

A Report Upon

**FUTURE BRIDGE CROSSINGS
OF THE POTOMAC RIVER**

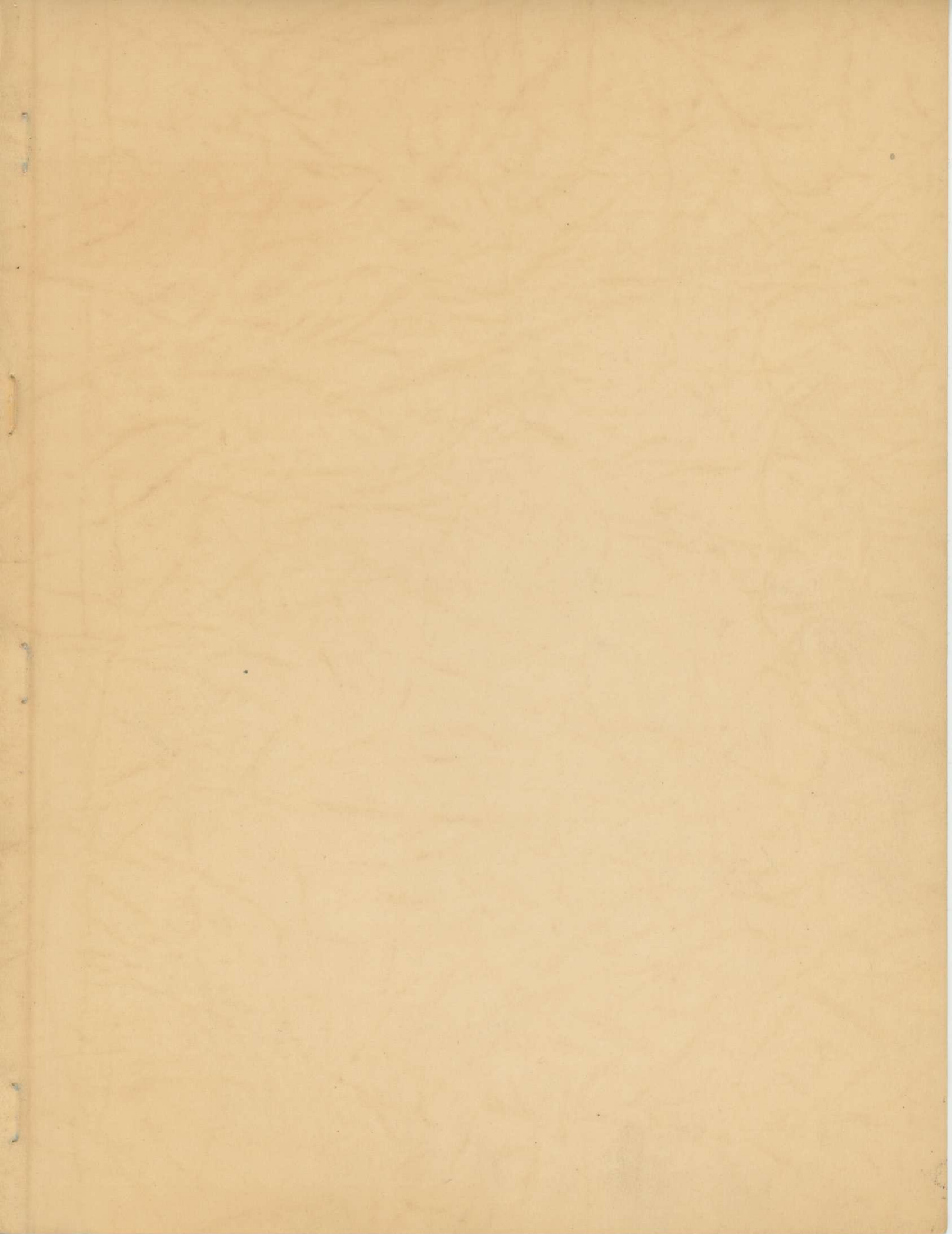
WASHINGTON, D. C.

Prepared for

NATIONAL CAPITAL PARK AND PLANNING COMMISSION

By

**HARLAND BARTHOLOMEW AND ASSOCIATES
CITY PLANNERS
SAINT LOUIS, MISSOURI**



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FUTURE BRIDGE CROSSINGS OF THE POTOMAC RIVER

Washington, D. C.

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Prepared for

THE NATIONAL CAPITAL PARK AND PLANNING COMMISSION

By
Harland Bartholomew and Associates
C i t y P l a n n e r s
St. Louis, Missouri

June 1952

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**National Capital Park and Planning Commission
Washington, D. C.**

Gentlemen:

In accordance with our agreement dated June 6, 1952, we are pleased to submit herewith our report upon "Future Bridge Crossings of the Potomac River."

This report is made for the purpose of assisting your Commission to comply with the terms of an Act of Congress approved March 3, 1952, and entitled "An act to authorize and direct the Commissioners of the District of Columbia to make such studies and investigations deemed necessary concerning the location and construction of a bridge over the Potomac River, and for other purposes." (Public Law 266 - 82nd Congress)

Following are pertinent and significant quotations from the Act. "A bridge so constructed, (i.e. across the Potomac River between Virginia and a point within the District of Columbia,) will be of material benefit to the Federal Government in the event that the dispersal of Federal agencies becomes an accomplished fact; and that the construction of such a bridge is hereby declared to be a desirable project."

"The Commissioners of the District of Columbia shall initiate and enter into such agreement as may be necessary for making and financing the studies and investigations herein authorized with the Bureau of Public Roads, Department of Commerce, and the Department of Highways, State of Virginia, and shall enlist the cooperation of the National Park Service, Department of the Interior, the National Capital Park and Planning Commission, and of any subdivision of the State of Virginia in which any part of such bridge or its approaches or connecting roads would be located, in the studies and investigations made pursuant to such agreement."

During the preparation of this report we have had occasion frequently to consult with the Highway Department of the District in regard to the findings of the 1948 Origin and Destination Survey and to other factual data regarding traffic movements across the Potomac River and elsewhere in the Washington area. We found the officials of this Department extremely cooperative and the information furnished has been invaluable to us in our studies of the bridge problem.

We have also consulted with representatives of the firm of Modjeski and Masters, who are conducting a certain detailed engineering study of the same problem. These conferences were held for the purpose of avoiding any duplication of effort in analyzing the Origin and Destination data and to exchange viewpoints. While our final conclusions regarding the solution to the problem may differ materially from those reached by Modjeski and Masters, we found little divergence of opinion on interpretation of the basic traffic data.

We wish to express our appreciation of the assistance rendered by the Highway Department and the firm of Modjeski and Masters. We also wish to acknowledge the cooperation and help given by the staff of your Commission, without which this report could not have been prepared within the limited time available.

Respectfully submitted,

HARLAND BARTHOLOMEW AND ASSOCIATES

By *Harry W. Alexander*

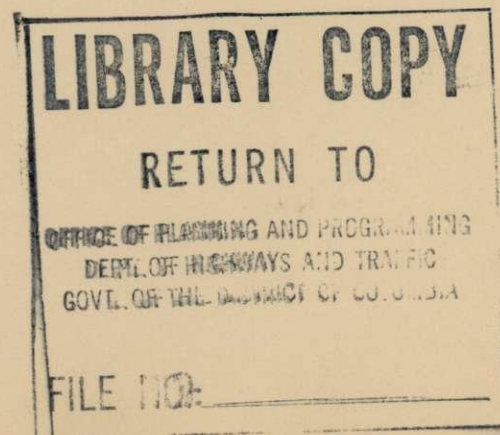


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SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Findings

1. Coincident with a sharp population increase, the Washington Metropolitan Area is rapidly becoming decentralized. Between 1940 and 1950 the District's population increased 20.9 percent compared to increases in Virginia of 132.0 percent and in Maryland of 106.6 percent. 2

2. Government employment in the area is near the wartime peak and is more than double that of 1937. There were in 1951 247,900 employees compared to 111,900 in 1937 and about 280,000 during the wartime peak in 1943.

3. Public transit riding has steadily declined since 1945, the peak year. This decline has amounted to 37.8 percent in the case of the Capital Transit Company, 25.7 percent for the Alexandria, Barcroft and Washington Transit Company, and 17.1 percent for the Arnold Lines.

4. Motor vehicle registration is increasing more rapidly than population in the metropolitan area. Since 1941 population has increased 48.5 percent while motor vehicle registration has increased 68.5 percent.

5. Traffic entering and leaving the Central Business District has increased 31.2 percent in five years.

6. Traffic crossing the Potomac River bridges is increasing at the rate of 7.4 percent annually.

7. 17.5 percent of the total daily vehicle trips in the Washington area have their origin or destination in the business and Government center. (Zero Sector of the Origin and Destination Survey.)

8. Traffic passing through the central area aggregates 45 percent of the total daily trips ~~destined to the area.~~ within the area. 2

9. If the Nebraska and Alexandria bridges had been in existence in 1950, it is estimated that they would have carried respectively 18,230 and 13,854 vehicles daily or 10.0 percent and 7.6 percent of the total 24 hour weekday traffic over all of the bridges. 6.3

7.4

13,327

15,516

1952 10. If the "E" Street Bridge had been in existence in 1950, it is estimated that it would have carried ~~37,530~~ 48,500 vehicles daily or ~~20.6~~ percent of the total 24 hour weekday traffic over all of the bridges.

23.1

Conclusions

1. Public policy in Washington should be directed toward moving more people and less individual passenger vehicles.

2. A basic and integrated plan of transportation is fundamental to a permanent solution of the traffic problem. Such a plan has been formulated by the Commission and should be carried out.

3. Attempts to revamp the downtown street system to accommodate an endless increase in automotive traffic is ill advised as it can only end in eventual failure.

4. Increasing the capacity of arterial streets and bridges at the approaches to the business and Government center will result in crowding more vehicles on the downtown streets which already are overloaded during peak periods. It will impair the movement of the more essential vehicular traffic. Improvements of this nature will merely aggravate present difficulties, not resolve them.

Recommendations

The basic transportation plan as outlined in this report should be carried out as rapidly as funds permit and legal authority can be obtained. Specifically, public policy should be directed toward:

(1) Vigorous prosecution of the plan for dispersing governmental employment centers.

(2) Improvement of the mass transportation system on a metropolitan basis.

(3) Making improvements to the highway system that will facilitate circulation throughout the area. These, in the order of priority should be:

(a) Progressive construction of the inner circumferential route eventually to be completely grade separated.

(b) Construction of the intermediate and outer ring routes including the Alexandria and Nebraska Avenue bridges and the Southwest Freeway.

(4) Carrying out the comprehensive plan for off-street parking facilities, including provision for fringe parking.

INTRODUCTION

Washington is rapidly approaching a crisis. Congestion in the Central Area of the city is becoming critical at many points and the situation grows worse daily. A decision soon must be made whether to attempt further saturation of the Central Area by introduction of additional endless numbers of vehicles or whether to accept, implement and carry out a basic, integrated transportation plan. The location of future bridges across the Potomac River is a fundamental part of such a plan.

A few very important factors are involved in selecting the location of future river crossings. While present pattern of traffic flow must be recognized and given careful study, there are other considerations which are much more fundamental to the problem and which must be given the fullest recognition. These considerations have to do with the principles and objectives of a fundamental and basic plan of transportation for the Washington region.

It is the purpose of this report to analyze these broad planning principles and to consider the following:

1. The basic transportation plan as set out in the comprehensive plan of Washington and its environs.
2. The functional value of future bridge crossings to this basic plan.
3. The manner in which the location of future Potomac River crossings can aid in reducing traffic congestion in the central area.

4. The ultimate effect upon the form and character of the Nation's Capital that will result from continually providing more facilities for moving more traffic into the central part of the city.

5. A review of the findings of the District Department of Highways based upon their analysis of the 1948 Origin and Destination Survey in respect to present and future traffic movements across the river.

Planning Considerations

The National Capital Park and Planning Commission long has recognized that the traffic problem primarily is one of moving people and goods and not the moving of more motor vehicles. The Comprehensive Plan of 1950 outlined this and other planning objectives in the following language:

- (1) "To move people and goods in and out of the metropolitan region, and from place to place within it, quickly, safely and economically."
- (2) "To further the welfare of the 2,000,000 people who will be living in the metropolitan community thirty years hence."
- (3) "To encourage a stable, attractive and profitable central business area."
- (4) "To preserve the best of the past in city building and experience, joined with leadership in new sound ways of development."
- (5) "To develop a National Capital that will be loved and honored for its eminence among cities - an inspiring symbol, to citizens and visitors, of the dignity and vigor of American democratic government."

A grave danger exists which not only threatens the stability of the Central Business District but also the essential character of the entire center of government in the

rapidly increasing vehicular traffic throughout the District and the concomitant congestion found in nearly all parts of the Central Area. The way to remove this danger is by a basic integrated plan rather than by palliatives which accept and continue the error. The essential parts of this plan are as follows:

1. Prevention of further concentration of Federal employment establishments in the congested area together with effecting a better distribution of such employment centers over an extended central area and throughout the outlying points of the region.
2. Development of a thoroughly efficient transit system. Movement of people is the first consideration. Movement of vehicles is secondary.
3. Maintenance or development of good residential areas within walking distance of the Central Area and some satellite towns at decentralized Government centers.
4. Development of a plan for improved major highways, expressways, freeways and parkways, throughout the metropolitan area for use by both mass transportation vehicles and private automobiles, supplemented by an adequate and convenient system of parking facilities.

FACTORS INFLUENCING THE PRESENT CRITICAL
TRAFFIC SITUATION

Population has Risen Rapidly in the Metropolitan Area

Since 1900 the population of the District has increased from 278,718 to 804,178 or ^{186.5}~~180.6~~ percent. During the same period the National Capital region including Montgomery and Prince George's counties in Maryland, Alexandria and Arlington and Fairfax County in Virginia increased from 378,605 to 1,466,035, or 287.2 percent. (See Table 5, Regional Aspects of Comprehensive Plan.)

The Metropolitan Area is Becoming Decentralized

In 1900 the District represented 73.6 percent of the metropolitan area's population. By 1950 this percentage had declined to 54.7 percent and undoubtedly this trend will continue in the future. Between 1940 and 1950 the District's population increased only 20.9 percent whereas the population in Virginia increased 132.0 and the population in Maryland increased 106.6 percent. (See Table 5, Regional Aspects of the Comprehensive Plan.)

Government Employment in the District Area Continues High

Federal employees in the District area were estimated at 247,900 in 1951 compared to the war-time peak of about 280,000. Present employment is more than twice that of pre-war 1937. Geographic distribution of present employment is approximately as follows: Old City, 74 percent; in District

outside of Old City, 2 percent; in Virginia, 21 percent; and in Maryland, 3 percent.

Public Transit Continues to Lose Patronage to the Private
Motor Vehicle

Since the peak year of 1945 there has been a steady decline in the number of passengers carried by the three principal transit companies. In 1945 the Capital Transit Company, serving the District, carried a total of 531,000,000 passengers. Since then there has been a steady annual decline and in 1951 only 330,000,000 passengers were carried.

Similar trends are observed on the two transit systems serving the Virginia portion of the Metropolitan Area. The Alexandria, Barcroft and Washington Transit Company primarily serves the southern part of Arlington County and the City of Alexandria and carried approximately 29,100,000 passengers in 1945. In 1951 these lines carried 21,620,000 passengers. The Arnold Lines, which serve the northern portion of Arlington County, carried approximately 15,000,000 passengers in 1945. In 1951 this number had declined to 12,435,000. The decrease in passengers carried on the Virginia bus lines is particularly significant as population has sharply increased in the 1945-1951 period.

Motor Vehicle Registration is Increasing More Rapidly than
Population in the Washington Area

Since 1941 the population of the Washington Metropolitan Area had increased 48.5 percent. During the same period motor vehicle registration has increased 68.5 percent.

While no official registration figures are available for Maryland and Virginia counties (except in Arlington and Alexandria where local licenses are required), it is possible to approximate motor registration in these counties by applying the state ratio of persons to automobiles to the county population. It is realized that county ratios may differ from these on a state-wide basis and any estimates prepared in this manner may be at variance with actual conditions.

The number of persons per motor vehicle has decreased from 4.1 to 3.5 since 1940 in Maryland and from 5.4 to 3.7 in Virginia. The District ratio has remained constant during this period at 4.2. Nationally the persons per vehicle has declined from 4.1 in 1940 to 3.1 in 1950. It is possible that the Washington area ratios will approach those of the nation as a whole during the ensuing years. If this occurs, the trend in motor vehicle ownership will continue to be in excess of future population increases.

Motor vehicle registration in the District has increased only 22.6 percent between 1940 and 1950 compared to 178 percent in the Maryland and Virginia parts of the Metropolitan Area. This points to the necessity of giving priority to

needed highway improvements in the suburbs as well as to those projects which are designed to expedite radial movements between the center of the area and the suburban residential districts. A balanced program is essential.

Traffic Entering and Leaving the Central Business District has Increased Annually since 1946

The District Highway Department makes periodic cordon counts around that part of the Central Area bounded by "K" Street, 7th Street, Constitution Avenue and 21st Street. In 1951 397,241 vehicles were counted crossing the cordon compared to 302,289 in 1946 for a ten hour period. This is an increase of 31.2 percent in five years. 24-hour volumes in 1951 aggregated 624,272 vehicles, but no comparable data for 1946 is available.

There have been no significant changes in the percentage of traffic entering and leaving the area from the east, west, north or south since 1946. Then, as now, approximately 18 percent crossed the 21st Street boundary (west), 38 percent crossed "K" Street (north), 27 percent crossed 7th Street (east) and 17 percent crossed Constitution Avenue (south).

In the thoroughfare study made in connection with the Comprehensive Plan in 1948, it was estimated that the street system of the downtown area was operating at about 75 percent to 85 percent of its peak hour capacity. Since that time an increasing number of vehicles continue to pour in and out of

the area. Obviously the saturation point is about reached and further increases in traffic in the area will result in virtual strangulation.

It would seem pertinent to raise the question of what will be the ultimate effect upon traffic circulation in the Washington Circle and Lincoln Memorial area if, in addition to the thousands of vehicles now entering the area by way of the Whitehurst Freeway, the Rock Creek and Potomac Parkway, Twenty-third Street and the Memorial Bridge, an additional 40 to 50,000 vehicles daily were superimposed upon the already overloaded streets in this part of the city.

Traffic Crossing the Potomac River Bridges is Increasing
Rapidly

In April 1941, 121,057 vehicles crossed the four Potomac River bridges during an average 24-hour weekday period. In April 1952, 210,636 vehicles were counted in a comparable period. This is an increase of 74.0 percent in 10 years or an average annual increase of 7.4 percent. The greatest numerical increase has occurred at the Highway Bridge, over which 96,679 vehicles crossed during an average weekday in 1952, compared to 45,567 vehicles in 1941. This is a percentage increase of 112.2 and was brought about largely by the construction of the new bridge in 1948 which doubled the capacity. The Key and Memorial bridges show increases of 42.7 and 46.0 percent, respectively, during the same period,

while Chain Bridge has had an increase in traffic of 151.1 percent. The increase in peak hour traffic has been at about the same rate as the daily increase. This trend is particularly significant as it is during the morning and evening rush hour that difficulties occur at the Bridge approaches. The abnormal Government employment in the Central Area undoubtedly is the principal cause of this increase.

Analysis of the trends revealed in the above statistics leads to the following conclusions:

1. Present and proposed policies of increasing traffic capacities of bridges across the Potomac leading to the Central Area, if continued, inevitably will result in further overloading the street system, parts of which now have reached their practical capacity during peak hours.

2. Barring pronounced changes in national or international conditions, it seems apparent that Government employment in the Washington area will continue indefinitely at its present high level. Concentration of this employment in the Central Area is a principal cause of present traffic difficulties.

3. Mass transportation is facing a financial crisis, which, unless averted, will result in bankruptcy. If this eventuality occurs present difficulties of relieving Central Area congestion will be further complicated.

SEE
Pg 5
"Movers"
Pg 4
Pg 2
Pg 3
Pg 4
Pg 5

REVIEW OF HIGHWAY DEPARTMENT'S ANALYSIS OF ORIGIN
AND DESTINATION SURVEY

It is beyond the scope of this report to make an independent analysis of the 1948 Origin and Destination Survey of the Washington metropolitan area. Such an analysis would require far more time than is available and would duplicate the work done heretofore by the Planning Section of the District Department of Highways and the analysis currently being undertaken by Modjeski and Masters under the terms of their agreement with the District. Instead, a summary of the results of the Highway Planning Section's studies which are pertinent to this inquiry follow:

1. The Business and Government Center of Washington is a Principal Objective for Traffic Movements in the Survey Area

Sector Zero of the Origin and Destination Survey embraces the central area of the city and includes the major business areas and government installations located between the Capitol and the Potomac River and between "K" and "H" Streets and Independence Avenue.

There were in 1950 an estimated 152,000 trips with destinations within the Zero Sector and an equal number originating there. These compare with the 1,725,000 estimated daily trips throughout the Survey Area and constitute 17.5 percent of the total movements.

2. A Large Part of the Traffic Found in the Central Area is Passing Through and has no Business There

The estimated 152,000 daily trips having destinations within the Zero Sector total but slightly more than the 122,500 trips passing through the area with destinations at some outside location. This through traffic amounts to about ~~45~~²⁵ percent of the total movements in the congested center.

3. Much Traffic in the Central Area Moves from One Point to Another Without Leaving the Zero Sector

In addition to the traffic destined to the Zero Sector and traffic passing through the area, there were an estimated 74,500 internal trips daily, which add to the traffic load. These internal trips amounted in volume to 49 percent of the total number of trips destined to the Central Area and 61 percent of the number of through trips.

4. A Relatively Small Amount of Traffic has its Origin and Destination Beyond the Survey Area

Of the total 1,725,000 estimated daily trips made in 1950 in the Washington metropolitan area, 226,000 or 13.1 percent were from points beyond the survey boundaries. Approximately 13 percent of the internal trips and 18 percent of the external trips were made by trucks.

Traffic Movements Across the Potomac River

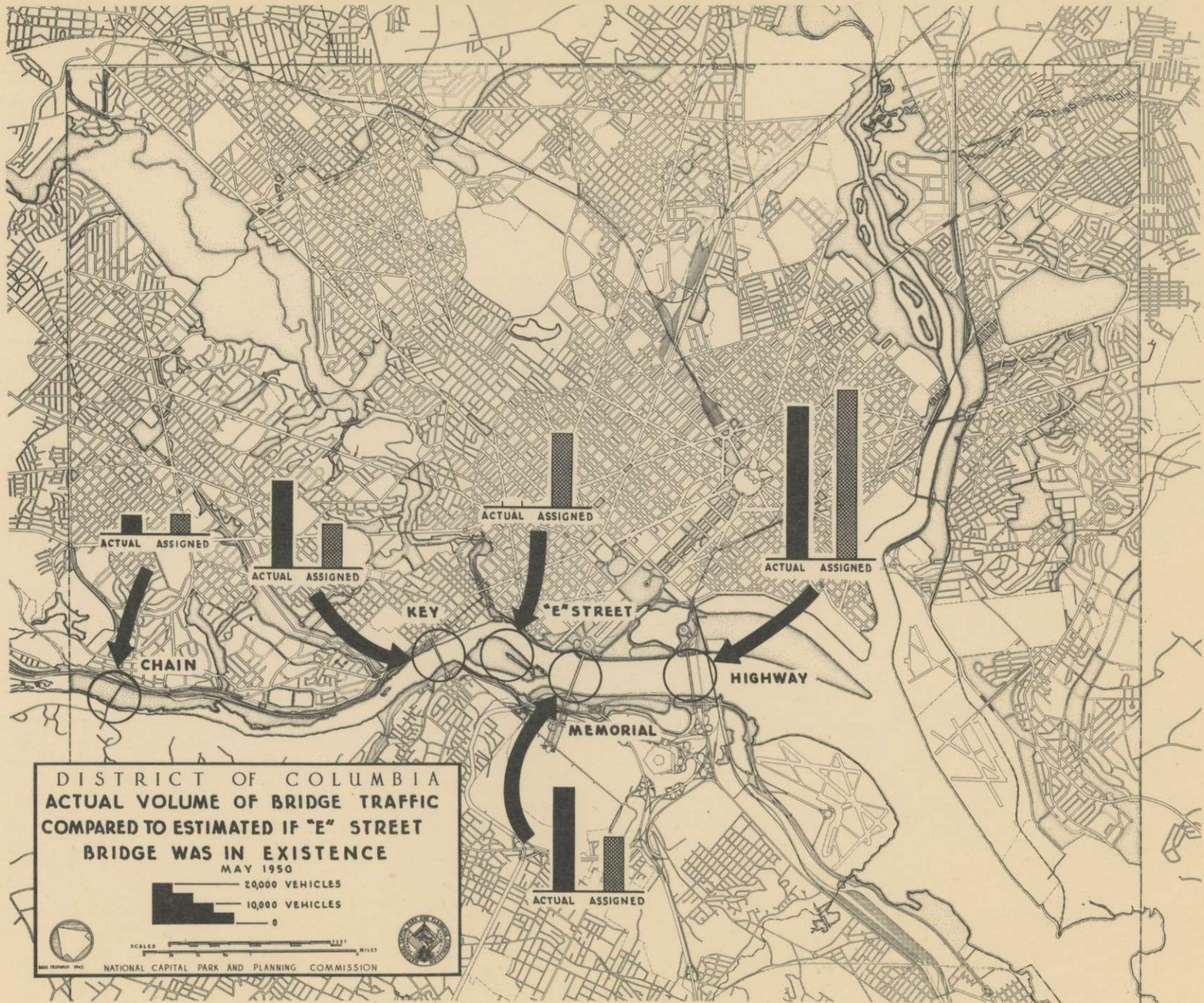
The Highway Planning Section also has prepared an analysis of the traffic movements across the four Potomac River bridges

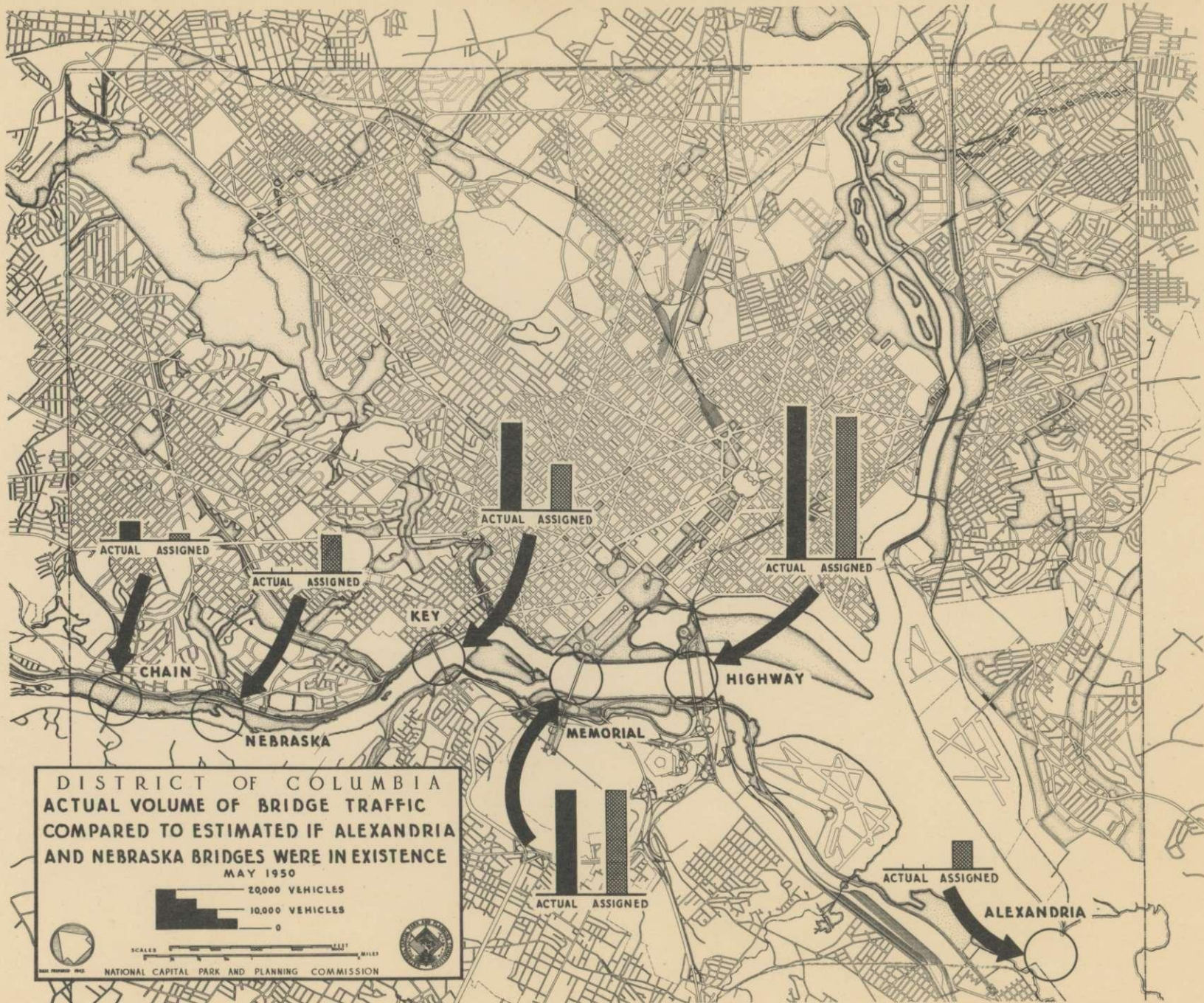
in 1950 and the theoretical movements which would have occurred if the proposed Nebraska Avenue and Alexandria bridges had been in existence at that time.

The analysis shows that the Nebraska Avenue Bridge would carry ^{6.3}~~10~~ percent of the total cross-river traffic and that it would chiefly affect the Chain and Key bridges, reducing their volume from ^{5.3}~~4.9~~ to ^{4.4}~~1.6~~ percent and ^{22.7}~~24.1~~ to ^{19.3}~~12.6~~ percent of the total, respectively. The Alexandria Bridge would carry approximately ^{7.4}~~7.6~~ percent of the total traffic and would reduce the volume on the Highway Bridge from ^{46.0}~~42.3~~ percent to ^{38.6}~~39.4~~ percent of the total. It was concluded that Memorial Bridge traffic would be affected neither by the Nebraska Avenue nor the Alexandria Bridge. Details of this analysis follow.

Bridge	⁵² 1950 Actual (1)				⁵² 1950 Assigned (1)			
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Chain	11,156	8,900	5.3	4.9	9,168	2,917	4.4	1.6
Nebraska	--	--	--	--	13,327	18,230	6.3	10.0
Key	47,646	43,900	22.7	24.1	40,546	22,970	19.3	12.6
Memorial	54,763	52,400	26.0	28.7	50,563	52,502	24.0	28.8
Highway	96,679	77,100	46.0	42.3	81,124	71,827	38.6	39.4
Alexandria	--	--	--	--	15,516	13,854	7.4	7.6
Total	^{210,244} 210,244	182,300	100.0	100.0	^{210,244} 210,244	182,300	100.0	100.0

(1) Average 24-hour daily volume. Peak hour percentages of total daily volumes at the various bridges are as follows: Highway, 9-10; Key, 11-12; Memorial, 14-16.





Another analysis based upon the theoretical presence of five Potomac River bridges including the proposed "E" Street bridge, showed that under those conditions the "E" Street bridge will reduce the traffic on Key and Memorial bridges, would have no predictable effect upon the Chain Bridge; but that Highway Bridge traffic would be increased. Details of this analysis follow.

Bridge	1952	52 1950 Actual		52 1950 Assigned	
		Number	Percent	Number	Percent
Chain	11,156	8,900	53 4.9	10,509	9,408 5.0 5.2
Key	47,646	43,900	22.7 24.1	24,736	22,130 11.7 12.1
Memorial	54,763	52,400	26.0 28.7	31,071	27,800 14.8 15.3
Highway	96,679	77,100	46.0 42.3	95,428	85,432 45.4 46.8
"E" Street		---	--	48,500	37,530 23.1 20.6
Total	210,244	182,300	100.0	210,244	182,300 100.0 100.0

Both of the above analyses are the result of the application of judgment in interpreting the 1948 Origin and Destination Traffic Survey by the District Highway Planning Section. Similar but independent analyses have been made by Mr. Lloyd B. Reid, traffic engineer for the firm of Modjeski and Masters, and while there are slight differences in the estimates, the two are in general agreement. Plates 1 and 2 show graphically the estimates of traffic flow under the two conditions described above.

EVALUATION OF THE THOROUGHFARE PLAN

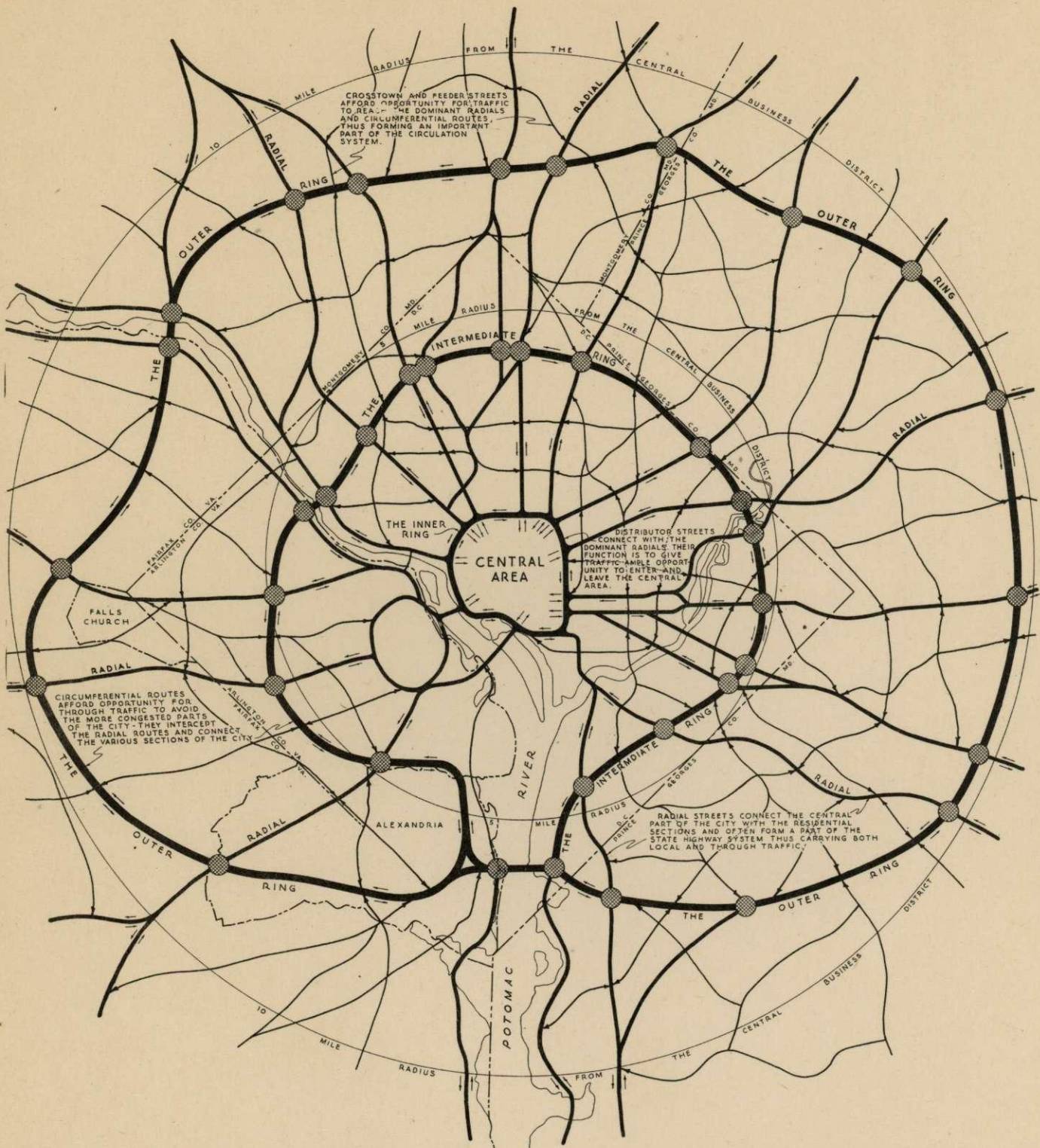
When the District and Metropolitan Area Thoroughfare Plans were prepared by the Commission and its consultants in 1948-49, results of the comprehensive Origin and Destination Traffic Survey for the area were not available. There was, however, sufficient data relative to traffic movements throughout the area to permit an intelligent analysis to be made of the principal problems facing the city. The resulting Thoroughfare Plan admittedly was preliminary in nature and subject to revision after results of the Origin and Destination Survey became available. Because of a severe shortage of personnel, it has not been possible for the staff of the Commission to complete the restudy of the Plan as yet.

Premises

The Thoroughfare Plans were based on several premises derived from past experience and known facts. These might be summarized as follows:

1. The Central Business District and its adjacent governmental employment centers generate extremely large volumes of traffic during the rush hours. As a result, the downtown streets are becoming increasingly congested and at certain key points practical capacities are being approached or even exceeded.

2. The spread of Washington over an ever-enlarging area, together with the rapid increase in the number of motor vehicles and their use emphasizes the critical need for developing modern highway facilities designed not only to expedite movement between the Central Area and the outlying residential districts, but to inter-connect each major area, one with the other throughout the Washington region.



NATIONAL CAPITAL PARK AND PLANNING COMMISSION
DIAGRAMMATIC REGIONAL THOROFARE PLAN

LEGEND

● MAJOR INTERCHANGE POINTS



Proposals

The Comprehensive Plan provides a broad, long-range solution - a basic plan of transportation. Briefly it proposes:

1. A system of radial freeways and expressways located and designed to move large volumes of traffic quickly and safely between the several parts of the Metropolitan Area.

2. An inner, intermediate and outer circumferential or ring route intercepting all dominant radial thoroughfares, thus permitting traffic to bypass congested centers and to disperse itself throughout the region.

3. A coordinated and integrated system of secondary main thoroughfares interconnecting all points of the region with the dominant radials and ring routes, thus permitting traffic movements expeditiously to reach a principal radial or circumferential route.

The accompanying drawing (Plate 3) illustrates diagrammatically and graphically the principles upon which the Thoroughfare Plan is based.

Results of the Origin and Destination Survey show that the premises upon which the Plan is based are sound. These results were summarized in a preceding section of this report. They show that although a substantial number of daily trips are in and out of the Central Area (17.5 percent of total trips) the predominating movements are spread throughout the region. They also show that 45 percent of all traffic entering the Central Area is passing through from one part of the region to another and unnecessarily adds to the congestion. These facts give added emphasis to the soundness of the Thoroughfare Plan in its broad and principal aspects.

Undoubtedly, some changes and revisions in the detailed location and scale of the individual routes comprising the system will be found advisable upon further study. These changes, however, should strengthen the validity of the plan as a whole.

APPLICATION OF PLANNING PRINCIPLES TO THE LOCATION OF
FUTURE POTOMAC RIVER BRIDGES

Previous sections of this report have outlined the considerations which have entered into the planning of the Nation's Capital since the inception of the National Capital Park and Planning Commission many years ago. Recent trends in population growth and traffic movements throughout the region, particularly those across the Potomac River bridges, have been analyzed and certain conclusions drawn as to what lies in the future. This section of the report is concerned with a discussion of what might be termed the basic planning approach to solving Washington's traffic problems in contrast to accepting the inevitability of continued growth of traffic concentration in the city's center which will necessitate more and more traffic facilities which in turn will attract more and more automobile ad infinitum. The inevitable result of a projection of this policy will be an endless pyramiding of costs, a persistent erosion of property values in the Central Business District, and the eventual destruction of those priceless assets of parks and open spaces which make Washington one of the most beautiful cities in the world.

It is generally agreed by all who are conversant with the traffic movements across the Potomac River that the present bridges are rapidly approaching their practical peak-hour capacity. Indeed, the peak-hour traffic across the new

Highway Bridge finished only two years ago now exceeds its design capacity. It is also evident by casual observation that Central Area congestion is growing increasingly critical and that relief is imperative.

A Basic and Integrated Transportation Plan

It is proposed that this relief be afforded by vigorously promoting the basic and integrated transportation plan, heretofore prepared by the Planning Commission, rather than by building additional bridges leading to the Central Area.

*Not
new in
conflict.*

The reasoning behind this recommendation may be summarized as follows: The automobile today makes possible a potential urbanized area of unlimited size. However, most people are unwilling to spend more than 30 minutes in driving between home and place of employment. There are significant factors now becoming apparent that will prescribe the physical limits of urbanization to an area much smaller than formerly seemed possible. Some of these emerging limitations are as follows:

(1) Street congestion is becoming most acute and the delays encountered reduce the distance traveled in any fixed time.

(2) Driving is becoming more of a strain, both physical and mental, thus causing many women and persons of less robust nature to restrict their driving. It is no longer a pleasant diversion.

(3) Truck traffic is increasing to such an extent as to discourage the use of private automobiles on main highways and on heavily used city streets.

(4) The parking problem is becoming constantly more difficult, more time consuming and more expensive.

(5) Traffic accidents and fatalities have increased to the point where automobile driving is universally recognized as hazardous - and progressively so.

(6) While times are prosperous, the cost of driving individual passenger cars is not a factor of concern to a large segment of the population. Once the upward trend in the national economy slows or turns downward, however, the realization of the high cost of operation will cause a marked shift to mass transportation. At 7¢ per mile for operations and 25¢ for parking (a most conservative figure in Washington) the daily cost is \$1.09 for a driver whose home is six miles from the office, and \$1.39 for one which is twelve miles. Even allowing a substantial part of overhead cost of the auto for family recreation purposes, there is a wide gap between this daily transportation cost and that of the mass transportation carrier.

We have not yet experienced the full impact of the automobile on our cities. Production capacity is very large and manufacturers will continue to produce so long as demand holds up. Our national figures show 31,104,000 vehicles registered in 1940 and 44,651,000 in 1951, which represents an increase of 43.6 percent in the short span of 10 years. (In the District registration has increased 22.6 percent in the last decade while in Virginia and Maryland parts of the metropolitan area registration increased 178 percent during the same period.) To what extent will the vast changes brought about by the automobile alter the form and character of the American City? Will the city of tomorrow be widely dispersed with much scattered development and extremely low population density? Certainly that would seem to be the present trend. Complete or even extensive transformation of a city is a slow process, however. Many things can happen meanwhile. As the difficulties mentioned

above become more acute and more widely recognized, it becomes apparent that the extent of decentralization may be much more sharply limited than we expect. If such an eventuality occurs the shift from mass transportation to individual passenger car transportation will be halted - not by law or regulation, but by limitations of inconvenience, cost in time and money, and increasing danger to life and limb. These are very effective limitations.

This matter of excessive decentralization requires careful consideration, not alone from the transportation standpoint, but because of the effect upon numerous other aspects of urban life. To what extent is excessive decentralization causing central blight and impairment of the tax base, for example? What is the full price of building all of the new streets, bridges, expressways and parking facilities required for a full transfer from mass transportation to individual cars? Will the end result constitute a distinct improvement in conditions?

Requisites of the Plan

City street and highway systems cannot take the full potential load, except in small cities. The price we are paying is too great for the results obtained. It is in the public interest from the standpoint of public convenience, public safety and general economy of the community to concentrate on developing thoroughly sound mass transportation. We are all familiar with the requisites of such a plan. A brief check list of some of these would include:

- ON-STREET
- (1) Prohibition of parking during rush hours in the Central Business District.
 - (2) Prohibition of parking during rush hours along the main traffic thoroughfares.
 - (3) Ample curb loading zones.
 - (4) Installation of a coordinated traffic signal system.
 - (5) Revision of routes to eliminate duplication and speed up flow of public transportation.
 - (6) Development of more express service.
 - (7) Analysis of operation cost and adjustment of service with the type of vehicle best suited to areas of varying population density.
 - (8) Continual study of the traffic flow problem and adjustment to speed flow.
 - (9) Adoption of staggered work hours.
 - (10) The establishment of perimeter parking lots.
 - (11) Revision of suburban commuter service by railroads.
 - (12) More study of new forms of rapid transit.

Practically all of the above steps have already been taken in Washington, but the problem still exists indicating that more comprehensive measures must be taken.

This does not mean halting individual automobile traffic. It does mean restricting it where necessary for better accommodations for the majority of the traveling public. It does mean giving mass transportation first consideration as the basic and predominant means of transportation. It does mean restricting the automobile to its rightful place as a supplemental vehicle to be accommodated only after major transportation needs have been provided for.

This is a decision that must be made at the top administrative level. Once it is made, a wider acceptance of mass transportation can then be expected.

Economic and Financial Factors

From the preceding discussion, the following is apparent in a modern metropolitan city, such as Washington:

(1) Any planning for mass transportation facilities begins with recognition of the fact that there is a wide diversity of population density in the areas to be served. (High in central areas, medium in intermediate areas and scattered and low in fringe areas.)

(2) Population growth will not be sufficiently great to produce a population density in many parts of the metropolitan areas to permit mass transportation service on a self-supporting basis, so a public subsidy in certain of these areas will be needed if this service is to be provided.

(3) It will be unfair to place the burden of this subsidy on riders in the central and intermediate areas, or on owners of homes and other real property in such areas.

(4) Since the transportation needs of larger cities, especially in metropolitan communities, cannot be met by individual passenger autos, it is imperative that a good mass transportation system be planned and constructed to service the central and intermediate sections and as much of the fringe areas as is economically justified. A definite Mass Transportation Area should be delineated.

At this point the question arises as to how this can be done. There are two aspects to the answer to this question, (a) finance, and (b) the role of government. As for the role of government, there are four principles to be remembered.

1. It is a government obligation to see that a mass transportation system be provided and to insure good service.

2. Where a private company exists, government must establish adequate standards of service.

3. Since a metropolitan area is merely a city grown large with a common economic and physical unity, the transportation system must be expanded and developed on a unified area basis.

4. If there is no private company (or if a private company collapses, as some have done recently), government should see to it that a metropolitan transit authority is established with power to build and to assure a reasonable standard of service.

While the modernization of the transit system as outlined above is of first importance there are further steps which should be taken to implement the basic transportation plan.

Other Recommendations

Immediate steps should be taken to make definite plans for constructing the Inner Ring Route, parts of which should eventually be grade-separated, including the Southwest Expressway.

Further studies should be made on the development of both the intermediate and outer circumferential routes, of which the Alexandria and Nebraska Avenue bridges are integral parts.

The program of the Motor Vehicle Parking Agency should be further analyzed and those projects which are found to be economically feasible and in conformity with sound planning principles should be carried forward without delay.

It is recommended that the "E" Street Bridge should not be constructed for the following reasons:

1. The additional traffic load which would be imposed upon the street system in the vicinity of its approaches in the District of Columbia, as well as in Virginia, would aggravate an already critical situation during peak traffic periods.

2. To alleviate these conditions, extremely expensive improvements to the approach street system would be required. These improvements might temporarily alleviate congestion, but if present trends continue and vehicular traffic increases within the Central Area, the new facilities will soon be used to capacity and the problem will remain unsolved.

