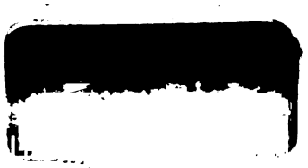
A REPORT ON OFF-STREET PARKING FACILITIES FOR THE CENTRAL BUSINESS DISTRICT OF LANSING, MICHIGAN

Thesis for the Degree of B. S.

MICHIGAN STATE COLLEGE

Milton E. Reeder

1947



A Report on Off-Street Parking Facilities for The Central Business District of Lansing, Michigan

A Thesis Submitted to
The Faculty of

MICHIGAN STATE COLLEGE
of
AGRICULTURE AND APPLIED SCIENCE

by

Milton E. Reeder

Candidate for the Degree of
Bachelor of Science

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F O R E W A R D

The number one headache of almost every automobile driver is parking. With new cars and increasing automobile use, the demand for parking space will increase. For many years the average motorist has realized that it is easier to get to his destination zone, traffic bottlenecks and congestion notwithstanding, than to find a place to park his car after he gets there. Particularly is this true if his destination is in the central business district of the average American city.

This condition is, of course, the result of many and varied causes. The increase in the number of vehicles, the increase in individual vehicle use, the extensive development of down town shopping areas, the lack of driver training and education, all have their effect on parking and traffic congestion. However, the basic underlying cause stems from the very origins of America's cities. That is, the cities were not planed nor built for the Motor Age! This is in no way the fault of the original city planners but, rather the fault of those who followed and failed to keep pace with progess. So now many cities throughout the country are face to face with the problem of furnishing adequate parking and terminal facilities in areas where curb parking has long been insufficient and where acquisition of property for parking lots is difficult and expensive. Readjustments to meet the needs of the automotive era will be costly, but failure

to make them will prove even more costly to the communities.

It is with this in mind that this report on parking facilities for the central business district of Lansing, Michigan is submitted.

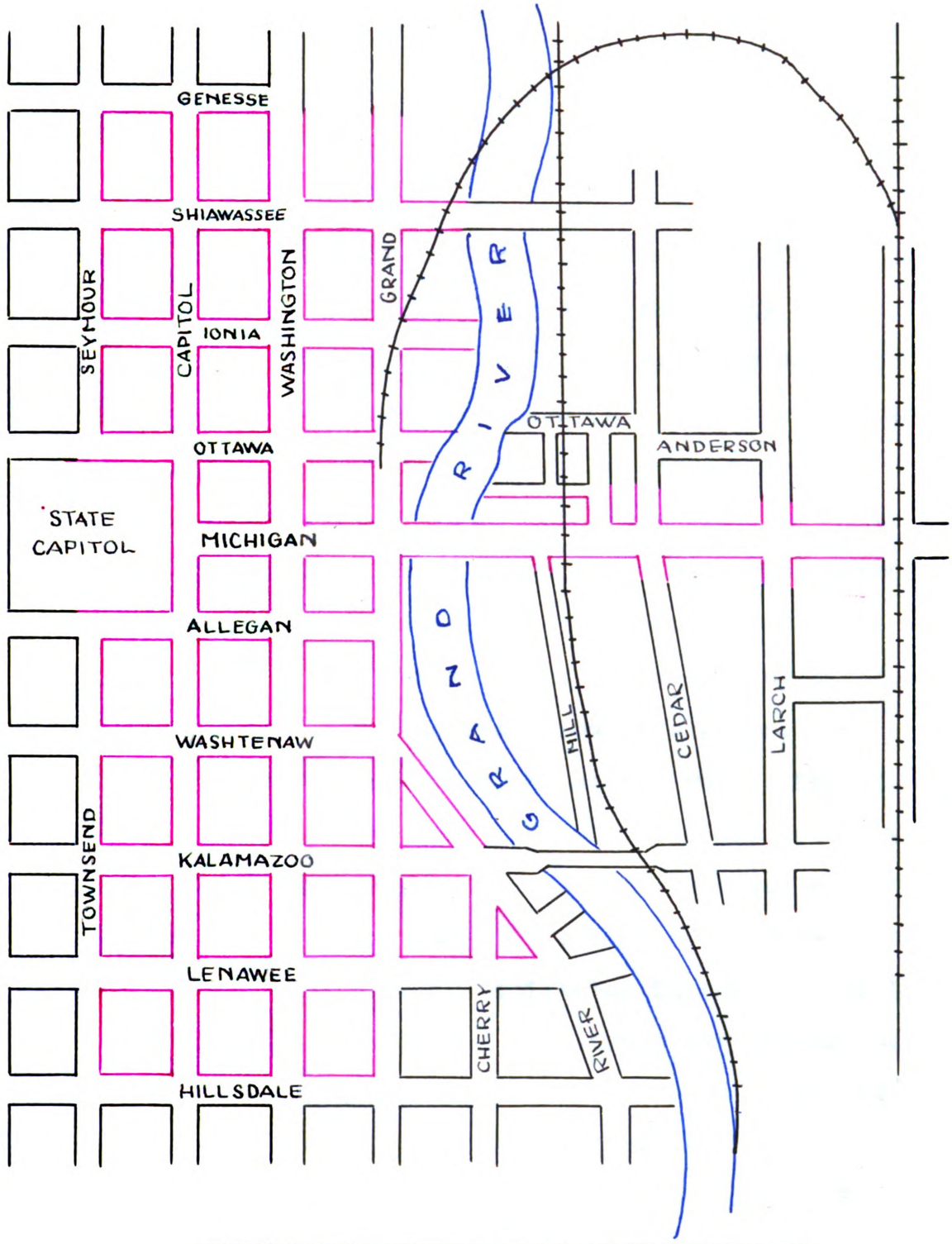
This paper embraces the subject under four major considerations: first, the need for additional parking facilities, under which falls the causes and effects of parking difficulties; second, an analysis of present facilities and capacities and of anticipated demands; third, the considerations to be made in developing the off-street parking program; and fourth, the findings and recommendations of the author as developed in this study.

This treatise should in no way be construed as a cure all of Lansing's parking problems. It deals with only one specific area and in that district alone can be considered as one solution and not as the only solution.

In the preperation of this plan several sources of information have been consulted, combining facts that have been gathered locally with experiences from various parts of the country. These sources include the American Automobile Association's Parking Manual, a report on off-street parking for the city of Miami, Florida, and information as offered by C.W.Wood, city engineer for the city of Lansing, and Kenneth Plank, city planner for the Michigan State Highway Department.

DEFINITION OF THE AREA CONSIDERED IN THIS REPORT

This report includes only that portion of the central business district of Lansing as indicated on the map on page 4. This district embraces all of the stores and places of business and recreation to which access by large numbers of people is necessary. The fringe area, the area bordering the central business district, consists of an industrial district, mostly small shops and warehouses, on the East and generally older residential areas on the North, South, and West. Parking demands in these areas are not sufficient to warrant their inclusions in this report.



CENTRAL BUSINESS DISTRICT

LANSING, MICHIGAN

AREA CONSIDERED IN THIS REPORT

SHOWN IN RED

PART I

AN ANALYSIS OF THE NEED FOR ADDITIONAL PARKING FACILITIES

TRENDS IN VEHICLE REGISTRATIONS AND ANNUAL VEHICULAR MILEAGE

The first and most obvious reason why it is difficult to find a parking place in the central business district arises from the tremendous increase in the number of automobiles and their extensive use in the urban area.

The annual report of motor vehicle registrations by the Michigan Department of State shows a 359 per cent increase in motor vehicle registrations in the state between the years of 1921 and 1941. The cessation of automobile production in early 1942 brought a marked reduction in registrations during the war years. However, with the return to production in 1945 came a rapid recovery in registrations, until by the middle of this year, 1947, the record of 1941 was equaled.

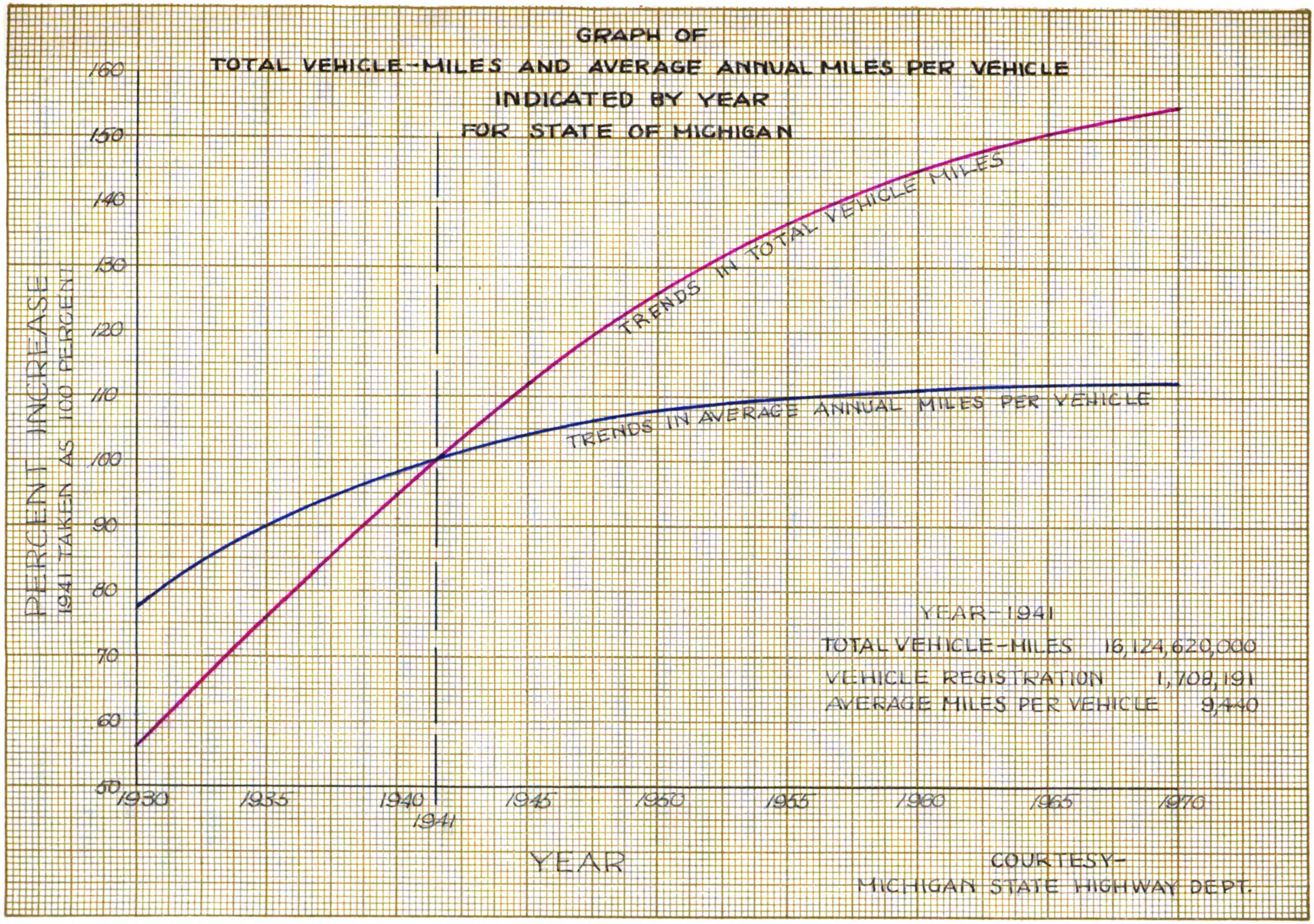
During the period from 1921 to 1947 some effort was made to increase the parking facilities in the central business district. The removal of the street car tracks facilitated the introduction of angle parking on Michigan Avenue. This gave 76 additional curb parking spaces. By 1946, 930 of the 1898 curb spaces then in use were metered. This was a step forward in the more efficient use of the already available curb space, however, few if any new spaces were added. The greatest increase in parking space was the result of the growth of the privately owned toll and merchant's

parking lots. The majority of all the vacant property in the area is now converted to this use and has a total capacity of 2264 cars.

Thus, during the last 27 years the total parking facilities in the central business district have been increased a total of 104.5 per cent. But, do not forget that during this same period the parking demand increased 359 per cent. Therefore, it is clear that there is a major deficit in present parking facilities.

Future trends will by no means ease the situation. A study has been made by the Michigan State Highway Department of the future trends in motor vehicle registrations and annual vehicular mileage. A graph showing the compilation of the conclusions drawn is presented on page 7. In developing this study the year 1941 was taken as the basic 100 per cent year. This was done so as to eliminate any erroneous trends result-from war time conditions. Example; present registrations are below those indicated, however, the present rate of increase is greater than that shown. It is the opinion of the Highway Department that these conditions will rectify themselves and return to the normal trend within the next two or three years.

The most significant curve on page 7 is that of the trends in total vehicle miles. This curve is the combined results of increased registration and increased vehicular usage. From this study it can readily be concluded that by 1957 the parking demand will be 40 per cent greater than at present.


GRAPH OF
TOTAL VEHICLE-MILES AND AVERAGE ANNUAL MILES PER VEHICLE
INDICATED BY YEAR
FOR STATE OF MICHIGAN
PERCENT INCREASE
1941 TAKEN AS 100 PERCENT
160
150
140
130
120
110
100
90
80
70
60
50
TRENDS IN TOTAL VEHICLE MILES
TRENDS IN AVERAGE ANNUAL MILES PER VEHICLE
YEAR-1941
TOTAL VEHICLE-MILES 16,124,620,000
VEHICLE REGISTRATION 1,708,191
AVERAGE MILES PER VEHICLE 9,440
1930
1935
1940
1941
1945
1950
1955
1960
1965
1970
YEAR
COURTESY-
MICHIGAN STATE HIGHWAY DEPT.

POPULATION TRENDS

The official city census taken in 1941 set the population of Lansing proper at 82,296. The Chamber of Commerce estimates the present population, 1947, at 90,000 with an anticipated increase to 100,000 by 1950. This would indicate an increase of 21.5 per cent in the nine year period from 1941 to 1950

This percentage is not, however, directly applicable, in that it does not take into consideration the distribution of this new population. A survey made by the Michigan State Highway Department shows that while the population of the city as a whole is increasing the population of the middle section is in fact decreasing. The most rapid growth is in suburban areas just within or outside the city limits. And furthermore, it was found that these suburban areas are not generally serviced by bus lines, but rather, individual automobiles were the most common mode of transportation.

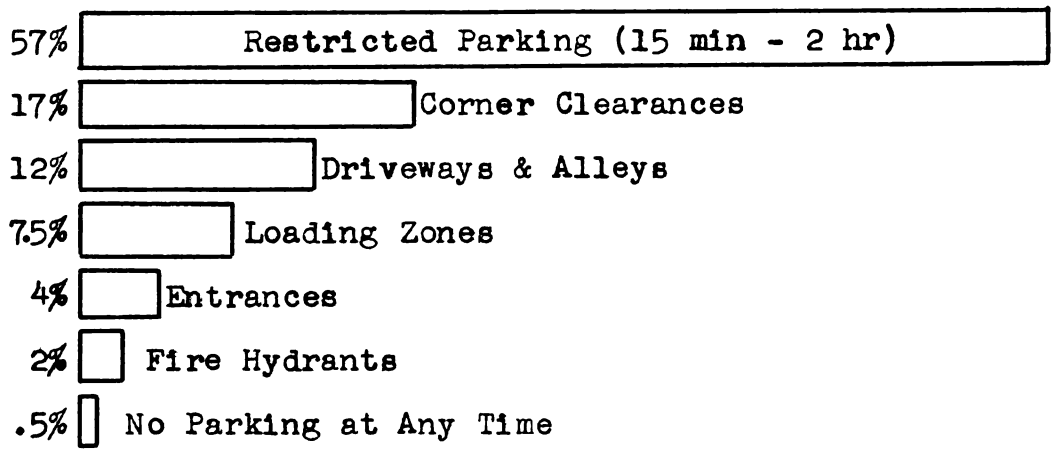
Thus, it can be seen that, while the figure is indeterminable, the resulting increased congestion in the central business district due to the increased population is far greater than the indicated 21.5 per cent.

UTILIZATION OF CURB SPACE

It has long been the belief of the motorist that where there is a street there also is space for parking. Generally in residential areas and decentralized shopping districts this is true, regardless of parking restrictions due to fire hydrants, alleys, driveways, loading zones, etc. However,

in highly developed areas such as the central business district these restrictions usurp great amounts of already precious curb space.

The table below shows how the total curb space in the central business district is utilized.



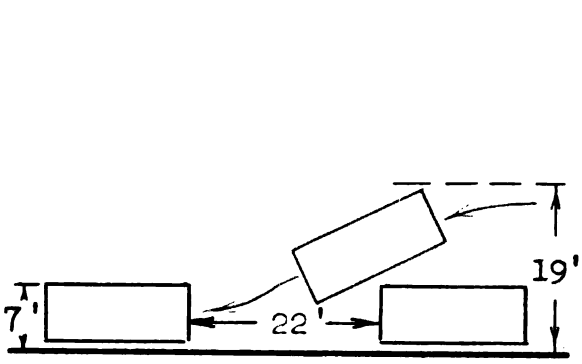
From this table it can be seen that 43 per cent of the total curb footage in the district is used for purposes other than parking.

THE PRIMARY PURPOSE OF STREETS

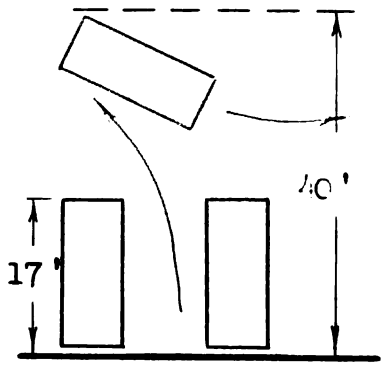
The streets and highways of America are dedicated to the purpose of the movement of traffic and commodities. In the past parking on these arteries has been permitted where it did not interfere with traffic. However, with the steady increase in traffic volume, restrictions in parking have been made to facilitate the flow.

In this respect Lansing has been more fortunate than other cities of the same size. The two major North-South and East-West arteries through the central business district, Washington and Michigan Avenues, respectively, are exceptionally wide thoroughfares.

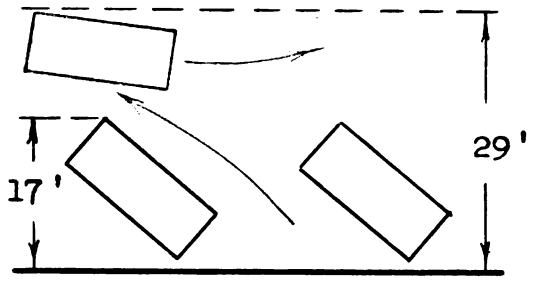
STREET SPACE USED FOR VARIOUS PARKING POSITIONS



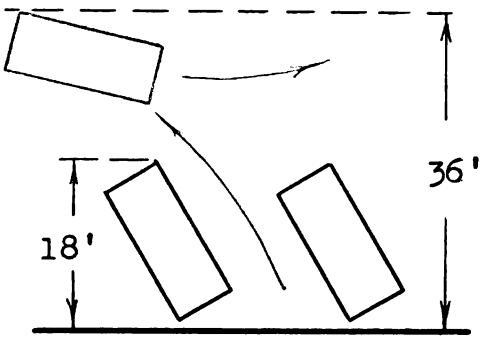
PARALLEL PARKING



RIGHT ANGLE PARKING



45° ANGLE PARKING



60° ANGLE PARKING

Position at Curb	Width of Street Used When Parked	Width Reqd for Parking Plus Maneuvering	Length of Curb Per Car*	Cars Parked per 100 feet
Parallel	7	19	20.0	5.0
45 degrees	17	29	11.3	8.8
60 degrees	19	36	9.2	10.8
90 degrees	17	40	8.0	12.5

*Based on angle parking in stalls 8 feet wide including lines, and on 3 feet between cars parked parallel.

Courtesy-AAA Parking Manual

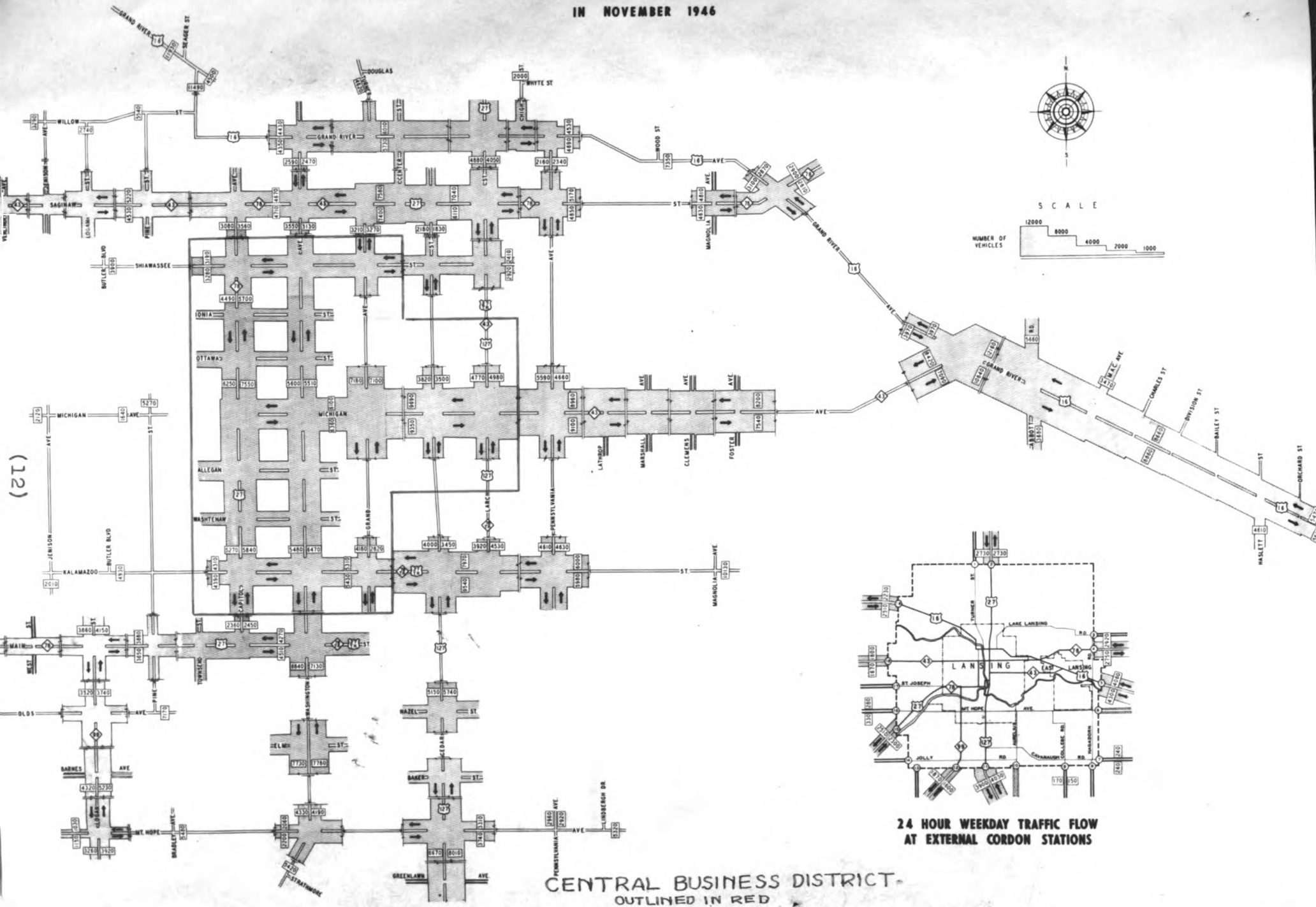
Present regulations call for 60 degree angle parking on these two streets. This permits two lanes of traffic to flow in either direction. However, observations show that the outer lanes, those directly behind the parked cars, are obstructed continuously by vehicles either backing out of or entering parking spaces. Therefore, neglecting interruptions caused by traffic signals and left turns, only the center lanes in either direction may be considered to have continuous flow.

During the peak hours these two streets with their present parking arrangement are considered to be at maximum traffic capacity. Faced with the anticipated 40 per cent traffic increase by 1957, it is imperative that provisions be made to increase the capacities of theses streets. The most logical means are to convert to parallel curb parking. The chart on page 10 shows that by so doing the total road width required for both parking and maneuvering would be reduced some 17 feet. This would be ample width to insure the flow over one half of the street of two lanes of unobstructed traffic with an additional outer lane for entering and leaving parking spaces. This would, however, reduce the parking capacity of these streets some 50 per cent, or 345 spaces.

The flow diagram on page 12 shows that because of their traffic densities Capitol and Grand Avenues and Kalamazoo Street must also be considered in this same manner. Capitol Avenue is another exceptionally wide street and already has

LANSING — EAST LANSING AREA

IN NOVEMBER 1946



(12)

MICHIGAN STATE HIGHWAY DEPARTMENT - CHARLES M. ZIEGLER, STATE HIGHWAY COMMISSIONER

PLANNING AND TRAFFIC DIVISION, MARCH 1947

parallel parking. And as the traffic density is no greater here than on Michigan or Washington Avenues it is not deemed necessary to alter parking arrangements on this street.

It is noted from the flow diagram that Grand Avenue has a high traffic density at the intersection with Michigan Avenue and as it progresses North and South from this point the density dwindles to approximately one half upon reaching Shiawassee Street, on the North, and Kalamazoo Street, on the South. This indicates that Grand Avenue is, in the main, an access artery from Michigan Avenue to the secondary East-West streets in that through traffic is only moderate. It is felt therefore, that further restrictions in parking is not warranted on this street.

The traffic density on Kalamazoo Street approximates that on Washington Avenue. However, this street is much narrower, and parallel parking is already in effect. Assuming this street is also at maximum traffic density during the peak hours, all parking must be eliminated to be in keeping with the anticipated traffic increase. This would remove from service some 74 parking spaces.

The grand total of curb parking spaces that should be eliminated by 1957 to facilitate the increased flow of traffic is then, 419.

THE PARKING DEMAND RESULTING FROM NEW BUILDINGS

When vacant property that has been used as a parking lot is converted to a building site a two-fold change occurs

in the parking problem. First, one car space of off-street parking is removed from service for every 240 square feet of lot surface. Second, the new building will generate the need for more parking space at the rate of one space for every 450 square feet of floor space, due to the number of persons that will go there for business or employment.*

Definite information as to the anticipated construction in the central business district is impossible to obtain due to the necessity for secrecy in dealings involving the purchase of business property. However, of three realators well informed in business real estate, all agree that the assumption of five three story buildings (covering individual lot areas of 20,000 square feet and to be built within the next ten years) would in no way be in excess of indicated trends.

Then using this as a basis it is possible to compute the estimated number of parking spaces generated by this new construction.

20,000 sq ft X 5 buildings X 3 stories = 300,000 sq ft of floor space

$$\frac{300{,}000 \text{ sq ft}}{450 \text{ sq ft/space}} = 670 \text{ additional spaces generated}$$

This total is not inclusive of the parking spaces removed from service, if the building site is a former parking lot. Observation shows that all of the vacant property, in the most desirable section of the district for new con-

*Courtesy-American Automobile Association

struction, is occupied by parking lots. It can not be concluded that all new construction will be on this property, as some razing of old structures must be expected. However, razing is a more expensive means of obtaining building sites, and so it may be assumed that only one of the five lots will be obtained by this method. Thus, the estimated number of parking spaces which must be relocated may be computed.

$$20{,}000 \text{ sq ft} \times 4 \text{ lots} = 80{,}000 \text{ sq ft of lot area}$$

$$\frac{80{,}000 \text{ sq ft}}{240 \text{ sq ft per space}} = 335 \text{ relocated spaces}$$

The sum of the number of relocated spaces and the number of spaces generated gives a grand total of 1005 new spaces required, due to new construction, within the next 10 years.

P A R T II

AN ANALYSIS OF PRESENT PARKING FACILITIES AND CAPACITIES AND OF ANTICIPATED PARKING DEMANDS

PRESENT PARKING FACILITIES

The present street parking consists of 1,898 curb spaces of which 930 are metered one hour parking, and the remaining 968 are time limited from 15 minutes to two hours. The map on page 17 shows the distribution of the curb spaces throughout the district. I may be noted that all street parking, other than on Michigan and Washington Avenues, is parallel to the curb, and on these two streets it is 60 degree angle parking.

The total capacity of the off-street parking lots is 2,264 cars. A breakdown of this figure, by individual lots, is presented on page 18. The lots marked with an asterick (*) are merchants' or company lots which afford free parking to customers and employees. All other lots are privately owned toll lots which charge various fees for parking, depending upon the length of time parked and upon the accessibility of the lot to the center of the district. The location number refers to the map on page 17 which shows the relative locations of the lots. Lots marked thus (#) are parking garages of semi-permanent structures.

The sum of the curb spaces and the off-street parking facilities gives a grand total of 4082 parking spaces to date.

PARKING FACILITIES
CENTRAL BUSINESS DISTRICT

CURB PARKING IN BROWN
PARKING LOTS IN GREEN
ANGLE PARKING SHOWN BY DIAGONAL LINES

Location	Operator	Capacity
1	*Auto-Owners Insurance Co.	30 cars
2	B.T.Fuller	40
3	Capitol Shell Service	80
4	Texico Service Station	150
5	Gladmer Parking Lot	150
6	#Olds Inside Parking	65
7	#Auto-Park Garage	175
8	Crown Service No. 2	100
9	Crown Service No. 1	90
10	#Porter Garage	175
11	*Kroger Parking Lot	45
12	*Market Basket Lot	20
13	Shields Auto-Park	55
14	*Kroger Parking Lot	75
15	Dick Sheets	75
16	Old City Market Lot	85
17	Lansing Tire Co.	110
18	Butler Service Lot	20
19	Thoman Parking Lot	38
20	Monroe Service Station	120
21	*Capitol City Fish Co. Lot	35
22	Michigan Parking Lot No. 1	65
23	Michigan Parking Lot No. 2	18
24	Bowlin Parking Lot	70
25	Fay Dunham	75
26	*Arbaughs Parking Lot	113
27	*Municipal Parking Lot	40
28	*Sears Roebuck Co. Lot	150
	Total	2,264

ESTIMATED PARKING DEMAND, 1947

The table at the top of the compilation of data sheet, page 20, is the result of a study made by C.W.Wood, city engineer for the city of Lansing. It gives a breakdown of the estimated number of persons entering the central business district during a normal day. A peak day is assumed to be 15 per cent in excess of a normal day, which when applied to the normal day demand, gives a peak day demand of 6,096 spaces.

If the total capacity of all parking facilities is

subtracted from this, the remainder will be the 1947 deficit of parking spaces in the central business district. This is 1,934 spaces.

ESTIMATED PARKING DEMAND, 1957

The table at the bottom of the compilation of data sheet shows the estimated increased parking demand by 1957. This increased demand is the result of three things: curb space removed from service to facilitate the flow of traffic; off-street parking space eliminated as a result of new construction; and the anticipated 40 per cent increase in traffic volume. This sum is 3,854 spaces. This applied to the 1947 deficit gives a 1957 deficit of 5,788 parking spaces.

COMPILATION OF DATA SHEET

The estimated number of people* entering the central business district and parking space required.

	Total	By Auto	Persons Per car	No of Cars	Parking Turn-over	Parking Req'd
Labor Force	10,000	6,000	1.4	4,200	1.1	3,890
Shopping Force	15,000	9,000	1.7	5,290	5.0	1,058
Business	1,500	900	1.7	529	2.0	265
Recreation	500	300	1.7	176	2.0	88
Total Normal Day	27,000	16,200	1.6	10,185	2.5	5,301
Peak day in excess of Normal day (15 per cent)						795
Total Peak Day						6,096

Present Parking Facilities:

Curb Spaces				
Time Limited		968		
Metered		930		
		1,898	1,898	
Off-street Spaces				
Toll Lots	(20)	1,756		
Merchants' Lots	(8)	508		
		2,264	2,264	
		Total	4,082	4,082
		1947 DEFICIT SPACES		1,934

Estimated Increased Demand by 1957

Curb Space Lost	419	
Off-Street Spaces Lost	1,005	
40 Per Cent Increase (.40 x 6,096)	2,430	
Total	3,854	3,854
1957 DEFICIT SPACES		5,788

*Courtesy - C.W.Wood, City Engineer, Lansing, Michigan

P A R T III

CONSIDERATIONS TO BE MADE IN DEVELOPING THE OFF-STREET PARKING PROGRAM

GENERAL

A rather impressive array of facts and figures have been presented in Part II to substantiate the need for and the extent of additional off-street parking facilities for the central business district. But, these data in themselves are by no means a solution to the parking problem. They are, however, a firm basis on which to develope a program that should go far in easing the parking congestion.

All the parking facilities in the district, public and private as well, must be integrated into such a program if the net result is to be workable at all. In so doing many controversial subjects are bound to arise. However, these subjects must be faced squarely and unbiasedly. It cannot be emphasized too strongly that the success of the entire program rests entirely in the intelligent development of the program.

In this light, presented here are some of the major considerations to be made in the development of the program. These include puplic ownership, freezing lots to the explicit purpose for parking, distribution of facilities, financing, multi-story parking structures, and public enlightenment of the needs and aims of the program.

PUBLIC OWNERSHIP

There is no generally accepted policy as to how far a city should go in providing or subsidizing off-street parking facilities. However, if the policies of other cities are any criterion, direct public ownership and operation of parking lots are widely accepted. The city of Battle Creek has just recently placed in operation two large parking lots in their main business district. These lots are city owned and operated. Grand Rapids has recently passed an ordinance empowering the city to condemn certain properties and convert them into publicly owned and operated parking lots. The city of Muskegon also has a similar plan under consideration.

Some of the greatest opponents of such a parking program are, of course, the private toll lot operators and other private citizens who feel that the city should not enter in direct competition with private enterprize. This is a well founded argument, but it is not wholly applicable in this situation. A study of the compilation of data sheet shows that the parking demand is and will progessively be far in excess of the present curb and private lot capacities. And therefore, any proposed publicly owned lots would, in effect, serve only the portion of the demand that does not, and will not, have a place to park. This program should not, and would not force any private operator out of business.

The data presented shows conclusively that there is a great demand for additional parking space and that this demand must be satisfied. No program can force into business any private lot operator who is not already operating. Therefore, if new parking facilties are not forthcoming from private business, the only logical solution is for the city to acquire the necessary lots and place them in operation.

OFF-STREET PARKING FACILITIES MUST BE "FROZEN"

Public ownership would also ease another situation that is becoming increasingly acute, which is the sale of private parking lots for building sites. As was pointed out in Part I of this report, for each parking space of a lot converted into a building site an additional need for one parking space for every two floors of the building is generated.

Little can be done to stop the sale of privately owned parking lots for such use and a continuous drain of privately owned space must be expected in the near future. However, puplicly owned lots may, upon acquisition, be frozen to the explicit use of parking facilities. Such a policy, by necessity, must be an intergral part of this program. Otherwise, the program would disintigrate to meerly a stopgap measure.

DISTRIBUTION OF OFF-STREET PARKING LOTS

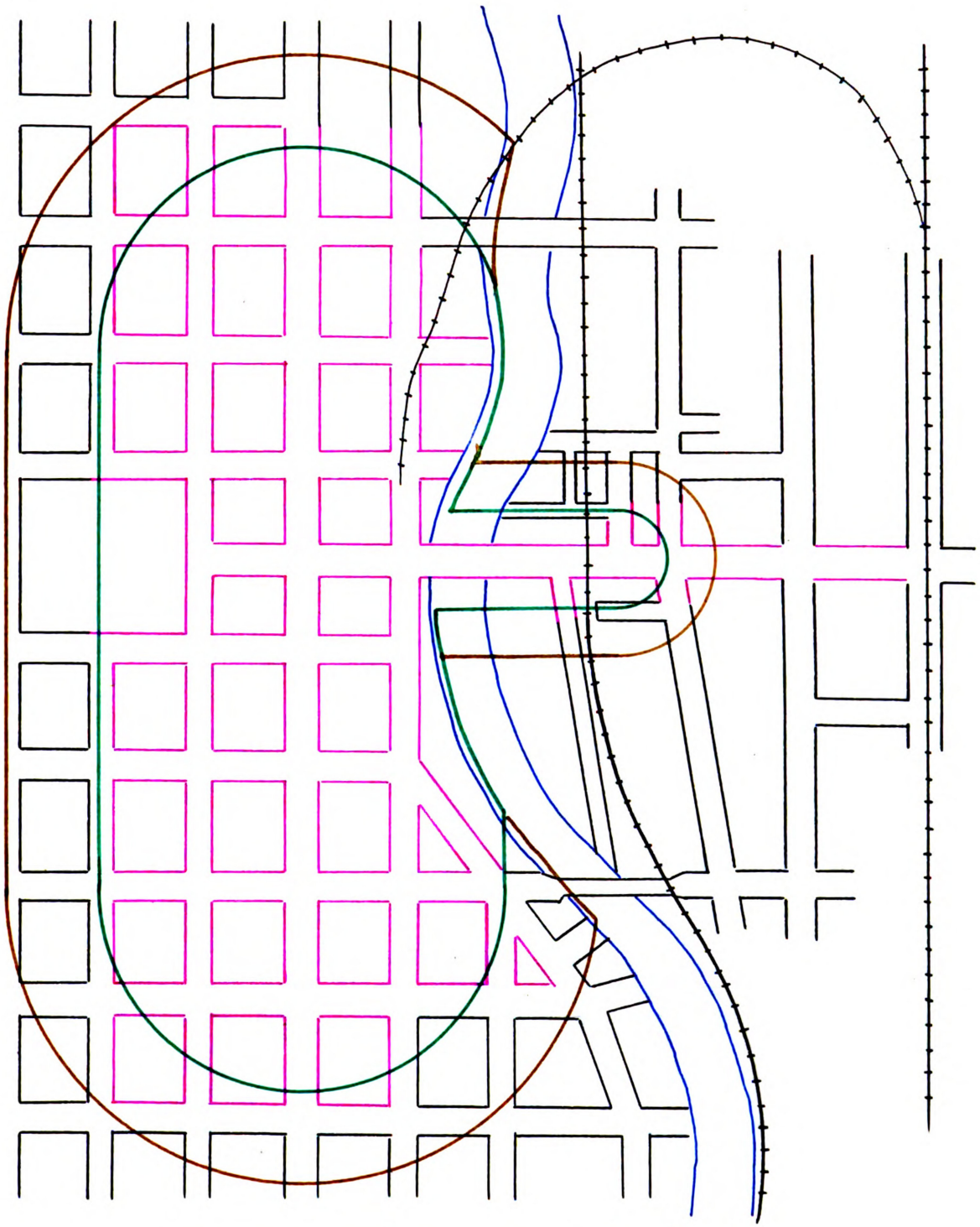
The American Automobile Association's Parking Manual points out that the distance a person will walk from his parked car to his destination varies directly with the

length of time he expects to spend there. Thus, it is obvious that the all-day worker is willing to walk farther than the short time shopper. From general observation of parking habits in the central business district and from information from other cities, it may be concluded that the short time parker is willing to walk from 2 to 3 blocks while the long time parker will walk up to five blocks.

The compilation of data sheet on page 20 shows that of the total estimated 10,185 cars entering the district during a day's time some 4,200, or 40 per cent, are long time parkers while 5,995, or 60 per cent, are short time parkers.

From the above data it can be seen that the new parking lots should be so located that short time lots, or 60 per cent of the total, should be within 3 blocks of the center of the district. Furthermore, the long time lots, or 40 per cent of the total, should be within 5 blocks of the center. This would be ideal if the center of the district was a definite point. However, the general mass center of the business and shopping establishments is along the 5 blocks on Washington Avenue between Ionia and Kalamazoo Streets. Therefore, to permit easy access to the majority of establishments in the district short time lots should be located within 2 blocks and long time lots within 3 blocks of this assumed mass center. A diagram showing the maximum limits of the two types of parking lots designated is presented on page 25.

Designation alone, however, will not assure the use of



MAXIMUM LIMITS OF PARKING LOTS

SHORT TIME LOT LIMITS IN GREEN
LONG TIME LOT LIMITS IN BROWN

these lots by the proper parkers. Further inducement must be forthcoming. This may be accomplished by establishing price scales so as to benefit the long time parker in the outlying lots. Example: 10 cents per hour for a maximum of four hours in the short time lots. 10 cents for three hours and 25 cents for eight hours in the long time lots.

FINANCING THE OFF-STREET PARKING PROGRAM

The most obvious means of financing the costs of property, construction, and operation involved in this program are general taxation and direct assessment against the benefited merchants and businessmen. Though both of these methods are widely used in financing public projects, they are not always the fairest ways of apportioning the costs. This program is dedicated to the service of the general public as a whole, and as such should not be an undue financial burden on any one group of persons. Therefore, it is not felt that the rendering of a special service to any one area within the city should be financed by general taxation. Nor is it considered practical to assess the costs against the benefited property owners, because the determination of the benefits derived would be extremely complex and controversial.

A more equitable plan for financing this project is the issuance of low interest, long term bonds. These bonds would be self-liquidating from funds collected in the form of parking fees. It is felt that because of the special

benefits derived from this program, the business people of the central business district would be willing to purchase these bonds for a longer term and at lower interest rates than would be salable in the open market. In so doing they would be shouldering their share of the costs without any direct investment loss to themselves. Also, that portion of the general public using the facilities would be carrying their apportioned load in the form of the fees paid for parking space, but would in return receive easily accessible parking facilities.

A similar plan is now under consideration by the city of Miami, Florida. In a study made by the Department of Traffic and Transportation of that city it was found that short time parking lots, in the center of the business district , would permit initial purchase cost of the property of $15.20 per square foot, and would be self-liquidating in 30 years at 2½ per cent interest. This was based on an estimated revenue of 70 cents per day per space for 300 days per year. The calculations include costs of surfacing, parking meters, supervision, and depreciation. This study also showed that outlying, long time lots would permit an initial purchase cost of property of $3.40 per square foot and still be self-liquidating under the same conditions. This, however, was based on an estimated revenue of 25 cents per day per space.

Property values are considerably less in the central business district of Lansing than in the same area of Miami.

Therefore, if initial land values are less and all other costs are assumed equal, it can be seen that the period of financing can be reduced or the interest rate can be increased so as to make the purchase of the bonds a more attractive investment.

GROUND LEVEL vs MULTI-STORY PARKING FACILITIES

In deciding the relative merits of ground level lots vs multi-story structures for off-street parking, several factors must be taken into consideration.

A multi-story structure will provide parking space for several times as many vehicles, on a given land area, as will a ground level lot. From this standpoint the use of multi-story structures will greatly reduce the amount of land area which will be necessary to accomodate the cars requiring parking space.

The greatest draw back to multi-story structures is the cost of construction. However, this may be offset by their greater capacities, provided land values are high. As example, when the parking demand is in excess of the capacity, the construction of a second deck above a certain lot may be cheaper than purchasing another lot in the vicinity, of the same capacity. This is, however, problematical and will depend, to a large extent, on the availability and price of land. It is generally conceded that because of the high costs of construction it is not advisable to enter into parking structure construction without an extensive survey to see if the additional expense is warranted.

PUBLIC ENLIGHTENMENT

One of the most unpredictable factors involved in this program is public understanding and cooperation. The importance of this should not be underestimated. As was pointed out, this program is conceived as a service to all, but without the wholehearted backing of and the intelligent use by the public as a whole, these facilities will be of little use to anyone. Therefore, it is essential that the requirements and aims of the program be presented for the edification of all concerned.

Many means are available to reach the public with this information. The local newpaper and radio stations are always cooperative in giving publicity to matters of public interest. Organization interested in public improvement, such as the Chamber of Commerce and Rotary Club, can be depended upon for support. Additional civic interest can be aroused through public forums and discussion groups. If these means are properly organized there is no limit to the benefits which may be derived.

In many cities, because of the great public interest, campaigns to beautify the shopping district have been the outgrowth of the parking programs. Citizens committees have demanded and obtained ordinances requiring the cleaning up of the existing parking lots and standard arrangements for new ones. Large areas of unproductive, unsightly structures have been condemned and converted to large, eye appealing parking lots. The net results of these programs

have been the solution of the parking problem and at the same time the beautification of the district as a whole.

There is no reason to believe that Lansing is not civic minded enough to achieve these ends, and more, provided sufficient interest is stimulated. Thus, it can be seen that public enlightenment is essential to this program.

P A R T IV

MAIN CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

1. As the result of the tremendous increase in vehicle registrations and usage, the rapid growth of the city, and the general expansion of business, the central business district is faced with an immediate, major deficit in parking space.

2. Trends indicate that due to continued increased vehicular usage and the loss of some parking facilities because of construction and increased traffic flow, the 1957 deficit in parking space will be triple that of present.

3. The present curb and privately owned lot facilities are unable to meet the requirements of the present parking kemand, and as the demand increases these facilities will dwindle. Curb facilities must give way to the demands of increased traffic flow for more road width. None of the private lot facilities are assured against sale as new building site.

4. When a new building is erected on a lot that was formerly used for off-street parking it not only forces the cars that were parked there to seek other space, but it also generates new demands for 1½ times as many spaces to accommodate the cars of the persons who go there for business or employment.

5. New off-street parking facilities must be frozen to the explicit use of parking to avoid displacement by new construction.

6. Long and short time parking presents two distinct problems and must be treated seperately. Lots catering to the short time parker must be close to the center of the district, whereas the long time lots may be more outlying, provided fee rates favor the long period parker in these lots. Differences in revenue returns will affect the financing of the lots, and differences in lot locations will affect the initial property costs.

7. The most equitable means of financing this program is the issuance of long period, low interest, self-liquidating bonds. These bonds would be payable entirely from parking revenues.

8. A multi-story structure increases the capacity of a parking lot many fold, but the construction costs of this type of structure are high. Careful investigation is necessary to see if availability and land values of surrounding property warrants the construction of a parking structure.

9. Public enlightenment as to the requirements and aims is essential to this project.

RECOMMENDATIONS

1. It is recommended that a parking authority be created within the city government in the form of a commission made up of representatives of the City Engineer, The Traffic Engineer, and the Police and Finance Departments. It would be the duty of this commission to coordinate all the activities involved in the administration of the parking facilities in the central business district. The committee would not assume any of the functions of the offices represented thereon. Procurement of property and overall financing would rest with the Finance Department. The detailed design, construction, and maintenance of all lots and structures would pertain to the office of the City Engineer. Enforcement of regulations would be a Police Department duty. And the surveillance of parking demand as effecting expansion of the program and distribution of facilities would be a function of the office of the Traffic Engineer.

2. A survey should be made of all property, both vacant and occupied with amortized structures, that would be available for use in this program. Land values should be determined and estimates made of the number of cars each would facilitate. From these should be selected sites of sufficient capacity to meet immediate demands. These locations should be in the ration of 3 short time lots to 2 long time lots.

3. A financing plan should be worked out in accord with that proposed in Part III of this report. In so far

as possible it is desirable to have the bonds retired entirely from revenues of the parking facilities without obligating any other city revenues for this purpose.

4. Lots should be surfaced with black-top and curbs should be installed to protect the parking meters. Entrance and exit ways should be arranged, wherever possible, so as to open onto secondary streets. This will minimize congestion due to inflow and exit of parking traffic on the major arteries.

5. Equitable rates should be established so as not to conflict with those of private operators, but must still be of sufficient amount so as to make the program self-liquidating. These rates should be set up on a schedule so as to benefit the long time parker in the outlying lots.

6. Wherever practicable, parking should be by the individual parker rather than by attendants, and fees should be collected by meter. In this way the convenience to the parker found in curb parking will be approximated in lot parking.

7. Constant surveillance of the parking demand is essential and as the demand necessitates, additional facilities should be made available. These facilities should be integrated into the program so as not to upset the balance of long and short time lots, nor throw any undue financial burden on the program as a whole.

8. None of the initial lots should be of the multi-story type. However, as the need for new facilities arise

the cost of additional property should be carefully weighed against the cost of this type of structure. It is anticipated that by 1957 several of the lots will have required "decking over".

9. All property acquired under this program should be frozen to the use as parking lots for the period of bond retirement.

10. Public interest in this program should be stimulated through the newspaper, radio stations, public improvement organizations, and public forums. As new facilities are made available the public should be informed of their proper use and locations.

GENERAL

The author is fully aware of the limitations of this study. Because of the varying nature of the subject matter, very few of the factors involved can reduced to absolute fact. However, while the individual data may not be wholly accurate, it has been weighted so as to minimize the effect on the conclusions drawn. Furthermore, the proposed program is sufficiently flexible so that it may be altered to meet any warranted contingencies, that may arise, without the breakdown of the program as a whole.

It is the firm belief of the author that this analysis is representative of demands and that the proposed program is a workable solution of the parking problem of the central business district.