in any zone. An early effort in Oklahoma to have a zoning ordinance which prohibited service stations in any residential zone declared invalid as a taking

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[57] Katobimar Realty Co. v. Webster, 118 A.2d 824 (1955).

[58] Roney v. Board of Supervisors of Contra Costa County, 292 P.2d 529 (1956).

of property without due process of law was, however, unsuccessful.[59] A Texas court of civil appeals arrived at substantially the same decision in 1931.[60] Later in the same year, however, a higher Texas court held that an ordinance which prohibited gasoline service stations in residential zones could not be justified except "upon purely aesthetic considerations," and so was held to be invalid.[61] Later decisions from courts in all parts of the country, however, seem to have firmly established the fact that the gasoline service station can be prohibited from residential, and even from some commercial, zones.[62]

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[59] City of Muskogee et al. v. Morton, 261 P. 183 (1927).

[60] McEachern v. Town of Highland Park et al., 34 SW.2d 676 (1931).

[61] Continental Oil Co. v. City of Wichita Falls et al., 42 S.W.2d 236 (1931).

[62] Champlin Refining Co. v. Dugan et al., 270 P. 559 (1928).
Scott et al. v. Champion Building Co. et al., 28 S.W.2d 178 (1930).
Long et al. v. Firestone Tire and Rubber Co. et al., 154 A. 364 (1931).
Leary v. Adams et al., 147 So. 391 (1933).
Lombardo v. City of Dallas et al., 73 S.W.2d 475 (1934).
Lutz v. New Albany City Plan Commission et al., 101 N.E.2d 187 (1951).
Rosak Properties Inc. v. Dwyer, 99 N.E.2d 558 (1951).
Suburban Tire and Battery Co. Inc. v. Village of Mamaroneck et al., 104 N.Y.S.2d 850 (1951).

The Functions of a Gasoline Service Station

The trend in classification of the gasoline service station from an industrial to a commercial use has resulted in a separation of the functions of retailing motor fuels, oils, and lubricants from that of repairing motor vehicles in many ordinances, on the theory that, even though the sale of petroleum products and minor services to automobiles may be an acceptable commercial activity, vehicle repair is not. Although many ordinances provide for some breakdown of functions between gasoline retailing and vehicle repair, more than one-half of the ordinances analyzed permit vehicle repair in any zone permitting a gasoline service station, so the practice of functional separation cannot be considered really widespread.

Height, Bulk, and Area Restrictions

Several ordinances apply height, bulk, and area requirements to commercial zones. Height restrictions pose no problem for gasoline service stations, since the vast majority of the stations now being constructed are one-story buildings. Bulk and area restrictions, however, may place some limitations upon gasoline service station construction and location. The restrictions contained in the zoning ordinances analyzed for this study are summarized here.

Front yards

Several methods are used to designate a required front yard. For gasoline service stations, the distance is usually measured to the front of the building, permitting the gasoline pumps to occupy the front yard. The following front yard requirements are frequently used:

1. A front yard equal to that required for the adjoining residential zone may be required. This type of restriction may be limited to the lot which adjoins the residential zone, or may be extended into the commercial zone for a specified number of feet. One ordinance sets this distance at 150 feet, while other ordinances extend the required front yard the entire length of the block between two intersecting streets.
2. Front yard requirements measured from the front property line range from four feet to forty feet in depth, with most ranging between twenty and thirty-five feet.
3. Front yard requirements measured from the center line of the street right-of-way range from twenty to sixty feet in depth, with forty feet the most frequently used distance.
4. Some ordinances require that the average front yard established by the existing buildings be observed by all new

construction, in order to insure continuity on a block. This situation frequently arises when buildings are set back to provide off-street parking in the front yard area.

5. One ordinance requires all commercial uses to observe the front yard required in the zone directly across the street, while another gives the zoning administrator power to determine what front yard will be required in each case, guided by existing conditions in the area.

Side yards

Commercial side yards are normally required only when the commercial zone abuts upon a residential zone. The commercial use may then be required to observe the same side yard requirement as for the residential zone, or the width of the side yard may be specified. In the ordinances examined, the side yards required in this situation range from three to fifteen feet in width, with five or six feet most frequently used.

Ordinances requiring a side yard in commercial zones other than those which abut upon a residential zone vary greatly in the minimum width of yard required. Requirements for corner lots range from four to twenty-five feet in width, while requirements for other lots range between five and ten feet. One ordinace requires

side yards twenty-five feet in width for gasoline service stations, but not for other commercial uses.

Rear yards

Rear yard requirements also vary widely between ordinances. The following requirements are most frequently used in the ordinances studied:

1. Some ordinances require rear yards only if the commercial zone abuts upon a residential zone. One ordinance requires the commercial use to observe the rear yard requirement of the adjoining residential zone, while another requires a yard equal to 60 per cent of the depth of the yard required in the adjoining residential zone. Two ordinances require a rear yard of 20 per cent of the depth of the lot in this situation, while others require yards varying in depth from five to twenty-five feet.
2. Some ordinances require a rear yard throughout the commercial zone or zones. These requirements vary from ten to twenty-five feet, with one ordinance requiring 10 per cent and two ordinances 20 per cent of the depth of the lot. A few ordinances permit the required rear yard to be measured from the center line of the alley, if dedicated.

3. A few ordinances vary the rear yard requirements between corner and interior lots. The rear yard for an interior lot may be from ten to fifteen feet deeper than that required for a corner lot. This arrangement is usually made to provide an interior block parking area.

Maximum land coverage

Land coverage restrictions in the ordinances examined ranged from 30 to 100 per cent. These provisions do not seriously affect modern service stations, which range in coverage from 10 to 20 per cent.

Minimum lot area

Minimum lot requirements for commercial zones were found in only a few ordinances. Those requirements which were encountered were of 4,000, 5,000, 6,000, 8,000, or 12,500 square feet. Gasoline service stations are currently being constructed on sites of 10,000 square feet or larger.

Minimum floor area

Minimum floor area requirements are used in a few ordinances to exclude very small commercial buildings, such as used car lot offices, newspaper stands, and temporary real estate offices.

Requirements of 400, 450, 576, or 600 square feet of floor area will not affect the two-bay service station, which contains about 1,000 square feet of floor area, but may exclude the smaller stations which have no inside vehicle service areas.

Minimum cubic content

A few ordinances require a minimum cubic content of 4,500 or 5,000 cubic feet for commercial buildings. This requirement may also prohibit the service station which does not include inside vehicle service areas.

Minimum frontage

Minimum frontage requirements are used in some ordinances for commercial uses, or for service stations only. The requirements encountered are for 22, 50, 66, 100, and 125 feet. The first three are well below the minimum needed for safe ingress to and egress from a gasoline service station. The other two are designed to insure safe access for gasoline service stations.

Summary

The use of height, bulk, and area controls for commercial zones is not sufficiently widespread to have seriously affected the construction of gasoline service stations as yet. However, many

communities are now considering such regulations as a means of controlling the design of gasoline service stations to some extent.

Special Provisions Regulating Gasoline Service Stations

Special provisions regulating gasoline service stations are contained in 71 of the 168 ordinances examined for this study. The number and variety of special provisions used is a reflection of the widespread feeling that traditional zoning methods are not adequate to handle the problems created by gasoline service stations, and that additional controls are needed. These controls are grouped under general headings here to facilitate analysis.

Approval of the location and plans for gasoline service stations

Many communities are attempting to control gasoline service stations by requiring that the proposed location and plans be submitted to some group or individual for approval prior to issuing a building permit. Some ordinances limit this practice to specific zones, while others require prior approval for any location. The approving authority may be the governing body, the planning or zoning commission or board, the board of zoning appeals, or the building inspector.

A few ordinances grant complete discretion for approval of the location and plans for a gasoline service station to some group or individual, without prescribing standards or other information to guide the approving authority. The following types of provisions are found in these ordinances:

1. The governing body of the city or county is designated as the approving authority in five ordinances. Three of these require approval of plans and location in any zone, while two require approval for stations to be located in a commercial zone.
2. The zoning board of two Michigan townships must approve the location and plans for any commercial use to be established in the township.
3. The zoning board of appeals is designated the approving authority for all gasoline service stations by one ordinance, and for those to be located in a commercial zone in four others. The "Zoning Resolution" of New York City authorizes the Board of Standards and Appeals to permit gasoline service stations to be located in specified commercial zones for a "stated term of years."

4. The zoning ordinance of Durand, Michigan, requires that the building inspector approve the location and plans for any building constructed in the commercial zone.

Most ordinances which vest the power to approve or disapprove the location and plans for a proposed gasoline service station in some group or individual provide some standards to guide the approving authority. These range from the designation of one or two elements which the approving authority should consider to the inclusion of very detailed procedures and specific points to guide the exercise of discretion:

1. As an example of an extremely broad limitation, the board of appeals of Wyoming Township, Kent County, Michigan, is required to approve all service stations "in terms of the public health, safety, and general welfare" while also considering the conservation of property values.
2. Two ordinances authorize the zoning board of appeals to require any changes in plan which will "insure safety, minimize traffic difficulties, and safeguard adjacent properties." A third ordinance authorizes the planning commission to require such changes.
3. The planning commission or board of appeals must find that the proposed location will not be unduly detrimental

to surrounding property, or adversely affect the normal development of the neighborhood, according to three ordinances.

4. Traffic safety is designated as the primary consideration in seven ordinances in granting approval by the building inspector or board of appeals. Consideration must be given both to vehicular and to pedestrian traffic.
5. The governing body of Fairfax County, Virginia, must insure that gasoline service stations are "so far as possible located in compact groups so as to prevent the undue scattering of same" prior to approving a proposed location.
6. Protests by nearby property owners against a proposed site for a gasoline service station limits the discretion of the board of appeals in two ordinances in approving proposed service stations. One ordinance provides that protest by a specified percentage of property owners within a given distance shall require a vote of four of the five members to grant a permit, while a second ordinance requires a uninamous vote.
7. The zoning ordinances of New Rochelle and White Plains, New York, establish somewhat more specific criteria by requiring that the board of appeals find that the proposed

service station will be readily accessible for fire and police protection, and that it will cause or create no traffic congestion, prior to granting approval.

8. The zoning ordinance of the Maryland-Washington Regional District contains the only provision encountered in this analysis which specifically requires that the governing body consider the relationship of the proposed service station to the purpose and intent of the general plan, as well as to the development of the neighborhood, prior to granting a special exception for a gasoline service station.
9. The board of appeals and standards in Niagara Falls, New York, is required to approve the location and plans for all gasoline service stations in the city after finding that the service station would be in harmony with the appropriate and orderly development of the area and will not be detrimental to the adjoining districts; that the vehicular traffic created would not be more hazardous than the normal traffic of the area, considering turning movements, intersections, sight distances, and pedestrians; that the size and location of the site is properly related to the existing pattern of commercial development, that the appropriate development and use of adjacent properties

will not be hindered or impaired; and that such operation would not be objectionable to nearby dwellings.

10. The most detailed procedure established in any ordinance analyzed is that followed by the board of appeals in Baltimore, Maryland. The proposed location and plans for a gasoline service station must first be investigated by the board of fire commissioners, health commissioner, police commissioner, and city engineer. The board of appeals must then consider the application in terms of the accessibility of fire and police protection; the provision of light and air to the proposed site and nearby property; protection of residents of the area from noise, dust, and gases; the proposed type of illumination and the resulting glare; the location of other service stations in the area; and the location of places of public assembly in the area.

11. The ultimate grant of discretion to any group is probably found in the "Zoning Resolution" of New York City, which provides that any public agency, public institution, or municipal department head may appeal to the Board of Standards and Appeals to terminate the operation of any existing gasoline service station in the city, stating the reasons

therefore. In considering such applications the board must give due consideration to the general welfare and to the investment involved. The board may either continue or terminate the service station, subject to such conditions as it may prescribe.

The courts throughout the country have compiled a somewhat erratic record in determining whether such discretionary powers are or are not valid. The decisions briefly described here are grouped according to the kind of group or official in which discretionary powers of approval are vested:

1. Governing bodies: Two decisions by the New York State supreme court have held that a governing body could refuse approval subject only to "its own consent," and without the need for standards or guidance. The court viewed this exercise of discretion as a legislative power, not subject to judicial review.[63] The courts of the neighboring state of New Jersey, however, held that such provisions are valid only if sufficient and adequate standards

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[63] Green Point Savings Bank v. Town of Hempstead et al., 24 N.E.2d 319 (1939).

Parkplain Realty Corp. v. Town of Hempstead et al., 137 N.Y.S.2d 474 (1954).

are provided, and have illustrated this finding by invalidating three ordinances which did not include adequate standards for the guidance of the governing body.[64] Lack of standards has also invalidated a similar ordinance in Florida.[65]

2. Planning and zoning commissions: Exercise of discretion by these groups is equally confused. The New York supreme court again upheld such action by either a planning or a zoning commission, while in Connecticut a permit granted for a gasoline service station was voided by the state supreme court because no standards were provided to guide the zoning board in deciding whether or not to grant such permits.[66]

3. Zoning boards of appeal: Ordinances in Maine, Maryland, and New York granting discretionary power to the zoning

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[64] Finn v. Municipal Council of City of Clifton, 53 A.2d 790 (1946).
Phillips et al. v. Borough of East Patterson et al., 46 A.2d 667 (1946).
Tulsa Oil Co. v. Morey et al., 60 A.2d 302 (1948).

[65] North Bay Village v. Blackwell, 88 So., 2d 524 (1956).

[66] Richardson v. Knapp, 237 N.Y.S. 442 (1929).
Olp v. Town of Brighton et al., 19 N.Y.S.2d 546 (1940).
Youngs v. Zoning Board of City of Norwalk, 17 A.2d 513 (1941).

board of appeals to approve proposed gasoline service stations have been upheld by the courts of those states, even thought the standards provided ranged in scope from extremely comprehensive to none.[67] The Michigan supreme court, however, found that "the ordinance is silent as to size, capacity, traffic control, number of curb cuts, location, or any other of the myriad considerations applicable" to gasoline service stations, and so invalidated the provision granting discretion to the board of appeals.[68] Similar decisions have been rendered in New Jersey and Ohio.[69]

Approval of the proposed location and plans for a gasoline service station at the discretion of the governing body, planning or zoning commission, board of zoning appeals, or building inspector,

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[67] Casino Motor Co. v. Needham et al., 118 A.2d 781 (1955).
Hoffman v. Mayor and City Council of Baltimore et al., 51 A.2d 269 (1947).
Aloe et al. v. Dassler, Building Inspector, 105 N.E.2d 104 (1952).
Commercial Properties Inc. v. Griffin et al., 131 N.Y.S.2d 619 (1954).
Cornwall Realty Corp. v. Murdock, 138 N.Y.S.2d 195 (1955).

[68] Osius v. City of St. Clair Shores, 75 N.W.2d 25 (1956).

[69] Lehrer v. Board of Adjustment of City of Newark, 58 A.2d 265 (1948).
State ex rel. Selected Properties Inc. v. Gottfried et al., 127 N.E.2d 371 (1955).

although widely used, are apparently of dubious legality unless very specific standards are provided to guide the approving authority. Such provisions can do very little toward solving the planning problems resulting from gasoline service stations unless comprehensive and detailed standards are provided and adhered to.

Provisions requiring the consent of nearby property owners

Provisions requiring the consent of property owners within a specified distance of the proposed site for a gasoline service station are contained in 14 of the 168 ordinances analyzed. These provisions are written so as to give other property owners some opportunity to decide whether a gasoline service station should or should not be located in a given area.

The most commonly used consent provision requires that the written consent of the owners of 60 per cent of all of the frontage, or property, within 400 feet of the proposed site, and of the owners of 80 per cent of all of the frontage or property abutting or directly opposite the proposed site, and not separated therefrom by more than one street or alley, be obtained before a building permit may be issued. This provision is used in six of the ordinances examined. Two other ordinances use this provision but do not require the consent of the owners of 80 per cent of the frontage abutting or opposite

the proposed site. The zoning ordinance of Novi Township, Oakland County, Michigan, increases the requirement for property or frontage abutting or opposite the site to include the owners of all such frontage or property. A variation of this provision is used in Old Westbury, New York, where the written consent of 80 per cent of the owners of property within 200 feet of the site must be obtained.

The zoning ordinance of East Lansing, Michigan, requires that the written consent of the owners of 75 per cent of the frontage within 400 feet of the proposed site for a gasoline service station, and not separated therefrom by more than one street or alley, be obtained if 80 per cent of the buildings within a 400-foot radius of the site are used exclusively for residential purposes. Consent must be obtained from the owners of at least 25 per cent of the frontage within 100 feet of the site, 25 per cent of the frontage between 100 and 200 feet of the site, and 25 per cent of the frontage between 200 and 400 feet of the site.

The zoning ordinances of Lake Worth, Florida, and Whitehall, Michigan, use a different basis for requiring consent. The Lake Worth ordinance requires the "consent of adjoining property owners," while in Whitehall, consent must be obtained from the owners of a majority of the frontage on both sides of the street in the block in which the proposed service station is to be located.

An ultimate level of control over the use of a site for a gasoline service station is provided in the Milan, Michigan, zoning ordinance, which requires that approval of the proposed use must be obtained from the owners of all the property located entirely within 300 feet of the site.

These provisions give nearby property owners a high degree of control over the use of a given piece of property for a gasoline service station, and so have resulted in a considerable amount of court litigation. Early court decisions based on other uses generally held such provisions to be an unlawful delegation of legislative power to private persons.[70] However, the United States Supreme Court has upheld consent requirements for billboards, and the East Lansing zoning ordinance mentioned above has been upheld by the Michigan supreme court.[71] Ordinances similar to those outlined here have been upheld by the supreme courts of Colorado, New York, and Virginia.[72] Another New York decision, however, held that a

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[70] City of St. Louis v. Howard, 24 S.W. 770 (1893).
Adams v. Gorrell, 161 N.E. 786 (1927).
Willis v. Town of Woodruff et al., 20 S.E.2d 699 (1942).

[71] Cusack v. City of Chicago, 242 U.S. 526 (1917).
City of East Lansing v. Smith et al., 269 N.W. 573 (1936).

[72] Cross et al. v. Bilett et al., 221 P.2d 923 (1950).
Epstein v. Weisser, Mayor, 102 N.Y.S.2d 678 (1951).
Martin v. City of Danville, 138 S.E. 629 (1927).

specific consent provision was invalid because it gave neighboring property owners the power to limit competition.[73]

Separation of gasoline service stations from residential, public, and semipublic uses, and protection of adjacent areas

Many zoning ordinances prohibit construction of a gasoline service station within a specified distance of certain uses. Twenty-seven of the 168 ordinances studied include one or more of these provisions, which can be grouped into these three general types:

1. The most commonly used provision prohibits the construction of a gasoline service station on any premises which are within a specified distance of such uses as a school, church, playground, hospital, library, institution for dependents or children, or a place of public assembly. Such provisions were originally enacted to protect these uses, at which large numbers of people congregate, from the dangers of fire or explosion which were associated with gasoline storage. Although the use of improved equipment has all but eliminated these hazards, the requirements remain in force, many times in an attempt to handle other

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[73] Starin et al. v. Board of Zoning Appeals of Hempstead, 101 N.Y.S.2d 80 (1950).

problems stemming from the location of service stations. Of the nineteen ordinances examined which contain such provisions, the majority specify a distance of 100 to 300 feet. Covington, Kentucky, uses a limit of only forty feet, while Coral Gables, Florida, uses the longest distance, 1,050 feet.

2. A second type of provision attempts to reduce the potential conflict between vehicles entering and leaving service stations and the pedestrian traffic generated around a school, church, playground, or library. These ordinances prohibit the construction of a vehicular entrance or exit for a gasoline service station within a specified distance of an entrance or exit of a school, church, playground, or library. Each of the ten ordinances examined set this distance at 200 feet, but five of the ordinances provide that this distance shall not be extended across an intersecting street.
3. A few ordinances regulate the construction of gasoline service stations in an attempt to minimize the effect of the service station on surrounding areas, and especially on residential areas. Some ordinances prohibit construction of a gasoline service station within a specified distance of a residential zone. This distance is established

at twenty-five feet in White Plains, New York, and fifty feet in Covington, Kentucky, Dubuque, Iowa, and Manhattan, Kansas. The zoning ordinance of Palm Springs, California, requires a distance of 100 feet if the station is located in a manufacturing zone, 250 feet if located in a general commercial zone, and 300 feet if located in a retail commercial zone. This ordinance also prohibits construction of a service station on a site adjacent to a hotel or apartment building.

Other ordinances attempt to protect adjacent areas through provisions designed to confine some of the more undesirable effects of the operation of a gasoline service station to the premises on which it is located:

1. The zoning ordinance of Williamson Township, Ingham County, Michigan, requires that, where the rear of any commercial zone adjoins a residential zone, and is not separated therefrom by an alley, a masonry wall six feet in height will be erected on the commercial property line. In Palm Springs, California, a similar wall must be erected along the property line of any site used for a gasoline service station, regardless of the character of the adjoining use. This ordinance also requires that all noise

be muffled so as to not exceed the level of the street background noise, and that all lighting must be part of the main structure, and must not reflect upon any adjoining property or street. However, a similar provision in regard to lighting was declared unconstitutional in Alexandria, Virginia.[74]

2. In the Maryland-Washington Regional District, a gasoline service station must be separated from any other zone by a solid wall or substantial fence five feet in height. Lighting must be arranged so as to cause no glare in any residential zone.
3. Two ordinances require that the entire area used by a gasoline service station be paved, in order to maintain a high standard of appearance and to reduce dust.

Zoning ordinance provisions prohibiting construction of a gasoline service station within a specified distance of schools, churches, playgrounds, theaters, and similar uses have been almost universally upheld by the courts, whether based upon hazards

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[74] City of Alexandria v. Texas Co., 1 S.E.2d 296 (1939).

of fire and explosion or upon traffic safety.[75] The tendency of gasoline service stations to locate in or adjacent to residential areas, as noted in Chapter I, makes it necessary that the effects of the service station upon nearby dwellings be regulated. As yet the validity or effectiveness of prohibiting construction of a service station within a specified distance of a residential zone has not been clearly established by court decision. However, a decision by the Missouri court of appeals that the operation of a gasoline service station in the "usual manner" within fifty feet of a residence zone does not constitute a nuisance is closely related to this problem.[76]

These provisions are of very limited value in solving the planning problems of gasoline service stations. Such provisions universally prohibit the construction of a service station within a specified distance of a school, church, theater, or residence, but

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[75] Eggie v. Board of Commissioners of Borough of Audubon et al., 143 A. 747 (1928).

City of San Antonio et al. v. Humble Oil and Refining Co., 27 S.W.2d 868 (1930).

Higgs v. City of Martin et al., 51 S.W.2d 237 (1932).

Oster v. Mayor and Common Council of Westwood, 180 A. 556 (1935).

Vine v. Board of Adjustment of Village of Ridgewood, 56 A.2d 122 (1947).

Suburban Tire and Battery Co. Inc. v. Village of Mamaroneck et al., 104 N.Y.S.2d 850 (1951).

[76] Green v. Spinning et al., 48 S.W.2d 51 (1931).

never prohibit the construction of one of these uses within the same distance of an existing service station. Obviously, the same problem is created regardless of which use is constructed first and which second, and any effort to control that problem must regulate all contributing elements. Provisions which attempt to confine any adverse effects of service station operation to the premises of the use seem to present more possibilities of successful control, but as yet have not received wide application.

Regulation of the location of gasoline pumps and lubrication equipment

Several zoning ordinances establish a minimum distance between the location of gasoline pumps and any property line. This provision is usually included as a method of insuring that there is sufficient room to service an automobile on either side of the pump without encroachment upon the sidewalk or adjoining property. The minimum distances established by the ordinances analyzed for this study range between ten and eighteen feet, with twelve or fifteen feet most frequently used. Two ordinances also prohibit pumps within twenty-five feet of any dwelling, or within fifty feet of any residential zone.

A few ordinances regulate the location of outdoor lubrication equipment, hydraulic lifts, or drainage pits, as safety hazards.

Four ordinances require that such equipment be located at least ten, twelve, or fourteen feet from any property line, and five ordinances prohibit the location of these facilities within fifty feet of any residential zone. The proposed ordinance for the city of Chicago requires that all equipment be enclosed within a building.

Architectural controls

A few zoning ordinances require that the architecture of a proposed gasoline service station be approved before a building permit may be issued. The governing body or the zoning board of appeals is generally designated as the approving authority.

Los Angeles County, California, and White Plains, New York, require that the design, layout, and appearance of a service station must be in keeping with the character of the surrounding area, while Ann Arbor and Scio Townships of Washtenaw County, Michigan, require that all buildings be of a "residential character."

The city of Grosse Pointe Woods, Michigan, specifies that the exterior or street elevation of the building shall be of early American or colonial design, and constructed of brick and/or stone. The planning commission must approve the proposed design prior to construction. In Coral Gables, Florida, gasoline service station roofs must be of tile construction, pitched, and extended out over

the pumps. The city of Camas, Washington, has established no specific requirements for design, but requires that the architecture of all commercial buildings be approved by a committee of the city council.

Provisions regulating the distribution of gasoline service stations

In spite of Edward M. Bassett's conclusion some twenty years ago that the principles of zoning are not adapted to compel the distribution of gasoline service stations at designated intervals, several political units are attempting to regulate distribution through their zoning ordinances.[77] These requirements are usually enacted in an attempt to counteract the tendency toward concentration exhibited by gasoline service stations so as to reduce or eliminate the problems resulting from concen ration of this use in certain areas.

The zoning ordinances of Ann Arbor and Scio Townships of Washtenaw County, Michigan, provide that only one corner at each intersection of section-line roads may be used for a gasoline service station. Other ordinances prohibit construction of a gasoline service station within a specified distance of an existing station. Coral Gables, Florida, sets this distance at 750 feet, while Dearborn,

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[77] Bassett, Zoning, p. 209.

Michigan, requires a minimum of one mile. The zoning ordinance of Fairfax County, Virginia, however, attempts to induce or promote concentration by requiring that gasoline service stations "shall be in so far as possible located in compact groups so as to prevent . . . undue scattering."

At one time ordinances regulating the distribution of service stations were based on a need to regulate the storage of a highly inflammable material, and so were held to be a reasonable exercise of the police power.[78] As the use of new-type equipment reduced the hazards of gasoline storage, however, many courts came to regard these provisions as an attempt to regulate competition, and therefore declared them to be invalid.[79] However, a refusal of the zoning board of appeals in Baltimore, Maryland, to grant a permit for a service station on the ground that there were enough existing stations in the neighborhood of the proposed station was sustained by the Maryland court of appeals.[80]

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[78] State ex rel. Newman v. Pagels, Building Inspector, 250 N.W. 430 (1933).

[79] Atlantic Refining Co. v. Township Committee of Haddon Township, 14 A.2d 786 (1940).

In re Lieb's Appeal, 116 A.2d 860 (1955).

[80] Kramer v. Mayor and City Council of Baltimore, 171 A. 70 (1934).

At least one city has attempted to solve the problems associated with gasoline service stations by prohibiting the construction of new service stations throughout the entire city. The state supreme court, however, lost no time in declaring this law unreasonable.[81]

Provisions regulating access to gasoline service stations

Each point of access to a gasoline service station creates a potential point of conflict between vehicles entering and leaving the station and pedestrians using the sidewalks, and between vehicles forming the main stream of traffic. Several zoning provisions regulating access have been developed in an attempt to control or reduce this conflict.

Two ordinances contain regulations governing the minimum distance between the intersection of street lines at a corner lot and any driveway to a gasoline service station. The Palm Springs, California, ordinance sets this distance at thirty feet, while in the Maryland-Washington Regional District, the minimum distance is twenty feet. This ordinance also limits the width of driveways to

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[81] First Church of Christ, Scientist v. Board of Adjustment of City of Newark, 22 A.2d 569 (1941).

twenty-five feet, so as to reduce the area of conflict. The ordinance of Wyoming Township, Kent County, Michigan, requires that a curb six inches in height be erected along the front property line to control the width of driveways, while in White Plains, New York, the approval of the Commissioner of Public Safety and the Commissioner of Public Works must be obtained for each curb-cut for a service station driveway.

The Relationship of Commercial Zoning to Traffic Volume

Growing recognition of the adverse effect of some commercial uses upon the traffic capacity of major streets, and of the fact that commercial activities cannot absorb all of the major street frontage in any urban area, has led many communities to the conclusion that at least some of this frontage should be zoned for other than commercial use. Questions as to the validity of zoning for purposes other than commercial use along heavily traveled streets have been frequently raised by gasoline service stations attempting to locate so as to draw business from the traffic using these streets. Because the resulting controversies are often settled by the courts of the various states, it is appropriate to examine the attitudes and thinking of at least some of the courts toward

the zoning of major street frontage. Most of the decisions discussed here are concerned directly with gasoline service stations, although the basic premise has been challenged by many other uses. These decisions are often complicated by local conditions, but will provide some indication of the current thinking of courts throughout the country.

Decisions handed down by the supreme courts of Illinois, Michigan, and New Jersey indicate the difficulty of maintaining residential zoning at one corner of an intersection when two or three other corners are used for nonresidential purposes. The Illinois and Michigan decisions also took note of the fact that the property in question was worth about ten times as much if used for commercial purposes than if used for residential purposes.[82] The Ohio court of appeals went even further in holding residential zoning at a busy intersection invalid, even though the other corners were in residential use, and the proposed rezoning had been defeated in a referendum election.[83] In another decision, this court held that,

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[82] Petropoulas v. City of Chicago, 125 N.E.2d 522 (1955). McGivern v. City of Huntington Woods, 72 N.W.2d 105 (1955). Tulsa Oil Co. v. Morey et al., 60 A.2d 302 (1948).

[83] State ex rel. Euverard v. Miller, Inspector, 129 N.E.2d 209 (1954).

where the boundary between a residential and a commercial zone is located at the center of a major street, it is unreasonable to zone the areas at the intersections on the "residential" side of the street for residential purposes, and ordered that a building permit for a gasoline service station be issued.[84]

In a situation very similar to that in Ohio, however, the Illinois supreme court upheld residential zoning on one side of a heavily traveled street, even though the property opposite was zoned commercial, stating that there is no rule of law requiring the same zoning on both sides of a street.[85] The Maryland court of appeals has held that commercial zoning of one or more intersections along a major street does not require that all intersections along the street be so zoned, if the original zoning was based upon sound planning, while the supreme court of New Jersey has ruled that residential zoning at the intersection of two busy streets is not per se invalid.[86]

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[84] State ex rel. Rosenthal v. City of Bedford et al., 134 N.E.2d 727 (1956).

[85] Mundelein Estates Inc. v. Village of Mundelein, 99 N.E.2d 144 (1951).

[86] American Oil Co. v. Miller et al., 102 A.2d 727 (1954). Grant v. Board of Adjustment of Borough of Haddon Heights et al., 45 A.2d 184 (1946).

Four state supreme court decisions indicate that the volume of traffic using a street may constitute a valid reason for prohibiting the location of gasoline service stations on that street. The court in each case cited the hazard which such a use presents to pedestrians using the sidewalks, or vehicles traveling on the street, or both.[87] However, a decision handed down by the Michigan supreme court in 1957 holds essentially that zoning major thoroughfare frontage for other than commercial purposes is unconstitutional, at least in Michigan. In rendering its decision the court rezoned 1600 feet of frontage along a major highway from a residential to a commercial classification. The dissenting opinion notes that this action will "play havoc with all city planning and zoning."[88] Obviously, the legality of controlling major thoroughfare frontage through zoning has not yet been established in all sections of the country.

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[87] Hirschorn v. Castles et al., 171 A. 211 (1934).
Socony Vacuum Oil Co. Inc. v. Murdock et al., 1 N.Y.S.2d 574 (1937).
Dickenson et al. v. Inhabitants of City of Plainfield, 4 A.2d 191 (1939).
Ficht, Building Inspector v. McMullen et al., 195 So. 610 (1940).

[88] White v. Township of Southfield, 79 N.W.2d 863 (1957).

Summary

This discussion of the application of zoning to the gasoline service station, based upon a survey of zoning legislation and court decisions concerned with zoning, concentrates upon five aspects of zoning as it affects this use:

1. Classification of gasoline retailing as a commercial activity.
2. Definition of the functions of a gasoline service station.
3. Height, bulk, and area regulations.
4. Special provisions applied to gasoline service stations.
5. Commercial zoning of frontage along major thoroughfares.

Zoning ordinances are the major instrument used to control the planning problems associated with gasoline service stations, and have consequently been frequently written or amended to include special provisions governing this use. Some of these regulations are workable and valuable, while many are not effectively controlling any of the problems for which they are designed, or are of dubious legality. Almost all of them support the conclusion that the problems of the gasoline service station are not being approached in a logical, comprehensive manner, but instead are being attacked in piecemeal fashion as these problems increase in scope and intensity.

The relationship of traffic volume to commercial zoning of major thoroughfare frontage is of special interest to planners who recognize the adverse effect of the indiscriminate location of automobile service activities along these streets. Several recent court decisions indicate that zoning based upon sound planning can be effectively used to prevent the users of property along major streets from destroying the value of the street by reducing its traffic capacity. In many states, however, this principle has not been clearly established in either zoning legislation or court decision.

Building Codes

Building codes are designed to provide for the public safety, health, and welfare through provision of adequate structural strength and stability, means of egress, adequate light and ventilation, and protection to life and property from fire and other hazards incident to the design, construction, alteration, removal, or demolition of buildings and structures. These codes are not normally considered "planning legislation," but in attaining major objectives, building codes may include provisions of special interest to planners.

Two "model" building codes which have been adopted in whole or in part by many urban communities, and which have influenced the writing of such legislation throughout the United States,

are analyzed in this section to illustrate how building codes may be used to regulate gasoline service stations. These model codes have been formulated and published by the National Board of Fire Underwriters and by the Building Officials Conference of America.

The National Building Code

The National Board of Fire Underwriters publishes the "National Building Code," which is recommended for adoption by municipalities throughout the country. The code and information concerning it is disseminated through offices in New York, Chicago, and San Francisco, and a suggested ordinance for adopting the code is furnished to municipalities considering the national building code. The code is primarily of the specification type, but contains many performance-type features.

The national building code classified gasoline service stations as a "business occupancy," with no more hazard implied than for any other retail or office use.[89] Gasoline service station buildings may be of any type of construction. Business buildings of unprotected noncombustible construction located within the fire limits,

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[89] National Board of Fire Underwriters, National Building Code (New York: The National Board of Fire Underwriters, 1955), sec. 300.1.

however, may not include more than 2,500 square feet of floor area, or be more than one story in height. All walls of such buildings must be located not less than ten feet from the walls of any other building or from any property line, or shall have a fire resistance rating of at least one hour.[90]

All buildings of unprotected noncumbustible construction, the least fire-resistant type commonly used for gasoline service stations, are limited in height to one story and to a total floor area of 9,000 square feet, if located outside of the fire limits. Use of more fire-resistant types of construction permit the maximum height and floor area to be increased over these maximums. A building used exclusively for a business occupancy may have a height of one and one-half stories and a floor area of 13,500 square feet.[91]

The Basic Building Code

The "Basic Building Code" was first adopted by the Building Officials Conference of America in 1950, and has since been revised annually. The code is of the performance type, and was prepared by the conference staff with the active participation of materials

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[90] Ibid., secs. 400.5.(c)., 401.

[91] Ibid., secs. 311., 402.

manufacturers, builders and contractors, building tradesmen, engineers, and architects, and adopted by the conference after extensive public hearings.[92] The code has received wide acceptance throughout the country, and has influenced the building codes of most of the larger cities, and of many smaller cities, to some extent.[93]

The basic building code classifies the gasoline service station as a member of Use Group E, which also includes offices, banks, governmental buildings, and retail stores, indicating that a gasoline service station cannot be considered a significant source of hazard, at least as far as this code is concerned.[94] Gasoline service stations may be located in any fire district, but must be located not less than eleven feet from any property line or other building in the first or second fire districts.[95]

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[92] Building Officials Conference of America, Inc., Basic Building Code (1955 edition with 1956 supplement; New York: The Building Officials Conference of America, Inc., 1955-56); and George E. Strehan, "Performance-Type Building Code Now Available to All Communities," American City, LXVI (February, 1951), 114-15.

[93] "BOCA Model Code Stirs Civic Interest and Producers' Objection," Architectural Forum, XC (April, 1949), 10, 12.

[94] Building Officials Conference, sec. 207.0.

[95] Ibid., sec. 303.0.

In addition to these provisions, which apply only to the most restrictive fire districts, gasoline service stations located in any district are subject to the provisions of Section 416.0. This section includes the following general requirements:

Section 416.1. Construction: All buildings and structures used for the storage and sale of motor fuels and oils shall be of fireproof, noncombustible, or masonry enclosed construction and must not exceed three stories in height or 11,000 square feet in floor area.

Section 416.11. Opening Protectives: All permissible openings in walls with a fire separation of less than twenty feet (from another building) shall be protected with approved fire windows and doors.

Section 416.12. Basements: Gasoline service stations shall have no cellars or basements, and when pits are provided, they shall be vented.

Section 416.2. Gasoline Storage: All volatile flammable liquid storage tanks shall be installed below ground and vented. Gasoline may be stored or handled above ground in approved safety cans of not more than five gallons capacity each.

Section 416.3. Location of Pumps: No gasoline pumps or other mechanical equipment shall be installed so as to

permit servicing of motor vehicles standing on a public street or highway.

Summary

These two model codes represent current, generally accepted practice in regulating construction. Many of the requirements found in these codes duplicate those found in some zoning ordinances, but which properly belong in the building code. Both of the model codes require that gasoline service stations be so constructed and equipped as to cause no more hazard than that incident to any other retail-commercial use, a factor of major interest to planners.

Conclusions

This mass of legislation regulating the construction of gasoline service stations is characterized almost universally by an orientation toward the very specific problems developed by gasoline service stations. Only a few laws or ordinances consider the problems associated with service stations as a function of the physical complexity of the urban area. Controls over gasoline service stations are currently undergoing a rather protracted transition from regulations concerned with the now-negligible hazards of gasoline storage to efforts designed to meet some of the most clearly

defined and urgent manifestations of the friction between service stations and the community. A few of the most outstanding problems have been recognized in legislation, and many provisions originally based upon dangers of fire and explosion are now directed toward some of these problems. However, almost none of these legislative efforts, at either the state or local level, consider the gasoline service station as an essential activity of the urban area which may develop certain problems in its relationship to the total pattern of urban development.

The growing use of "consent" and "discretionary" procedures in granting permits to construct or operate gasoline service stations is generally failing to bring about a widespread recognition of the fact that the problems of the service station exist and must be solved within the larger framework of the urban area. Adjacent or nearby property owners, governing bodies, and zoning boards of appeal, in which such powers are usually vested, cannot be expected to take cognizance of the problems and needs of this complex area in determining whether or not a given site is suitable for this or any other use, and the courts, with few exceptions, have expressed more concern for the rights of the individual property owner who demands a special permit, variance, or rezoning, than for the rights

of the hundreds or thousands of individuals who make up an urban community.

Failure to solve the planning problems of the gasoline service station through legislation, and particularly through zoning, is a reflection both of a failure to comprehend the real scope of the problem, and of a lack of information about the nature of the problem. This does not imply, however, that such information cannot be obtained, or that effective legislation cannot be enacted.

CHAPTER III

POLICIES OF OIL COMPANIES CONCERNED WITH THE LOCATION AND DESIGN OF GASOLINE SERVICE STATIONS

Introduction

The postwar trend in gasoline retailing is toward construction of an increasingly larger proportion of gasoline service stations by an oil company for lease to an operator, or for operation by the company, as noted in Chapter I. This practice provides a more definite direction to the locational pattern of gasoline service stations than was formerly exercised when the vast majority of stations were constructed by individual operators. Oil companies, or their distributing subsidiaries, draw upon experience gained through extensive market research, and make a detailed analysis in evaluating a proposed site for a service station. Larger independent operators are now making use of similar techniques. The effect of these efforts is seen in the study of service station construction in Lansing from 1945 to 1956, which has resulted in a readjustment of the locational pattern of gasoline service stations involving about one-fifth of the total retail outlets in the city.

Both "major" and "independent" oil companies are constructing service stations for operation or lease. A major company is one which undertakes most or all of the phases of petroleum production, refining, transportation, and distribution as an integrated operation, while the independent companies purchase gasoline and other "finished products" from several suppliers for sale at retail. The major companies usually operate in several states, while the independent companies confine their operations to a much smaller geographical area. Because of the increasing influence of both major and independent oil companies upon the locational pattern and design of gasoline service stations, it is necessary to examine the policies and practices of these companies as they concern service station location and design. For this purpose, the Cities Service, Gulf, and Standard Oil Companies were selected as representative of the major oil companies, and the Beim Oil Company as a typical independent operation. Information furnished by these four companies forms the basis of this chapter. Each of these organizations is engaged in the construction of gasoline service stations for operation or lease. Because of the close similarity of policy expressed by each company, this survey may be considered as generally representative of practice throughout the industry.

The attitudes and policies of the companies surveyed are summarized in this chapter under significant topic headings. Major deviations from the general pattern by any one company are noted.

The Volume of Gasoline Service Station Construction

Both major and independent oil companies reject the claim that more gasoline service stations are being built than can be financially successful, and that many stations are constructed to incur a loss for tax purposes, for advertising value, or to prevent a competitive station from occupying a site. The oil companies contend instead that each service station is constructed as an investment which must produce a profit. The Gulf Oil Company, for example, evaluates each proposed location in terms of its ability to maintain a specified profit level over a period of fifty years. Cities Service emphasizes the fact that many stations are built with borrowed funds, and so must repay the investment within the time period of the loan. Independent companies feel that it is even more important that each of their stations be operated at a profit, in as much as they do not have the large financial resources or other sources of income available to the integrated companies.

Both major and independent companies construct service stations based upon the business potential of a given site, and not with

the idea of taking business away from an existing station. There are many examples which demonstrate that construction of a new station at an intersection may increase the business of an existing station or stations, as well as operating at a profit itself.

The effect of changing business conditions and methods and the increased number of motor vehicles in operation must be considered in appraising the volume of construction of gasoline service stations since the end of World War II. Each oil company is naturally attempting to better its competitive position by locating new stations in areas with high business potentials, and by eliminating existing stations which are not operating at a profit due to their location. The oil companies feel that they can best accomplish this without undue interference from local authorities, but generally recognize the right and need of the community, and especially of the urban community, to take a greater part in planning for its own future.

The Location and Distribution of Gasoline Service Stations

The basic locational factors considered by all companies are essentially similar, but vary in their order of importance and in the significance ascribed to them by different companies. A potential

site for a service station, if available for purchase, is evaluated in terms of the following factors, which are not necessarily listed in their order of importance.

Consumer Buying Habits

Studies of gasoline buying habits by various oil companies and market research organizations have brought to light certain characteristics which affect the location of gasoline service stations. These surveys indicate that most people purchase gasoline on the way home from work, and that very few buy gasoline on the way to work. Consequently, the preferred location for a gasoline service station is on the right-hand side of a major street leading away from a major employment center.

In order to attract the greatest amount of business in such a location, the service station should be located on the "far corner" (across the intersecting street) of an intersection along a major street. The station is then visible to the passing motorist for a longer period of time, giving him time to slow down and enter the station. Some companies place the service station building at an angle to the major street in this situation.

As a secondary consideration, service stations which depend upon intercity vehicular traffic for a large proportion of their

business should be located on the right-hand side of a major route entering the city. However, this type of operation is becoming increasingly less important in gasoline retailing, as will be noted later in this chapter.

The Status of the Residential Trade Area

The present and probable future status of the residential area which surrounds the site is considered to be of primary importance, since as much as 95 per cent of the station's business will be drawn from this area. The probable rate of development of the area is estimated from population growth or residential construction activity, while the economic status of the area is determined from the type and quality of housing or from the number of cars parked in the area. The neighborhood business potential is carefully evaluated by the Standard Oil Company, which is generally conceded to receive the largest share of the "transient" business, as well as by independent companies, which receive very little transient business because of the lack of a well-known "brand" name.

Traffic Volume

Most oil companies count the traffic passing a contemplated site, or obtain traffic-count data from other sources, in order to

determine the probable amount of transient business which may be attracted. This process usually results in the selection of a location on a major street, as noted in the Lansing case study. Traffic-volume data must be qualified by such factors as the speed of traffic, type and location of traffic controls, alternative routes available, and the number of existing stations which are serving the traffic. Proposed major streets must be evaluated in terms of their effect upon this traffic volume. Traffic congestion must also be considered: too much traffic, or traffic halted by signals so as to block driveways, can discourage business at a service station.

Traffic Safety

Closely tied to the factor of traffic volume is the problem of traffic safety. Although acknowledging a potential hazard to pedestrians and vehicles at driveways to service stations, the oil companies generally hold that, because of excellent visibility at a service station due to generous building setbacks and lighting, the actual hazard to either pedestrians or vehicles is negligible.[96] A study of accident experience in Detroit, Michigan, during 1950, which

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[96]Cameron R. Brown, Information to Help Secure Zoning for Service Stations (Petroleum Industries Committee, 1956), pp. 5-6.

shows that only 27 of the 4,301 accidents involving a vehicle and a pedestrian which occurred during that year took place at any of the city's 2,091 gasoline service stations, tends to support this position, at least as far as pedestrians are concerned.[97] The essential problem of increased traffic congestion, and the resulting decline in usefulness of major streets, of which traffic accidents are only one aspect, is not covered by this report.

Visibility

The proposed location should be clearly visible from the street, both for advertising value and for safety reasons. This requirement frequently discourages location within a planned shopping center, where visibility may be obscured or diverted to other elements of the center.

Competition

The location, quantity, and quality of competing stations are evaluated by most companies, although this factor does not carry the weight which would be expected to be ascribed to it, and is claimed

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[97] Ibid., chart 3. This chart minimizes the accident record of gasoline service stations to a far greater extent than the figures warrant.

to be completely ignored by one company. One successful station in an area may indicate that another would also be successful in that immediate area, or in another situation might indicate that there is not enough additional business potential to support another station. In general, however, competition cannot be considered as discouraging to a new station in any given area.

Location of Other Company Stations

Examination of the location and quality of other service stations selling the same company's products is complementary to the evaluation of competition in determining the business potential of a contemplated site. As is the case with competition with other companies, this factor may influence the decision on a site in either direction, and a nearby station handling the same brand of gasoline cannot be considered per se to be detrimental to the use of a site for a service station. The determining factor again is probable financial success.

Zoning

All of the companies surveyed profess to be extremely reluctant to attempt to overcome adverse zoning, primarily because of the ill will which may be incurred in obtaining a rezoning. Experience

in Lansing, as noted in Chapter I, tends to dispute this claim to some extent. Major oil companies may make use of their legal and public relations staffs to bring a considerable amount of pressure upon a local zoning board of appeals or governing body; which may not be possible for an independent company or an individual operator. Organizations such as the Petroleum Industries Committee and the American Petroleum Institute contribute with publications and "institutional" advertising. Obviously only the best and most well-founded zoning regulations will be able to resist such pressure, if applied.

Both major and independent oil companies strongly resist controls over the distribution of gasoline service stations in relation to each other, feeling that this distribution should only be regulated by the competitive situation operating in a given area. Some oil companies follow general guides in locating a service station in relation to another station selling the same brand of gasoline, but all insist that the location of a competing station should exert no governing influence over the selection of a site for a new station. The Gulf and Standard Oil Companies desire about three hundred families in the "trade area" of a proposed station, without reference to the presence or absence of any competing stations, but prefer, with other oil companies, that they be free to evaluate each proposed

location as a separate case on a profit-and-loss basis, rather than under "artificial" limitations controlling distribution. Independent oil companies operate in a somewhat different market than do major oil companies, and in general do not feel that the distribution pattern of independent stations is closely related to that of major company stations, and so cannot operate under the same regulations.

Transient Business vs. Neighborhood Business

Contrary to popular belief, 90 to 95 per cent of the business at most service stations is drawn from the surrounding residential area, while only 5 to 10 per cent is "transient" business, attracted from traffic passing the station. The residential trade area of a service station will vary widely in area, depending upon the type of station and the density of population. The normal "trade radius" for a major oil company station varies from one-half to one and one-half miles, while an independent station will usually have a somewhat larger trade radius. The independent station generally relies more heavily upon neighborhood business than does the major oil company, since its brand name will not be sufficiently well known to attract a large volume of transient business. This high degree of reliance upon the residential trade area presents several aspects of interest to planners:

1. Gasoline service stations will attempt to locate in stable or developing residential areas, in an effort to increase their volume of neighborhood business.
2. Large industrial or commercial-industrial areas will hold little attraction for new service stations, since they offer little potential neighborhood business.
3. The service station may be expected to be interested in maintaining or improving the status of the residential area in which it is located, so as to retain or increase its volume of neighborhood business.

In some instances, the service station need not be located within a residential area to draw neighborhood business, but may be located on a route between the residential area and the central business district or a major employment center. In general, however, the service station will prefer to be located within or adjacent to a stable or developing residential area.

Considerations in Designing Gasoline Service Stations

Several general considerations in planning and designing a gasoline service station exert some degree of influence upon the planning problems associated with gasoline service stations. The

factors discussed here represent a consolidation of the practices of those oil companies interviewed.

Size of Site

The minimum site required for a gasoline service station in an urban area has increased steadily over prewar standards, paralleling changes in building and equipment design. Major oil companies now desire a minimum frontage of 100 feet and a minimum area of 10,000 square feet for a corner location. An interior block site requires a minimum of 125 to 150 feet of frontage, to provide for adequate ingress and egress. Independent oil companies feel that their stations require more frontage than for a major company station, with one company considering 135 feet as the minimum desirable. Larger sites are needed to provide for the larger buildings used by service stations, for adequate servicing and parking areas, and for safe entrance and exit ramps.

Interior Block Sites

Both major and independent oil companies are making use of interior block locations, although this type of location has not yet seriously challenged the predominate use of corner sites. The interior block station does not create as much congestion as does

a corner location and the property is frequently less expensive. However, this type of location requires more frontage for safe ingress and egress than for a corner location, and the visibility of the site may be obscured by construction of other commercial buildings on either side.

Driveways

The entrance and exit driveways or ramps and the advertising sign have become the primary focal point of the modern service station, taking precedence over all other elements including the service station building. Every effort is made to improve ingress and egress movements at the service station.

Most companies follow the practice of placing two ramps on the principal street and, if located at an intersection, one ramp on the secondary street. For a typical station located at an intersection on a site 100 feet by 100 feet, two ramps will be located within 50 feet of the intersection, while the third will be located within 100 feet of the intersection. If the driveways are 25 feet wide, 50 per cent of the site frontage along the principal street will be used for vehicular access to the station, and will form the zone of potential conflict between vehicles and pedestrians. Obviously, these problems

cannot be solved through piecemeal action, but only within the framework of effective planning for the entire urban area.

The Vertical-Island Arrangement

Gasoline service stations constructed with the pump islands at a right angle to the principal street are referred to as "vertical-island" stations. These stations require a larger site than those using the traditional "parallel" arrangement, and the depth may be as great as 200 feet. The major oil companies which have experimented with this design have in general not found it to be satisfactory for stations which offer a complete line of services, and which provide enclosed vehicle service or repair areas. However, many independent companies, which specialize in the sale of gasoline and oil only, and which do not include extensive facilities for lubrication or repair, favor the vertical-island arrangement. More vehicles can be serviced at one time, and ingress and egress are made easier and safer. Vehicles leave the station driveways at a ninety-degree angle, permitting greater visibility. The length of the curb-cut is usually greater for this type of station, however.

Amenity

Both major and independent oil companies are becoming more conscious of the effect created by the appearance of a service station, and are attempting to improve the appearance of both existing and new stations. New stations are of masonry construction, and most have a porcelain-enamel exterior. The Cities Service Oil Company, however, is introducing a new type of station which they feel will receive better acceptance by the public. The station building is modeled on "contemporary architecture," and uses a minimum of porcelain enamel on the exterior. Most oil companies do some landscaping on the site, and will enclose the site with a wall, fence, or hedge if requested. Adequate refuse containers are provided on the site, and lighting has been improved so as to make the station more visible and to reduce safety hazards. Programs such as the Cities Service "Better Merchandising Award Program" are designed to promote an improved appearance for both the station and the personnel operating it.

In addition to the possibilities of increased business, improved service station appearance is used as a selling point in attempting to obtain a special permit, variance, or rezoning to permit construction of a service station in an area from which it is otherwise prohibited.

Although the appearance of any use is an important consideration, it should not be permitted to obscure the far more important factors involved in service station location, as outlined in Chapters I and II.

The Relationship of Gasoline Service Station Location to Patterns of Commercial Development

Commercial areas act as a focal point for vehicular traffic, and consequently locations near these areas are desired by many oil companies. In order to function effectively in this respect, the commercial area must include a variety of retail stores and must have adequate off-street parking facilities. The service station is usually located on the fringe of such an area, so as to avoid congestion within the area and to relate as closely as possible to a residential trade area. Frequently, however, service stations are located within a retail-commercial area, creating "dead spots" in the retail pattern. As yet there does not seem to be a general awareness of the adverse effect which a service station may exert when located within a retail shopping area on the part of either the operators of retail establishments or the builders of gasoline service stations.

Central Business Districts

All of the oil companies interviewed for this study stated that they do not favor construction of new gasoline service stations in the central business district of any but the smallest urban areas. This policy is based upon four considerations:

1. The high level of traffic congestion, and especially of pedestrian congestion, which discourages the use of stations located in this area.
2. Concentration of business into a few hours of the day, with essentially no business after six o'clock in the evening.
3. Little or no neighborhood business can be drawn from this area.
4. The high cost of land in the central business district.

There are, of course, exceptions to this policy, as in the case of a service station combined with a parking lot or garage, or one located at the fringe of the central business district so as to have a partial residential trade area. In general, however, the central business district is not considered a good location for a gasoline service station, and some major oil companies are disposing of stations located in such areas.

Planned Shopping Centers

The most outstanding change in the pattern of commercial land use in urban areas during the postwar period has been the appearance and widespread growth of shopping centers which are planned, developed, and managed as a unit, and which provide large off-street parking areas. However, gasoline service stations probably represent the commercial activity which has been least affected by the development of this new concept in retailing. This is largely due to a reluctance on the part of many shopping center developers to include a service station or stations, and to an uncertainty on the part of many oil companies as to the desirability of locating in a shopping center, stemming from possible conflicts between circulation systems, lease arrangements, and differences in hours or operation.

Limited experience seems to indicate that a gasoline service station can be successfully operated as part of a shopping center if three requirements are carefully observed:[98]

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[98] Community Builders' Council of the Urban Land Institute, The Community Builders Handbook (Washington: The Urban Land Institute, 1954), p. 204.

1. The service station must occupy a prominent location in the center, clearly visible and accessible from major streets outside the center.
2. The service station building must be in "architectural harmony" with the center, and a high standard of appearance must be maintained.
3. The traffic pattern of the service station must be separated from the circulation pattern of the shopping center, including the parking areas.

All of the oil companies surveyed expressed interest in locating gasoline service stations adjacent to or near a shopping center, but not as an integral part of the center. The ability of the shopping center as a generator of vehicular traffic is widely recognized, but many oil companies feel that they can best benefit by locating on a route leading to such a center, rather than by locating in the center itself. The whole pattern of shopping center development, however, is too recent in origin to have significantly affected the locational pattern of gasoline service stations.

Conclusions

These policies and attitudes are basic elements with which the planner must work in considering the physical planning problems

resulting from gasoline service stations. They reflect business practices which both major and independent oil companies have developed over a long period of time, and over which these companies feel they must retain primary, if not absolute, control. Some of the policies cited here conform closely to the objectives generally sought by community planning, while others are obviously in conflict with current planning thought. Thorough consideration of these factors is essential to the formulation of an effective policy in planning for gasoline service stations.

Oil companies actively oppose legislation designed to control arbitrarily the number of gasoline service stations which may operate within an area, or to regulate the distribution of new service stations in relation to existing stations. The oil industry claims that this type of regulation is discriminatory, in that it is not generally applied to any other commercial activity. Controls over the number and distribution of gasoline service stations are regarded as a governmental interference with business which is not warranted by the hazards created by a service station. Legislation of this type can thus be attacked on an economic, political, and emotional basis, and cannot be considered firmly established as a legitimate exercise of governmental authority unless based upon extremely objective and valid standards.

The locational policies developed by both major and independent oil companies represent determinations made from a vast amount of business experience evaluated over a long period of time. The companies will naturally be guided by these policies in selecting locations for service stations, and will resist zoning or other legislation which conflicts with the operation of these factors. The two most troublesome manifestations of these policies are probably the location of service stations along major thoroughfares, and in "spot" locations in residential areas, in an effort to draw a maximum volume of both transient and neighborhood business. In many ways, location of a service station in a residential area as a spot rezoning or nonconforming use is the most desirable location from the point of view of the operator or oil company. Only a well-grounded planning program can resist pressure to create this type of location.

Emerging policies governing the design of gasoline service stations, including utilization of larger sites, easier ingress and egress, and improved appearance, contribute to the objectives of community planning. However, each service station constructed at an intersection adds three, or in some cases four, possible points of traffic conflict to the intersection, unavoidably increasing

congestion and reducing the capacity of the streets involved to move traffic.

Obviously, any proposals concerned with the location, distribution, design, or operation of gasoline service stations which seriously conflicts with the policies outlined in this chapter will be subjected to intensive examination and, in some cases, to efforts to evade or subvert legislation based upon such proposals. However, the problems created by gasoline service stations in urban communities are of such a magnitude that some policies must be evolved to guide the development of this use. A successful planning program will recognize the needs of both the gasoline retailer and of the community as a whole in fitting this activity into the urban area.

CHAPTER IV

POLICIES TO GUIDE THE DESIGN, LOCATION, AND REGULATION OF GASOLINE SERVICE STATIONS

Introduction

Two conclusions of major importance to the urban planner emerge from this analysis: (1) gasoline service stations can create many problems in an urban area unless their development is guided by an effective planning program and controlled by sound and valid regulations; and (2) in general, both physical planning and the legislation by which planning is effectuated have thus far failed to integrate gasoline service stations into the urban complex in an efficient and satisfactory manner. Those problems associated with the gasoline service station which have been recognized are generally treated as individual, isolated issues, rather than with the comprehensive approach which should be characteristic of urban planning. Undoubtedly, a lack of knowledge as to the true scope and nature of the problems developed by gasoline service stations is primarily responsible for the typical piecemeal attack upon these problems.

The purpose of this study, as stated in the general introduction, is to evolve and present policies designed to guide effectively the development of gasoline service stations in an urban community. The proposals discussed in this chapter are based upon a realization that the retailing of motor fuels and related products is a necessary activity to the urban community, and that physical planning and planning legislation should permit the widest possible range of action to the designers, builders, and operators of gasoline service stations.

The major problems confronting the urban planner which may be attributed to the unplanned or poorly planned development of gasoline service stations in an urban area were enumerated, with specific reference to Lansing, Michigan, in Chapter I. Legislative approaches examined in Chapter II indicate that these same problems exist in varying degrees of intensity and in varying combinations in many urban communities, and so they are restated here in general terms:

1. The master plan, and the zoning ordinance which is based upon the master plan, must develop a logical and reasonable basis for controlling the location and distribution of all land uses, including the gasoline service station as a commercial use, and these basic documents must be

continually revised to meet changing needs. The master plan and zoning ordinance must then be adhered to if they are to guide the physical development of the community. Failure of the master plan and zoning ordinance in this respect can only result in inefficient and disorganized development, in which the problems associated with gasoline service stations will be greatly intensified.

2. The zoning ordinance must include positive and specific controls over the location of gasoline service stations. Ordinances which approach this problem in a negative manner, permitting service stations to locate indiscriminately throughout all commercial and industrial zones, foster the creation of the problems associated with unplanned and uncontrolled development of service stations. Extensive encroachment of service stations upon the street frontage of areas intended for industrial use is an outstanding example of the type of problems created.
3. The building code, which is an important instrument in controlling a use such as the gasoline service station, must be closely coordinated with the master plan and zoning ordinance if it is to function effectively.

4. Uncontrolled development of gasoline service stations along major thoroughfares will induce commercial strip development along these streets, and reduce the ability of the street to perform its primary function of traffic movement.
5. Concentration of service stations at intersections, and especially at intersections of two or more major thoroughfares, will greatly increase traffic congestion at the intersection through multiplication of turning movements.
6. The importance of a well-developed residential trade area to a gasoline service station creates a delayed demand for land for this activity. Unless this demand is anticipated and planned for in advance, service stations will attempt to enter residential areas through rezoning of random locations, to the detriment of the entire community. This is an especially important problem in residential areas in need of conservation, where the unguided introduction of nonresidential uses into the area results in further deterioration toward blight.
7. Although the gasoline service station is a commercial land use, the service station shows little affinity for established or planned patterns of commercial development.

Instead, the spot location in an otherwise residential area is becoming increasingly popular for construction of service stations.

8. Conversely, the indiscriminate location of service stations in retail commercial areas results in the creation of "dead spots" in the commercial pattern, and in conflicting vehicular and pedestrian circulation patterns.
9. Improper siting of gasoline service stations in relation to uses which generate a large volume of pedestrian traffic, such as schools, recreation areas, public auditoriums, and meeting halls, also results in conflicting vehicular and pedestrian circulation patterns. This situation does not presuppose that one use is in the "wrong" location, but rather that a lack of effective land-use planning has created a hazardous relationship.

Policies and legislation must be evolved to deal with these problems if the gasoline service station is to be made an efficiently functioning component of the urban community. Because service stations are a part of the larger urban complex, policies and legislation concerned with the service station must be developed on a comprehensive basis. The problems associated with the service

station do not exist in a vacuum, but only in relation to the entire urban area.

The policies and controls presented in this Chapter are divided into three phases: the design, location, and regulation of gasoline service stations. Although many of these recommendations are concerned directly with the service station and its immediate surroundings, they are also related to the broader framework, the urban community.

Design

The community must exercise a measure of control over the design of gasoline service station buildings and their sites as a major component of any program concerned with the problems of this activity. This control should be guided by a realization that the community cannot engage in architectural design or site planning itself, but that it can lay down a basic framework within which individuals may evolve their own solutions. The objectives of the community in establishing these regulations should be to:

1. Improve ingress and egress at service stations.
2. Reduce the congestion created at street intersections by the introduction of more turning movements and points of marginal access.

3. Confine the adverse effects which might otherwise be exercised upon surrounding areas and uses to the service station site.
4. Provide for the maximum possible separation of vehicular and pedestrian movement.

The recommendations presented here are based upon a two-stage improvement in the design of gasoline service stations. The first stage represents the minimum design which accomplishes the objectives listed above, while the second stage contemplates development beyond the minimum level in design. The sketch plans contained in this chapter are included only to demonstrate the application of the proposed standards, and are by no means considered the only workable solution.

Minimum Design

The minimum requirements to be discussed here are designed for application to the type of building and site currently in use. Each requirement is based upon the objectives of design listed in this section, which represent the minimum standards necessary if the problems outlined previously are to be remedied. A sketch plan of a service station designed to meet these requirements is shown on Plate 10. This plan utilizes a corner location, containing

A GASOLINE SERVICE STATION INCORPORATING MINIMUM STANDARDS OF DESIGN

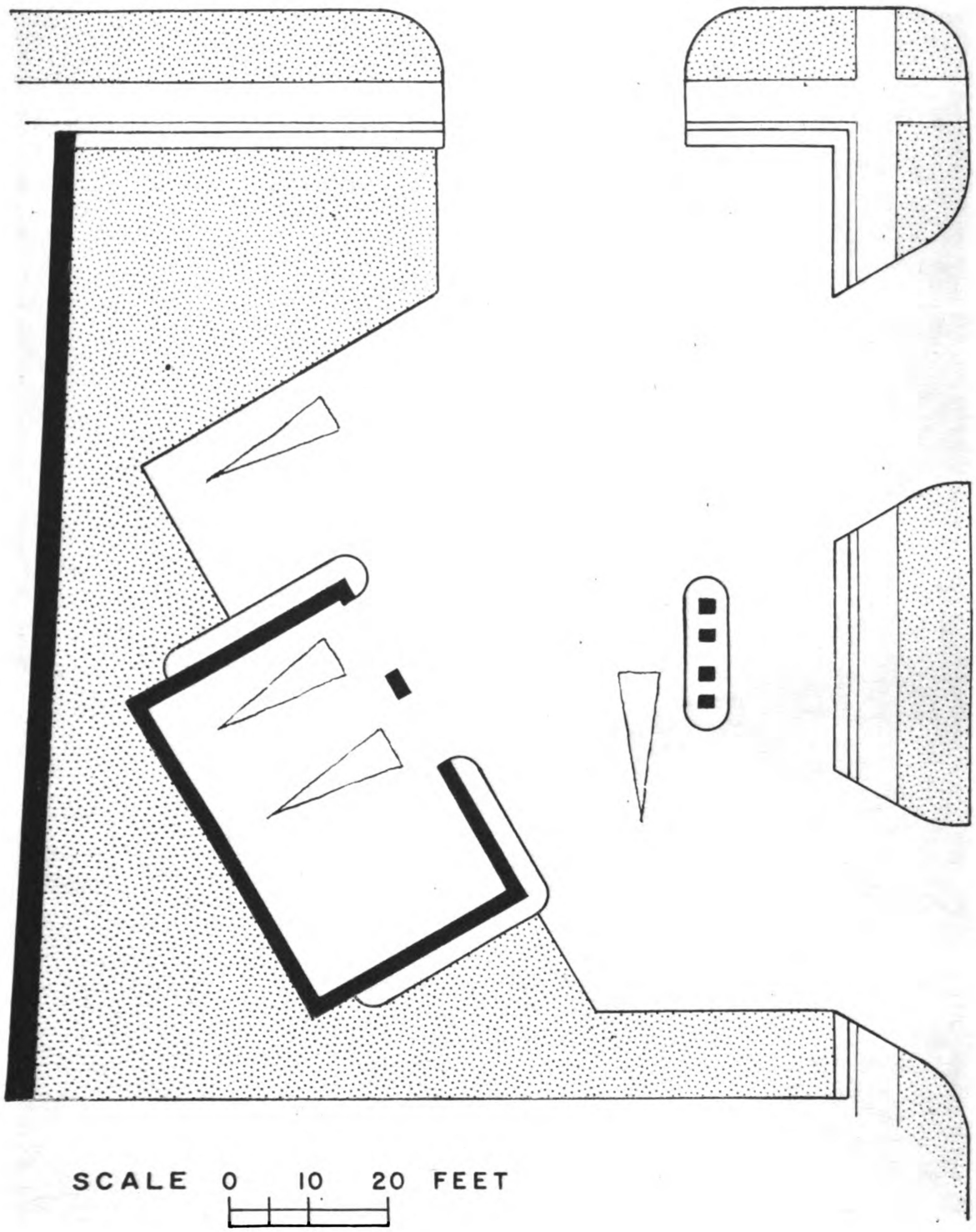

PLATE NUMBER: 10

a two-bay service station, the most popular type now being constructed.

The specific standards upon which this plan is based are as follows:

1. The site:
   a. Minimum frontage on the principal street . . . . . 120 feet
   b. Minimum depth . . . . . 100 feet
   c. Minimum area . . . . . 12,000 sq. ft.
2. The building:
   a. Minimum setback from all street property lines . . . . . 40 feet
   b. Minimum setback from all other property lines . . . . . 10 feet
   c. Maximum number of service bays (enclosed areas for vehicular service or repairs) 2
3. Ingress and egress:
   a. Maximum width of driveways measured along the center line of the public sidewalks . . . . . 30 feet

b. Minimum angle of intersection of driveways with center line of the street pavement, unless acceleration and deceleration lanes are provided . . . . . 60 degrees

c. Minimum distance between the nearer edge of any driveway and any exterior (corner) property line, measured along the street property line . . . . . 20 feet

d. Minimum distance between the nearer edge of any driveway and any adjacent property line, measured along the street property line . . . 10 feet

e. Minimum distance between driveways, measured along the street property line . . . . . 30 feet

f. Number of curb cuts permitted on any street:

For 100 feet or less frontage 1

Maximum number permitted 2

4. Vehicular service areas:

   a. A raised curb 6 inches in height and 2 feet in width is erected along all street property lines, except for driveway openings.

   b. The entire area is paved, or if part of the site is not paved, this portion is landscaped and protected by a low barrier surrounding all paved areas.

   c. All hydraulic hoists and pits, and all lubrication, greasing, automobile washing, and servicing equipment must be enclosed entirely within a building.

   d. Minimum setback for pump islands from any property line . . . . . 15 feet

   e. Maximum number of pumps 4

5. Miscellaneous provisions:

   a. A solid masonry wall 5 feet in height is erected along all property lines separating the site from any

lot or parcel zoned for residential purposes, and along all alley property lines if the abutting property opposite is zoned for residential purposes.

b. Off-street parking must be provided on the site to include one parking space for each two employees on the largest shift, with a minimum of two employee parking spaces, plus one parking space for each enclosed service bay.

c. All signs, whether permanent or temporary, are erected so as not to encroach upon or overhang any adjacent property, public property, or public right-of-way.

d. All exterior lighting is erected and maintained so as to cast no glare upon any adjacent property.

e. The size of the service station may be increased according to a

sliding scale. Two pumps and one enclosed service bay may be added with the provision of each additional 2,000 square feet of area to the basic site requirement.

These standards establish a minimum framework within which gasoline service stations may be designed and constructed. The requirements are intended to ease ingress and egress, maintain a minimum separation between the traffic movements into and out of the service station and those at the street intersection, provide a clear distinction between vehicular service areas and the sidewalk, and enclose the activity so that it is reasonably unobjectionable to nearby uses.

Optimum Design

The standards discussed thus far represent a minimum approach to the service station problems which may be ameliorated through design. However, the design of gasoline service stations should continue to evolve toward improved facilities, and design standards must keep pace with changing needs in layout and construction.

The gasoline service station portrayed in the sketch plan on Plate 11 contains many improvements over the layout shown on Plate 10, in terms of the accepted objectives of design. This plan probably represents the most favorable combination of standards attainable in the foreseeable future, and so is designated as an "optimum design." Service stations should, however, continue to improve beyond this point as marketing practices and competitive needs change.

The standards upon which this optimum design is based differ in several important respects from those forming the framework for the minimum design. The major improvement is gained through the use of an interior site, rather than the presently popular corner location. This single proposal would go a long way toward relief of congestion at street intersections. Although this change would meet with stiff resistance if proposed at this time, it may be brought about over a period of time.

Other improvements over the "minimum design" include an increase in the minimum frontage to 160 feet, and in the minimum site area to 16,000 square feet. The minimum distance between the nearer edge of any driveway and an adjacent property line as measured along the street property line is doubled to 20 feet, and the minimum distance between driveways at the property line is

A GASOLINE SERVICE STATION INCORPORATING OPTIMUM STANDARDS OF DESIGN

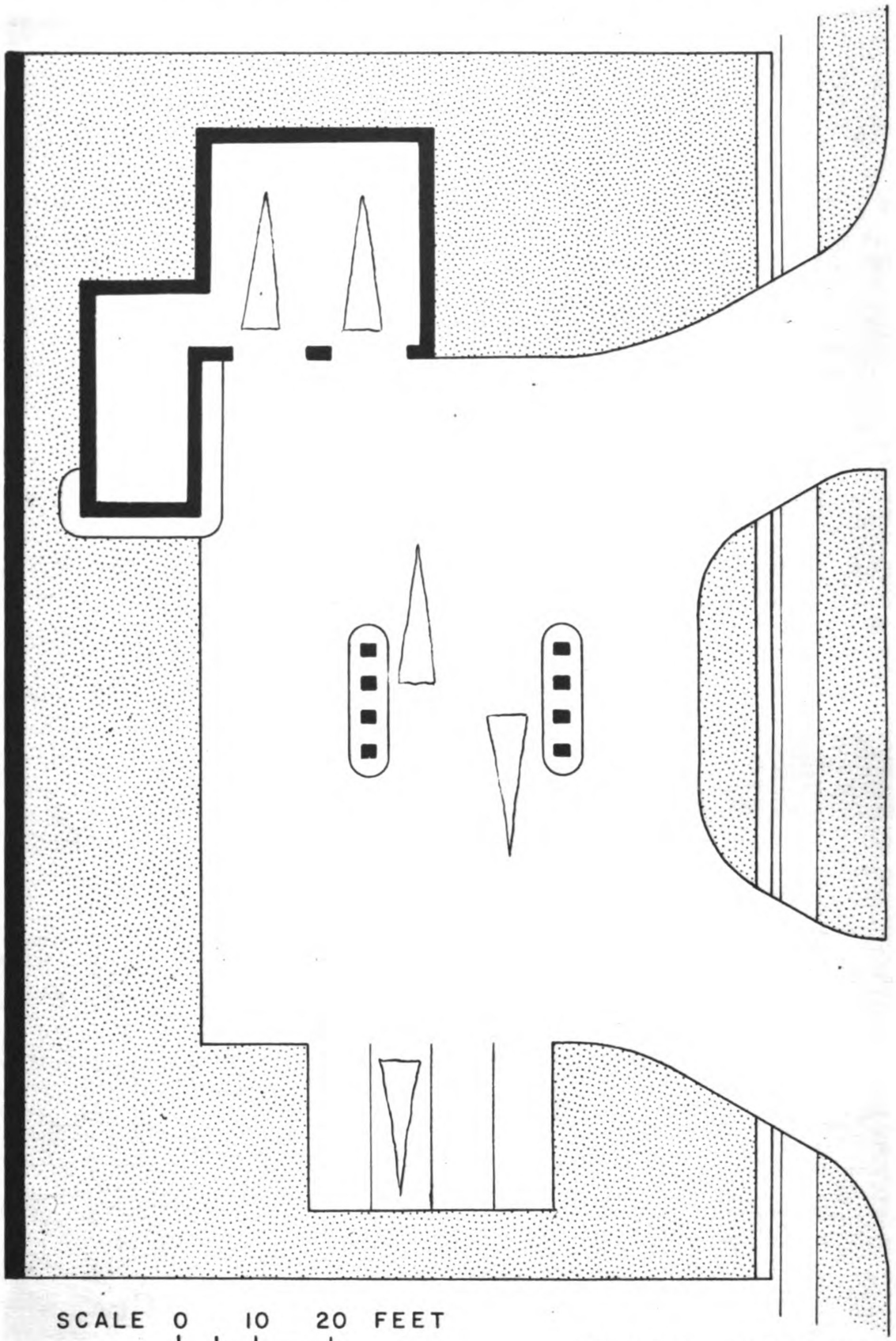

PLATE NUMBER: II

increased to 50 feet. The maximum number of pumps is increased to 8. All other standards are carried over from the "minimum" design, including the requirement for a raised curbing along the street property line, the masonry wall separating the site from residential areas, and the sliding scale by which the size of the service station may be increased.

Summary

The many opportunities which improved design presents should not be overlooked in any planning program devised to cope with the problems associated with gasoline service stations. Valid design standards can make an important contribution toward reducing the detrimental effect of service stations upon street traffic capacity, relieving congestion at intersections, mitigating the adverse influences which service stations may exercise upon surrounding areas, and separating vehicular and pedestrian traffic. However, improved design is not a panacea for all of the problems associated with service stations, and design standards must be combined with locational considerations in a comprehensive planning program.

Location

The development, application, and continual revision of theories guiding the location and distribution of the various land uses

which comprise the urban community forms the core of any planning program. This section is concerned with the formulation of a locational theory for gasoline service stations which is oriented toward the problems associated with the location of this use. Community responsibility in this program lies in designating areas in which gasoline service stations may be located, and in providing for the development of compact, efficient commercial areas into which service stations can be successfully integrated.

Locational theories concerning gasoline service stations, or any other use, which are evolved as matters of public policy should be articulated through the master plan. Attempt to develop and apply locational theory outside of the framework of comprehensive planning are almost certain to be unsuccessful. This section is devoted to a discussion of approaches to the locational problems of service stations which may be pursued through comprehensive planning.

A Locational Theory for Gasoline Service Stations

The principal problems in evolving a locational theory for gasoline service stations lie in the selection, definition, and control of the areas suitable for service stations. Although service stations are considered a commercial activity, they cannot properly be located

in all types of commercial areas, or on any site in a commercial area. Successful integration of service stations into the commercial pattern depends upon functional classification of commercial areas, and upon functional separation of activities within commercial areas.

The degree of functional classification undertaken will depend upon the size and complexity of the community under consideration. Although this topic is far too extensive to discuss in detail here, the following general classifications provide a reasonable and workable functional breakdown:

1. The central business district: This area is the major comparison shopping area for the community, containing department and variety stores and specialty shops, and also including such facilities as business and professional offices, hotels, theaters and other entertainment, and governmental administrative offices.
2. The central business-service district: This area, adjacent to the central business district, may include parking facilities, utility installations, warehousing, wholesaling, and transit and transportation terminals.
3. Comparison centers: These centers may be either planned, developed, and managed as a unit, or developed and operated under diversified ownership. In either case, the

comparison center is characterized by the presence of a number of stores handling each type of goods, and may also include a department store, as well as some convenience stores.

4. Primary convenience centers: These areas provide convenience shopping for a group of residential neighborhoods, and usually include one or more "supermarkets" in addition to other convenience goods stores and retail-service establishments.

5. Neighborhood convenience centers: These areas are similar in composition to the primary convenience centers, but serve a single residential neighborhood, or part of a neighborhood.

6. General commercial areas: All commercial activities which are not normally considered a part of a retail shopping center or district may be grouped under the heading "general commerce" for purposes of this study. Uses such as large business offices not located in the central business district, commercial recreation, automobile sales and repair, wholesaling, and warehousing are among the uses included in this category.

Although this system of classification will be too complex for some communities, and oversimplified for others, it is sufficiently definitive to permit application in general terms to any urban area.

Generally speaking, the gasoline service station can be an effective component of all but two of these types of commercial areas. These are the central business district and the neighborhood convenience centers. In each case, a high volume of pedestrian traffic, and a need for separation of vehicular and pedestrian traffic make the inclusion of gasoline service stations undesirable in either area. High land values in the central business district and the small size of the neighborhood convenience center also are prohibitive for the service station.

Gasoline service stations can be and should be included in commercial areas falling into any of the other four classifications, but must be very carefully handled in the comparison and primary convenience shopping centers. Uses such as service stations can create dead spots in the retail pattern which discourage pedestrian traffic between various elements of the area, disrupt the vehicular circulation into and past the center, and block the economic and physical growth of the area. The service station can thus be an important blighting influence upon the entire center unless carefully guided toward locations which minimize these problems. In either

a comparison or a primary convenience center, gasoline service stations should be located at the margin of the ultimate center, away from major pedestrian routes, and with direct access from major thoroughfares. This problem can be handled by requiring that the planning commission approve the proposed location of each service station to be constructed in comparison and primary convenience shopping centers. This approval should be made with the advice of the technical planning staff, and should be based upon three specific factors:

1. The relationship of the proposed location to the present and planned physical development of the center concerned.
2. Separation from primary patterns of pedestrian circulation.
3. Direct access to major thoroughfares.

Although there are many objections to the exercise of discretionary powers by administrative agencies, the grant of authority in this instance can be so clearly described and guided that the provision can be considered a valid delegation of authority.

Gasoline service stations can usually be located throughout the central business-service districts and the general commercial areas, as the uses found in these areas do not generate a high volume of pedestrian traffic, and the service station does not exert a significant blighting influence upon these uses.

The problems which may result from uncontrolled construction of gasoline service stations in industrial areas were discussed in Chapters I and II. The whole question of the desirability and legality of either permitting or excluding commercial uses in industrial areas is too complex for inclusion in this study, other than to note the growing practice of either prohibiting them entirely or permitting some specified commercial activities closely associated with industrial uses, such as restaurants and cafeterias, wholesaling, banks, medical clinics, motels, and gasoline service stations. When service stations are permitted in industrial areas in this manner, their location should be subject to approval by the planning commission, governed by the same considerations established for locations in comparison and primary convenience shopping centers. Special attention must be given to maintaining the usability of the area for industrial purposes.

The Application of Locational Theory

The two major problems of maintaining the ability of major thoroughfares to perform their function of traffic movement, and of successfully integrating gasoline service stations into compact, efficient commercial areas are closely related through locational theory. Obviously, if service stations cannot locate in such areas, they will

continue to string out along major thoroughfares, perpetuating strip commercial development and converting thoroughfares into a succession of closely spaced intersections. However, if service stations can be confined to commercial areas of various types, and these areas can be located on one side of a major thoroughfare or in one quadrant at an intersection of major thoroughfares, the problem is largely solved. This solution is directly dependent upon the possibilities of putting major thoroughfare frontage into uses other than commercial, as discussed in Chapter II. Certainly the growing recognition by both communities and the courts that commercial activities cannot absorb more than a small part of the major thoroughfare frontage in any given area, and the rapidly increasing number of shopping centers which are planned, constructed, and managed as a compact, integrated unit, lends support to this position. There will, of course, be demands to open up the major thoroughfare frontage opposite or adjacent to such areas to commercial uses, and especially to gasoline service stations. Resisting these pressures is largely a matter of administration and regulation, combined with the ability to draw a line somewhere and adhere to it.

A desirable physical separation between gasoline service stations and uses which generate a large volume of pedestrian traffic can also be achieved through the application of locational theory.

These uses include schools, playfields and playgrounds, community centers, and many similar activities. The pedestrian circulation patterns associated with these facilities can only be separated from the vehicular circulation pattern associated with a service station by space isolation, obtained through advance planning for the location of each factor concerned. Cognizance of this relationship must be taken early in the planning program if a desirable end product is to be obtained.

Summary

The development and application of locational theory is the key to the problems developed by gasoline service stations in an urban area. The policies outlined in this section are oriented toward the specific problems of the service station but are based upon the principle that both the problems and their solutions must be approached through the framework of comprehensive planning. Locational theory, evolved within this medium, is an essential component of any planning program which essays the successful integration of the gasoline service station into the urban community.

Regulation

The policies developed in this chapter must be effectuated through legislation which establishes controls and administrative procedures designed to accomplish the objectives of the planning program. The proposals discussed here are presented in brief outline form, rather than in formal legal style, in the interests of clarity and simplicity. They can, however, be worked into a legal format which observes local practice and peculiarities. The legislation contemplated here is not limited to that which is considered possible or practical under contemporary planning laws and procedures, but instead is based upon the level and type of controls needed to accomplish the stated objectives.

Three different legislative tools may be employed to guide effectively the development of gasoline service stations in an urban area. These are the building code, zoning ordinance, and special ordinance. The provisions to be included in each ordinance are enumerated here, and refer directly to the recommendations discussed in greater detail in the preceding sections on design and location.

The Building Code

The primary function of the building code in this program is to insure that all gasoline service stations are constructed and equipped so that the safety hazards incident to the storage and sale of motor fuels are reduced to a minimum. This control is essential if the service station is to be considered an acceptable commercial activity. The appropriate provisions of the basic building code, the national building code, and of many local codes are adequate in this respect, and do not require further discussion here.[99] Those provisions of the building code which apply to designated areas of the community, as expressed through the delineation of fire districts, should be closely coordinated with the location of the various zones provided for in the zoning ordinance.

The Zoning Ordinance

Locational theory, as outlined in the section on location, is primarily effectuated through the zoning ordinance. The zoning ordinance then should include the following elements:

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[99]The basic building code and national building code are discussed on pages 146 to 150.

1. A functional classification of commercial areas and uses, suitable to the needs of the community.
2. A definition of the term "gasoline service station" (or other term used in the ordinance) and a description of the functions of the use.
3. Designation of the types of commercial zones in which gasoline service stations are either a permitted use, a permitted use with approval by the planning commission, and a prohibited use. Specific and detailed standards must be included to guide the exercise of discretion by the planning commission.

The Special Ordinance

A special ordinance for gasoline filling stations is recommended here in preference to inclusion of these provisions in the zoning ordinance for two reasons: (1) to limit the zoning ordinance to basic requirements concerned with use, height, bulk, and area, in the interests of over-all simplicity; and (2) to make it possible to apply some of the proposed provisions to existing as well as to new stations, so that they might be brought closer to the desirable standard. However, all of the requirements outlined here can be included in the zoning ordinance if desired.

This special ordinance will naturally be the most complex of the three legal tools, since it deals specifically with gasoline service stations, and involves more detail than either of the others. The following general provisions should be included in this ordinance:

1. A definition of the term "gasoline service station" which should be identical to that used in the zoning ordinance.
2. An enumeration of the design requirements for new service stations, as discussed in the section on design.
3. An enumeration of those design requirements which also apply to existing service stations. The following provisions should be included:
   a. A provision stating that all modifications to existing service stations shall provide a higher degree of conformity with the design requirements for new stations.
   b. A requirement that within two years of the effective date of this ordinance, all existing service stations must be modified so as to meet the requirements concerning curbing along street property lines, paving or landscaping of the area, construction of a masonry wall separating the site from residential areas, exterior lighting, and signs.

4. Controls over the operation of gasoline service stations, which should require that all vehicular repair activities, except for minor services, be carried on within an entirely enclosed building, and that all vehicles be parked so that there is no encroachment upon any adjoining property or public right-of-way. Waste disposal should also be covered in the section, with a requirement that integral waste containers of adequate capacity and design be included.

These provisions are closely related to those recommended for inclusion in the building code and zoning ordinance. The three legal instruments are so dependent upon each other that any major modification to one will require corollary modifications to the other two.

Conclusion

The program outlined in this study admittedly assumes a high level of planning effectiveness. However, any planning program should set a high standard and work toward it, even though a compromise solution may eventually be accepted. The proposals outlined in Chapter IV comprise a set of desirable standards which should prove workable and valid throughout the next twenty or

twenty-five years. They may represent an ultimate goal which a community may work toward, making necessary modifications to meet local conditions and changing situations.

These requirements should not be slavishly copied in every detail, but instead are intended to guide the formulation of a local program which is based upon local desires and needs. A careful appraisal of the individual situation must be made to intelligently adopt this or any other program to a community under consideration.

Although the recommendations outlined in this chapter relate directly to the gasoline service station, a program of this type can only be successful when undertaken within the master planning process. Without a strong foundation in comprehensive planning, this program will be no more effective than any other piecemeal remedial action. As a part of the master planning program, however, these proposals can bring about the successful integration of gasoline service stations into the urban area, so that an activity which now creates some of the most difficult urban land-use problems will become a valuable, efficient component of the community.

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