

MOTORWAYS

During this century the automobile has become a major influence on our way of life. Thirty years ago in the United States there were 26,532,000 registered vehicles; by 1960 the number had increased to 73,897,000, a growth of 178 percent. During the same period in Hamilton County, the number of vehicles increased from 137,772 to 305,000. Thirty years ago there were 4.28 persons per vehicle in the county; today the ratio is 2.84. Obviously, however, this ratio is beginning to stabilize and even though the ratio does not decrease in the future, the anticipated population growth in the county would result in their being some 460,000 registered vehicles by 1990.

The original street system of Cincinnati in the basin area was the typical gridiron pattern. This pattern was generally abandoned as urban development encountered the steeper hillsides away from the basin. Development then was laid out in relation to the series of rural roads and lanes that had been established inter-connecting Cincinnati and other communities in the area. Because of the rough topography these country lanes were established not so much on section lines (as in cities on flatter sites to the west) but rather they were established in the most likely locations provided by the topography, in valleys and along the ridges. Steep grades and sharp curves were typical. As certain of these lanes were designated as parts of the state and federal highway system, they were improved. Wherever possible the grades were flattened a bit and the curves straightened out a little; in other cases the existing roads were so inadequate that new locations were selected. Much of the original network remains, however. When great numbers of automobiles endeavor to use a street system laid out in this manner, obvious difficulties, congestion, and hazards are encountered. The State Highway Department, the County and the various communities involved have struggled mightily to keep up with this problem with very limited resources. We have been loathe to face up to the full implications of the automobile.

This is despite the fact that the street system is the most important physical facility in the community, providing access to the structures where people live and work, space for the location of essential public services and utilities, but most important of all, a major means of transportation, essential to the economic health of the community. Goods must be transported from place to place within the urban area. The products of the community's factories must be transported to their customers or moved to other forms of transportation. A large part of

the daily movements of workers from their homes to places of employment takes place by means of privately-owned automobiles. The use of the automobile becomes even more predominant as urban growth scatters over a wider land area and particularly as centers of employment become dispersed, making far more difficult the provision of a mass transportation facility.

This revised County Master Plan does not include a separate analysis of transit systems or of mass transportation; a study of mass transportation will be made as a part of the development and transportation plan for the whole Cincinnati region to be started this year. This transportation plan will include a much more detailed analysis of transportation and travel patterns, present and future, and their interrelationships than was possible in the present report. Mass transportation in its various forms will be fully considered in relation to highways and other transportation facilities.

The economic life of Hamilton County is dependent upon an efficient traffic circulatory system. Such a system should serve the economic and physical conditions of the community giving full recognition to present and potential commercial and industrial development. Residential neighborhoods should be protected from the harmful effects of fast-moving, heavy traffic by routing major thoroughfares around the edges rather than through their centers. The Motorways Plan should provide a framework within which a desirable residential environment can be created. Routes for new highways, and particularly the freeways, should be selected in such a manner as to provide the minimum damage to existing property values and amenities.

The Motorways Plan is an endeavor to reserve in the proper location adequate rights-of-way for the major thoroughfares required to serve the future population. The Motorways Plan is essential to proper direction of subdivision development, to the proper design of residential areas, to the location of major commercial and industrial districts, and to the most efficient use of the limited public funds available for construction of motorway improvements.

The Motorways Plan presented in this report has been designed to be a coordinated part of the County Master Plan, not an isolated entity. It has been carefully related to population distribution, land use, schools, parks, and the other component parts of the urban pattern. Similarly,

the land use pattern, in many instances, has been designed and adjusted in relation to the Motorways Plan.

One of the most useful functions that can be served by a Motorway Plan is the coordination of actions on the state, county, and municipal levels in making street and traffic improvements. Nothing but a hodge-podge and a waste of public funds will result unless all of the public agencies involved focus their attention upon carrying out a single, coordinated plan.

The major function of the Regional Planning Commission in this matter is in the provision of adequate right-of-way in the proper location for the motorway facilities that will be needed. The exact width or type of paving, exact geometric standards followed, traffic control measures and devices used are of concern only as they may affect the location and the width of right-of-way. The Regional Planning Commission must have a plan of this type in order to satisfactorily administer the regulation of land subdivision within the unincorporated parts of the County. The State and County Highway Departments and the municipalities need a much more detailed Motorways Plan; however, the additional detail must necessarily be based upon a plan for location and width of the motorways, merely making more valuable the planning work undertaken herein.

The 1948 Metropolitan Cincinnati Plan prepared by the Cincinnati Planning Commission included a Motorways Plan. This plan has been officially adopted by the Cincinnati City Planning Commission and by the Hamilton County Regional Planning Commission. It has been used by the Regional Planning Commission in the control of land subdivision. Unfortunately, however, this plan was not adopted by the Ohio Highway Department and in quite a number of instances, the state has made major deviations in the plan. The State Highway Department has an overall statewide expressway scheme and has made location studies for the Northeast and Northwest Freeways, the Circle Freeway, the Colerain Modified (U. S. 27) Expressway and for the Mill Creek Expressway. Major elements of this system are under construction. Hamilton County has a highway improvement program which generally follows the 1948 Motorways Plan, with a few variations.

The plan proposed herein is essentially an updating of the 1948 Motorways Plan. In almost all instances, it incorporates the present plans and thinking of the State and County Highway Departments, unless

these are at such a wide variance with basic planning principles as to cause a modification to be suggested. The plan has been related to probable future county land use.

However, in no sense is the plan a complete and adequately documented street and highway transportation study. Traffic volume information throughout the county is not complete; much information is available within the City of Cincinnati and on state highways, but there is inadequate information in other areas. The last complete origin-destination survey was undertaken in 1946. While parts of this were brought up-to-date in 1954, the 1954 study had serious limitations - for example, it did not include the origin of traffic in the Kentucky area. An up-to-date origin-destination survey will be undertaken, along with other travel and transportation analyses, in the development and transportation studies for the Ohio-Kentucky-Indiana region to begin this year. Traffic volumes and patterns will be projected to 1985 in relation to a land use plan for the region. This analysis may indicate the need for some changes in the Motorways Plan, but it is not likely that these changes will greatly affect the plan in the area of immediate concern - i. e. , in relation to the control of land subdivision.

Principles

Major and Minor Streets

Experience has shown that traffic can be best accommodated by developing a few streets with wide pavements and direct alignment with traffic control devices arranged to expedite the flow of traffic on the principal arteries. These arteries or thoroughfares are the "motorways" on which most of the traffic of the urban area could be accommodated. Such a system should consist of less than one-fifth of the total street mileage. With few streets of wide, high-type pavement accommodating the great majority of the traffic, the remaining streets (mostly residential in nature) can be improved with narrow, less expensive pavement.

The major street system should be designed as a network accommodating the principal movements of traffic between the residential districts, employment centers and the major commercial districts. In the usual single-family neighborhood the major streets should be spaced approximately one-mile apart. In semi-urban areas, in rural areas and areas where there is little or no development a much wider spacing is satisfactory. In the closer-in areas where densities are much higher a

closer spacing of major streets of between one-fourth and one-half mile becomes necessary. As discussed in a previous section of this report, the major streets divide the urban area into "cells" or "units". There are many advantages in developing each of these cells as a "neighborhood unit" with the boundaries being major streets or changes in land use and the center of the neighborhood being a combination of an elementary school and a neighborhood park. Such an arrangement results in a much more desirable residential area, is economical insofar as mileage of well-improved motorways is concerned, and contributes much to the amenities of the general residential development. In a large metropolitan area, heavy concentrations of traffic warrant the construction of expressways or freeways. As a general principle, spacing of freeways should be at distances of four to five miles throughout the more heavily developed portions of the urban area.

Motorways by Function

There are three major types of motorways according to the function they provide:

Radial Thoroughfares. The central business district and the central industrial areas constitute the principal objective for metropolitan traffic. The first and most important function of the Motorways Plan is to provide adequate facilities for the interchange of traffic between these central areas and the residential sections of the community. The radial routes should proceed as directly as possible from the central area to all of the residential sections in the community. The more significant of the radial thoroughfares continue on into the trade area as parts of the Federal Highway System. In form, the radial thoroughfares resemble the spokes of a wheel.

Cross-Town Routes. As urban areas become large, the proportionate amount of cross-town or "counter-radial" traffic increases significantly. This traffic consists of movements from residential areas to outlying centers of employment and from one residential area to another. Traffic to and from the industrial concentrations in the northern end of the Mill Creek Valley, for example, may be classified as "cross-town" traffic.

Circumferential and Distributor Routes. There should be a system of circumferential routes carrying traffic around areas of

concentration and around the more heavily developed parts of the entire urban area. For example, there should be a "loop" around the central business district; there should also be intermediate circumferential routes between the loop around the central business district and an outer belt highway.

Functions of different parts of the motorways system are interchangeable in many cases. Cross-town streets are frequently used for circumferential movements, and, in many cases, portions of the radial highway network serve cross-town traffic. The need is for a coordinated system serving all three types of traffic movement.

Types of Motorways

The freeway or expressway is the most important element in the motorways system. Such highways are best typified by the Mill Creek Expressway; through traffic lanes are completely separated from crossing traffic; access is completely controlled; wide right-of-way are essential and the construction is quite expensive, particularly through developed areas. However, a freeway will carry three to four times as many vehicles per hour per moving lane of traffic as the more conventional major street. A freeway built to satisfactory standards is able to carry between 40,000 to 60,000 vehicles per day.

Supplementing the freeways are the major streets. It is possible to handle but a relatively small part of a metropolitan area's total traffic movement on a freeway system. A major street system is essential to carry traffic to the freeways and to provide for traffic movements in areas not directly served by the freeways. The major street should be wide and direct in order to invite and accommodate the vehicular traffic. The width of such a street should be related to the volume of traffic expected to use it, especially to the peak-hour traffic. On an average major street without limitations of access a single traffic lane in an urban area can accommodate about 500 vehicles per hour. At the peak hour one-half to two-thirds of the traffic is in one direction so that a street with two moving lanes can accommodate from 750 to 1,000 vehicles per hour and a street with four moving lanes between 1,500 and 2,000 vehicles per two hours. The less important major streets should provide at least two lanes of moving traffic and the more important major streets four to six lanes of moving traffic.

In detail, all parts of the motorways system should be designed to be as efficient as possible, insofar as traffic-carrying capacity is

concerned. The traffic carrying capacity of the street is affected materially by the type of land use along it, by the arrangement of driveways, whether or not parking is permitted along it, whether left turns are allowed at major intersections, etc. The Westwood -Northern Boulevard, for example, is a major street built to a high standard whose traffic-carrying capacity has been materially reduced by uninhibited use of driveways directly entering the major thoroughfare. In other areas changes in topography or institutional use of fronting lands provide the equivalent of limitation of access and materially increase traffic-carrying capacity of the major thoroughfare.

In general, as mentioned previously, due to the topography and the low-type of standards followed in original construction, many of the existing major highways, in the metropolitan area are developed at a very low geometric standard, insofar as both vertical and horizontal curvature are concerned. The county, however, has adopted higher standards for new major thoroughfares. As a general principle, everything possible should be done in the control of land use, provision of service roads and careful initial layout to provide major thoroughfares with as high a traffic-carrying capacity as possible. Obviously, this is a matter for detailed consideration when each street is constructed initially or receives a major improvement. Moreover, it would be most worthwhile to have general agreement on standards for all parts of the major street network between the county, the State Highway Department and the various municipalities affected.

Basic Considerations

Because of their short duration, and consequent high peaks, the home-to-work and work-to-home traffic movements are the most difficult to handle by the motorways system. Currently employment is concentrated in the basin area, in the Norwood Trough Area and up and down Mill Creek. While all of these areas will receive some of the anticipated increases of employment in the future, it is quite probable that the entire future employment pattern will be much more dispersed in character than the present pattern. We will see many more "decentralized" activities such as those built in recent years by the Proctor and Gamble Company and the contemplated move of the Union Central Life Insurance Company to a new office building on the outskirts. The anticipated major industrial development to take place in Crosby, White-water and Harrison Townships will aid in creating a more dispersed pattern also. Insofar as the motorways system is concerned and the general problem of handling traffic congestion, the more dispersed pattern of

employment centers will be of major assistance. There remains a very considerable problem, however, in the concentration of industrial employment up and down the Mill Creek Valley and the proper traffic service to this area both by facilities parallel with the valley and by cross-town arteries interconnecting the residential areas in other portions of the metropolitan area.

Unfortunately, our urban populations do not show any marked tendency to locate their homes in close proximity to places of employment. Families seem more likely to choose their home location because of tradition, friendship, economic status and other reasons. However, as the community gets larger and more residential areas are developed, it will be possible for more and more families to find housing closer to their places of employment. Insofar as possible, the residential land use plan has been designed to provide housing of all types and character immediately adjacent to both existing and proposed areas of employment concentration. A basic difficulty with the present pattern has been the use of lands immediately adjacent to the Mill Creek Valley for low-density residential occupancy when many such areas are more appropriate for high-density housing for industrial employees. The residential land use plan proposes to correct this condition insofar as possible by providing areas for low-income and for multiple dwellings, in and near the proposed new areas of industrial concentrations.

It is evident, however, that for a satisfactory place of employment as well as living, interconnections by good highways must be available to serve all parts of the metropolitan area.

Topographic Problems

A major element in the design of the Motorways Plan is the relationship of the major thoroughfares to the topography of the land. This is particularly important with respect to truck traffic; routes of low gradient serving all parts of the metropolitan area should be available for use by trucks. Freeways in particular need to be carefully related to the topography of the land in order to avoid extremely heavy grading which is both expensive and damaging to aesthetic values of the community.

Traffic Flow

The most recent traffic information that has been compiled is that applying to the City of Cincinnati. Results of the traffic volume survey prepared in 1962 are shown on Plate 21.

Insofar as high traffic volumes are concerned, the bulk of the problem is found within the City of Cincinnati. Most of the heavily traveled arteries are carrying less than 20,000 cars per day when they leave the city limits; the exceptions to this are Mill Creek Expressway and Reading Road. The heaviest traffic volumes are concentrated on the radial arteries and particularly those to the east and north of the downtown area. Because of lack of alternate routes, traffic tends to pile up and become quite concentrated in a few places well beyond the downtown area such as at Reading Road just north of Mitchell Avenue, and along Paddock Road just north of Seymour.

A special analysis of the radial traffic, described more fully in a subsequent section of this report, indicates that the peak radial traffic flow is found along the Mill Creek industrial area about six and one-half miles north of the downtown area where the radial traffic flow includes traffic to and from the central business district as well as traffic to and from the industrial area and amounts to approximately 130,000 cars in the average 24-hour day. Where the street system must contend with the twin problems of traffic to and from industrial concentrations and traffic to and from the business district, the result is uniformly one of extremely heavy traffic concentrations and usually periods of extreme congestion.

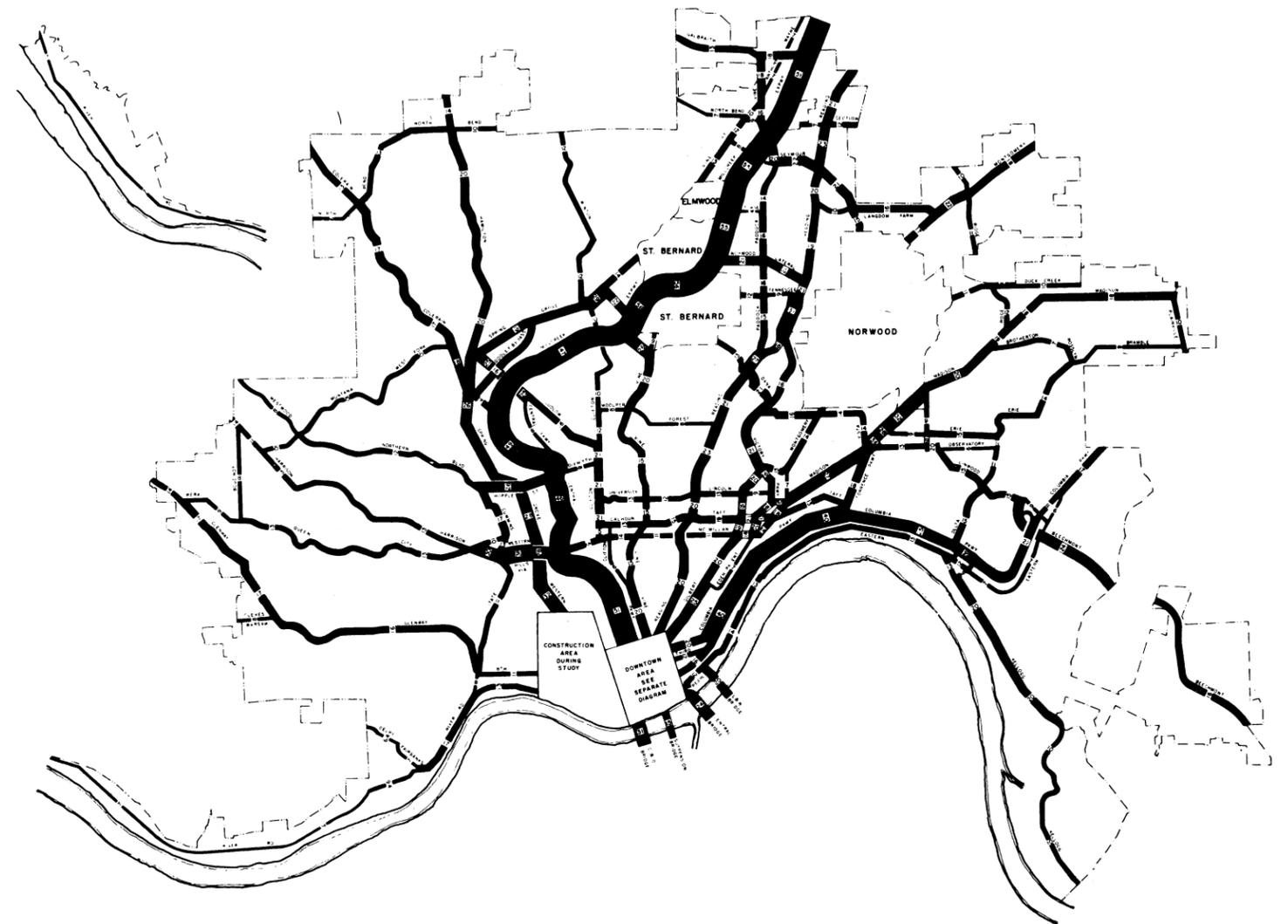
Revised Motorways Plan

The revised motorways plan shown on Plate 22 indicates the network of freeways and major streets designed to serve the future growth of Hamilton County. Certain important connections are indicated in Clermont County and in the Kentucky parts of the metropolitan area south of the Ohio River.

Freeway System

The freeway system consists of a major circumferential route, the "Circle Freeway" and five important through radial freeways, plus several important cross connections, as well as two shorter radial freeways.

The Circle Freeway has been studied and analyzed by the State Highway Department and its location has been fairly well established. Right-of-way has been purchased and certain improvements constructed in the extreme northern portion of the county. In the extreme



TRAFFIC FLOW DIAGRAM
CINCINNATI
1962

Plate No. 21

NOTE
FIGURES IN FLOW BANDS
INDICATE NUMBER OF VEHICLES
BY THOUSANDS, DURING A
TWENTY-FOUR HOUR PERIOD

southwestern portion of the county, the route would cross the Ohio River on a new bridge just this side of Lawrenceburg. A complete circle around the metropolitan area is proposed with a major link located in Kentucky. There would be two new bridges over the Ohio River, one at Lawrenceburg and one near Fort Thomas. The Circle Freeway, in general, has a most satisfactory location, providing important access to existing and proposed major industrial districts. The alignment in Anderson Township along a route somewhat more than a mile south of Salem Road has been the subject of considerable discussion and contention, but should actually favor sound residential development in the Anderson Township area instead of cutting up and interfering with the neighborhood development. The segment of this route in Anderson Township, moreover, and the possible connection into downtown Cincinnati by means of routes in Kentucky constitute a most important element in the Motorways Plan. This would assist materially in the reduction of traffic concentration on the Columbia Parkway, and in the avoiding of heavy traffic congestion on other east-west streets in the Township, such as Beechmont, which will be generated by future growth to the east.

The Mill Creek Expressway (Interstate Highway 75) is the most important radial route, performing the dual function of service to the heavy through north-south traffic between Cincinnati and Dayton, as well as service to the metropolitan area's principal concentration of industrial employment. Through the basin area near the central business district this route "picks up" traffic from three other freeways, which will result in an extraordinary concentration of traffic upon one route. It is predicted that handling of these heavy volumes of traffic on the one route will prove to be a difficult problem. The solution of this and other capacity problems points up the need for a detailed traffic and highway study, as contemplated in the projected development and transportation plan for the whole Ohio-Kentucky-Indiana region.

The location of this freeway through the areas of heavy industrial concentration poses a considerable problem. As an indication of the significant employment concentrations in the Mill Creek Valley, the valley area between Galbraith and Sharon Roads contains 21.1 percent of the industrial employment in the metropolitan area. An analysis of the Evendale industrial area prepared in 1953 indicates a potential employment for the industrial sections in Evendale alone of 45,500 persons. It was estimated that this employment generated a need for 24,000 parking spaces. This compares with 23,163 parking spaces in the

central business district of Cincinnati. The revised Motorways Plan shown on Plate 22 indicates rather diagrammatically the plan for this area as currently contemplated by the State Highway Department. A far more thorough analysis of potential traffic movements into and out of the Mill Creek Valley is essential, and will be made as a part of the regional development and transportation study. This may indicate a need for additional routes paralleling the valley in order to handle the highway traffic and that generated by the concentration of industries.

The Northeast Expressway (Interstate Highway 71) has an approved and fixed location, which is quite satisfactory, much existing development having already been adjusted to this route. It is most important that this route be eventually tied directly into the new bridge across the Ohio River leading to the Kentucky communities. This would help to relieve some of the pressure on the Mill Creek Expressway in the central area.

The Northwest Expressway (Interstate Highway 74) also has a fixed and satisfactory location. This route (now under construction) will have a pronounced effect of encouraging rapid growth in Hamilton County beyond the Great Miami River.

U. S. 27 Expressway. This route is not on the interstate highway system but is deemed of sufficient importance by the State Highway Department to warrant planning to expressway standards. The location of this route on the plan is the result of a collaborative effort between the Highway Department and local governmental agencies to preserve a satisfactory residential organization between the expressway and Colerain Avenue. In so doing, the route will preserve logical service areas around existing elementary schools.

Columbia Parkway - U. S. 52. The Columbia Parkway connected into Kellogg Avenue as shown on the plan would form an important radial from the business district to the east. This provides an important truck route along the Ohio River. An important element of this route is the improvement of U. S. 50 north of Lunken Airport as far as Fairfax. Study should be given to connecting Kellogg Avenue to Circle Freeway east of the California area in order to eliminate duplication of facility.

Connecting Routes. Four extremely important connecting routes are shown on the freeway system.

1. The Norwood Lateral would provide an important connection between the Northeast Expressway and the Mill Creek Expressway serving the industrial development in the "Norwood Trough".
2. Cross-County Highway would provide a badly needed connection between major residential areas east and west of Mill Creek Valley and industrial areas in the valley. Part of this highway is existing but it was built without limitation of access. New sections are now being constructed and the entire facility is to be built to freeway standards. This important route will connect all north-south radials to the freeway system at the mid-county level generally paralleling Galbraith Road.
3. The Redbank Connection would connect the new U. S. 50 route and the Northeast Expressway with connection to be afforded with the Circle Freeway at Fort Thomas. This would provide an important route from the eastern residential areas leading into the Kentucky communities.
4. The Taft Expressway is a part of the official plan of Cincinnati and an integral portion of the basin plan. (See Plate 12) This route would connect the Columbia Parkway with the Mill Creek Expressway and would be strategically located a short distance north of the central business district. This route, with the Northeast Expressway, the Mill Creek Expressway and Fort Washington Way along the riverfront, would form the four sides of a Central Expressway loop around the downtown area.

Two Shorter Radial Expressways are also Proposed. These are the Queen City Expressway leading directly west from the Taft Expressway through Delhi Township to River Road and a short expressway connection across the mouth of the Mill Creek Valley into River and Delhi Roads.

As shown on Plate 22, the freeway system would provide expressway service at intervals of five miles or less forming a satisfactorily interconnected network with portions well located to serve the heavy concentrations of traffic volumes. A considerable amount of new and badly needed cross-town and circumferential service will be provided

by Circle Freeway in the north and by Cross-County Highway in the mid-county location. In the more heavily developed portions of the county, this type of movement could be made by using the Northwest Expressway, part of the Mill Creek Expressway, the Norwood Lateral and the Northeast Expressway. It is believed that heavy volumes of traffic will be generated by this type of use of the proposed expressway system. Taft-Queen City Expressways would provide complete interchange with all radials between Columbia Parkway and River Road.

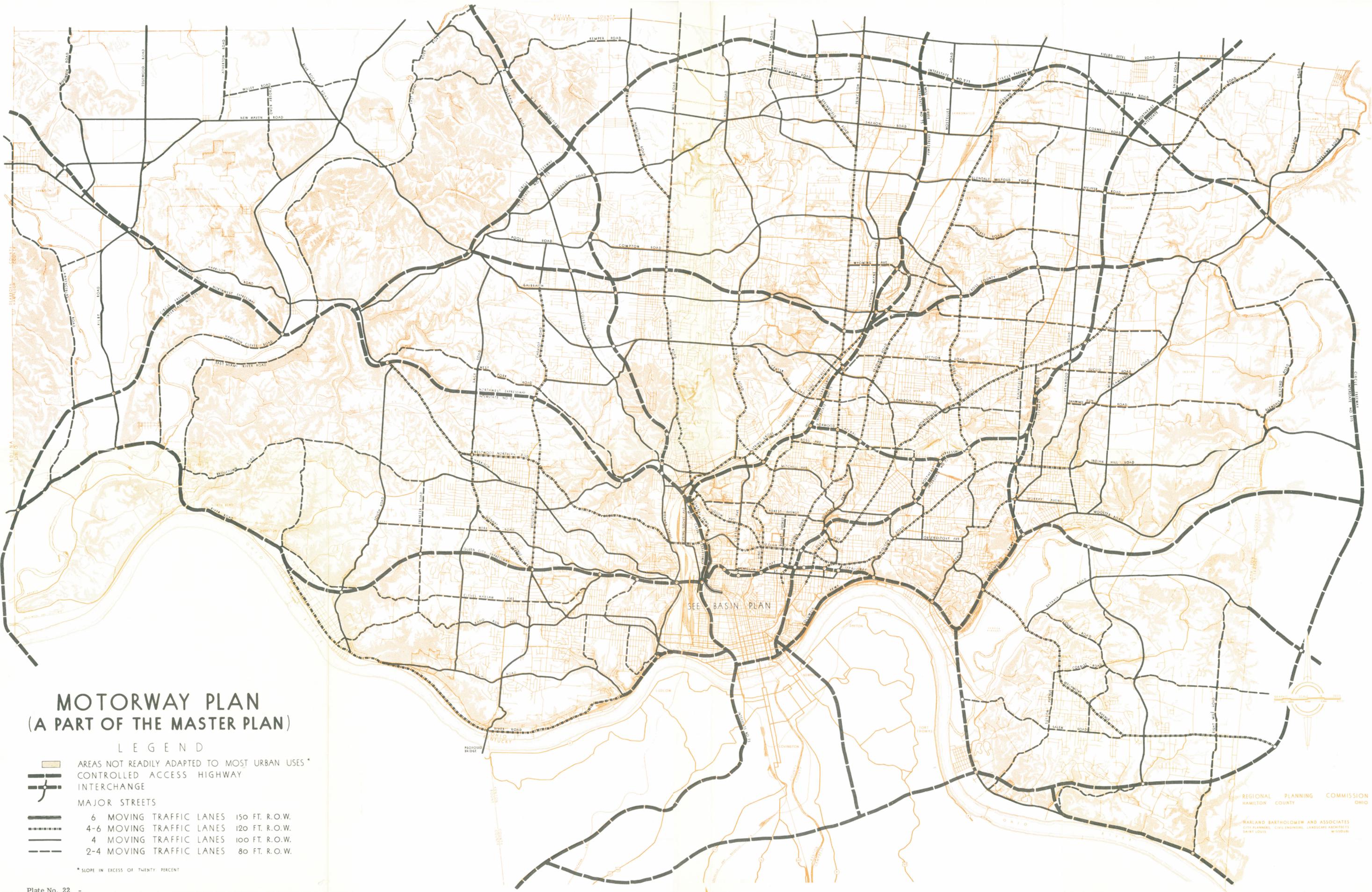
Ohio River Bridges

Until the recent completion of the Interstate Highway 75 bridge, no new bridges had been constructed across the Ohio River during the 20th Century. Thus, reliance was placed on the four inadequate structures located near the Cincinnati central business district - the point of heaviest traffic congestion. Part of this has been occasioned by the fact that the Kentucky state line is on the northern bank of the Ohio River, which poses a problem to the State of Kentucky or to a private company in the development of these expensive bridges.

In addition to the new Interstate 75 structure serving the central business district, three other bridges are proposed as part of the interstate system. One of these would serve the downtown area; the two others would be on the Circle Freeway. A fourth bridge is proposed on the plan to provide a connection between Anderson Ferry Road and the Boone County Airport. The bridges as proposed would not only relieve the existing inadequate crossings, but would also have a major effect in bringing about a better balance of population growth in the metropolitan area.

Interchange Problems

Suggested locations for interchanges along the freeway system are shown on the Motorways Plan. The location and design of the interchange is a most important part of the overall plan. From the standpoint of moving through traffic, it is important that the interchanges be well separated. On the other hand if the freeway is going to provide for the local traffic which in numbers constitutes a great bulk of the traffic movement, then the interchanges should be closer together. Ideally within the more heavily developed portion of the urban area there should be an interchange with almost every major street. However, interchanges should be at least one mile apart. In the more outlying portions



MOTORWAY PLAN (A PART OF THE MASTER PLAN)

LEGEND

- AREAS NOT READILY ADAPTED TO MOST URBAN USES *
- CONTROLLED ACCESS HIGHWAY
- INTERCHANGE
- MAJOR STREETS
- 6 MOVING TRAFFIC LANES 150 FT. R.O.W.
- 4-6 MOVING TRAFFIC LANES 120 FT. R.O.W.
- 4 MOVING TRAFFIC LANES 100 FT. R.O.W.
- 2-4 MOVING TRAFFIC LANES 80 FT. R.O.W.

* SLOPE IN EXCESS OF TWENTY PERCENT



REGIONAL PLANNING COMMISSION
HAMILTON COUNTY COMMISSION OHIO

HARLAND BARTHOLOMEW AND ASSOCIATES
CITY PLANNERS, CIVIL ENGINEERS, LANDSCAPE ARCHITECTS
SPRING LOUIS

of the county where normal urban densities are anticipated, interchanges could be two miles apart. This spacing recognizes the fact that within the next thirty years the entire county area will be urbanized. Spacing the interchanges any further apart than this general standard will only mean that the traffic will "pile-up" at the few interchanges provided and congestion will result.

In reviewing the tentative plans for the proposed freeway system, it was evident that additional interchanges were needed on the Circle Freeway. Close cooperation between state and county officials provided such urban-spacing with the addition of interchanges at Colerain Avenue, Hall Road and Kenwood Road. Such spacing is consistent with freeway design and provides maximum service to local areas.

Radial Street and Highway System

The system of radial streets and highways that comprise the "backbone" of the motorways plan is shown diagrammatically on the accompanying sketch. As can be seen on this plan, the freeway system forms the important portion of the radial system, the freeways penetrating all portions of the metropolitan area and offering the best and most rapid radial highway service.

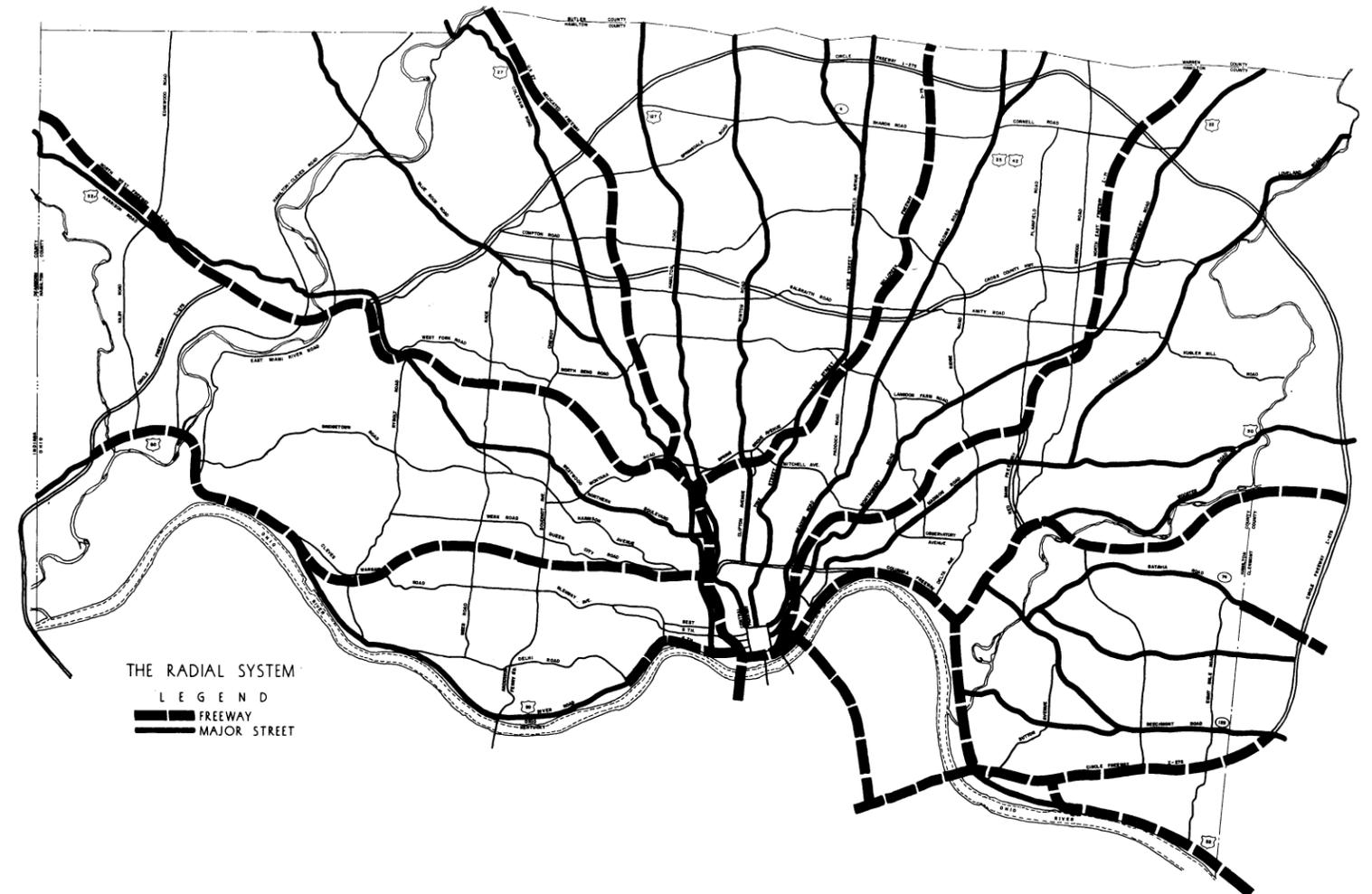
Supplementing the freeway system would be thirteen important radial streets. These are virtually all existing important road and highways; most are parts of the state highway system.

The first of these is River Road which has presently been improved to a four-lane pavement with a median strip. This road has many limited access features because of the arrangement of land uses in the area it serves.

The second is Westwood-Northern Boulevard. This has been improved with a four-lane pavement and a narrow median.

Blue Rock Road and Colerain Road form the third and fourth major radial streets. The State Highway Department has widened parts of Colerain Road in the area south of the Circle Freeway.

Hamilton Road and Winton Road are important radial arteries serving the rapidly developing residential area in the Mt. Healthy, North College Hill, and Green Hills section of the county.



Vine Street and Springfield Pike form an important radial artery serving the Wyoming-Glendale area.

The eighth major radial highway is Reading Road. This is a most important artery because of the service it affords to the industrial development along the Mill Creek Valley.

In the northeasterly section of the county there are three important radial streets, Montgomery Road, Madison-Camargo Roads and Wooster Pike (U. S. 50).

Finally, serving the Anderson Township area are Batavia Road and Beechmont Road.

As shown on the sketch, there are also a series of radial streets of lesser importance supplementing the above - described system. These include such roads as Delhi, Glenway Avenue, Werk Road -Queen City Road, Harrison Avenue, Paddock Road, Plainfield Road, Kenwood Road, Indian Hill Road, Clough Road and Salem Road.

Adequacy of the Radial System

A special analysis was made of the adequacy of the radial portions of the motorways plan. This analysis was made because it was quite evident that the radial traffic movements were the heaviest and most critical within the county. In order to make this study, the county area was divided into six major radial sectors. For each sector, the 1960 radial traffic was computed at each mile interval out from the central business district of the City of Cincinnati. For the same area, the total capacity of the proposed motorway system was also estimated. The results of this study are shown on Plate 23.

In the preparation of this study, no effort was made to establish projection, directional distribution, truck percentage, or design hour volume factors - these being beyond the scope of this report. To offset the possible detrimental effect of these unknown factors on the comparison presented, the following "safety factors" were used:

1. Where the plan called for a range in number of traffic lanes for a thoroughfare, the smaller of the numbers was used in computing the capacity.
2. The lower values of the accepted ranges of Average Daily Traffic Design Lane Capacities for various types of thoroughfares were used.
3. The principle of using Design Capacity rather than Ultimate Capacity is in itself a safety factor. The Ultimate or Possible Capacity of a thoroughfare is approximately 25 to 30 percent higher than the Design Capacity.

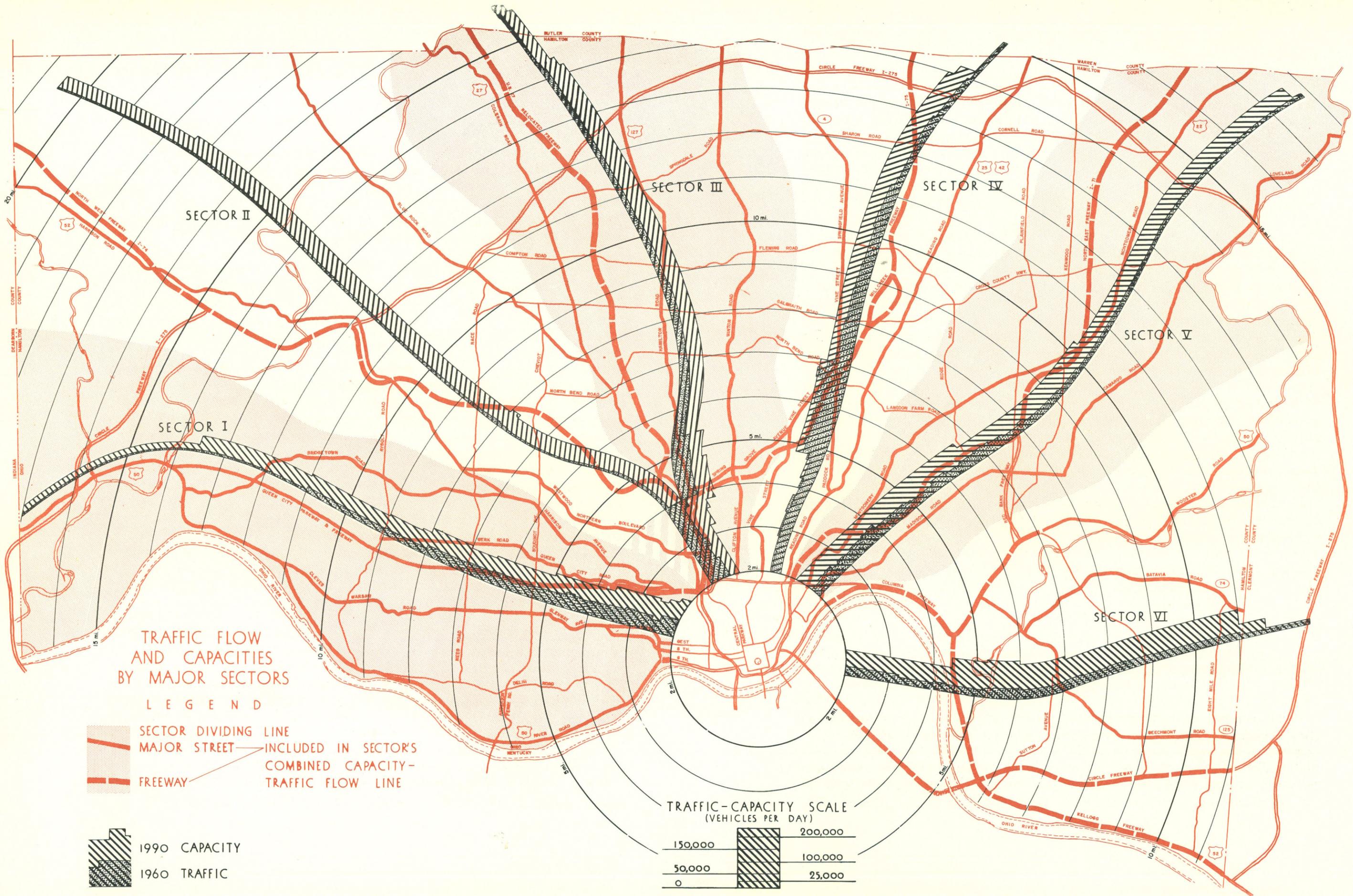
The most important element in Sector I is the proposed Queen City Freeway. Cincinnati plans now call for this to be a completely controlled access facility starting at the Mill Creek Freeway, staying just south of Queen City Road to Boudinot Avenue, and then following the general line of Muddy Creek Avenue and Cleves-Warsaw-Hillside to its termination at River Road in Addyston. With the Queen City

Freeway, the importance of Bridgetown Road in its present location is somewhat lessened. The segment of Bridgetown Road between Ebenezer Road and Zion Road has been removed from the 1948 plan and replaced with Dog Trot Road and Taylor Road to provide a much more useful thoroughfare. This shift north, approximately half way between the Queen City Freeway and Harrison Pike, will provide better service and allow more desirable neighborhood planning. River Road, when completed to the high standards that much of it is now built, will give all the capacity necessary along the southern edge of Sector I.

Sector II would have the greatest allowable increase in traffic. This 1990 capacity provided by the Northwest Freeway, Westwood Northern-Harrison, and Blue Rock Road should adequately handle the great increase in traffic created by the two large industrial tracts proposed west of the Great Miami River and the expected residential growth in the northwest corner of the county. With the Northwest Freeway programmed as part of the Interstate System, the county's major effort in Sector II should be pointed toward Westwood Northern-Harrison and Blue Rock Road. Because it so closely parallels the Northwest Freeway, some of the urgency for a major improvement of Harrison Road is removed. Harrison in conjunction with Westwood Northern would continue, however, to serve the very important function of being the major local service facility in Sector II. Intersections should be improved; particularly the proposed Boudinot-Crosstown intersection. Improvement will also be necessary between Beekman and the Mill Creek Expressway if this is not to be a bottleneck. Blue Rock Road requires both horizontal and vertical alignment improvement as well as widening. In addition, new structures over the Great Miami River and some major alignment changes around New Baltimore will be necessary before this proposed industrial and residential concentration is served with the direct radial toward the central business district that it requires.

The major addition to Sector III is the proposed relocation of U. S. 27 as a controlled access freeway. Colerain Avenue would be the principal local service thoroughfare in the western half of Sector III. This in conjunction with Spring Grove, Central Parkway-Hamilton, and Clifton-Winton would provide ample radial capacity for a considerable time into the future.

Sector IV presents the most serious problem relating to the adequacy of the motorways plan. Traffic flows on Reading Road and Vine are approaching or surpassing the design capacity. With this area so heavily built up, particularly south of the William Howard Taft, an



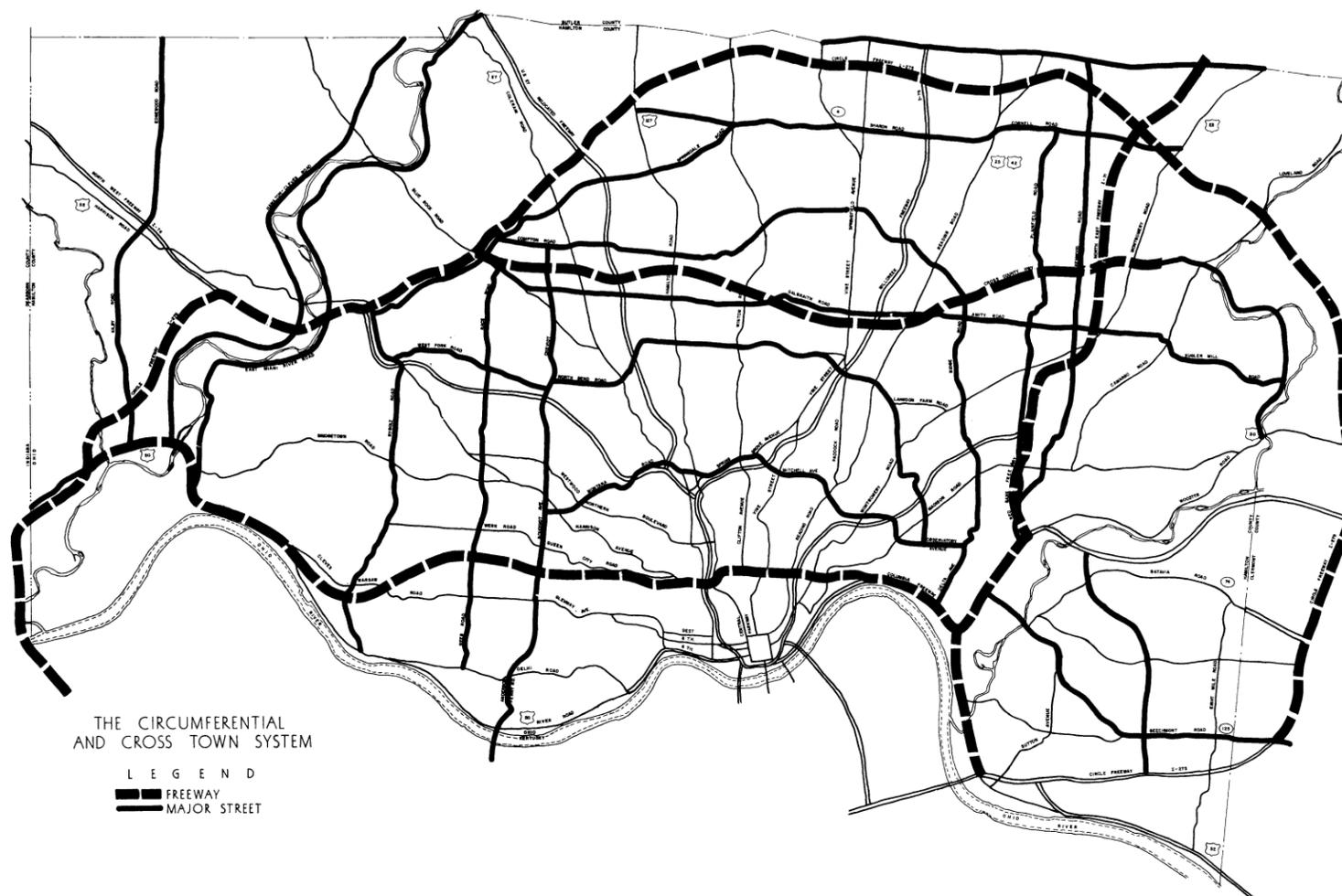
analysis should be made of all possible improvements to increase capacity of existing streets. However, this sector is more built up and traffic should not increase as rapidly as in some of the others.

In Sector V, there are no significant changes from the 1948 Motorways plan. Except for minor route location differences and some laneage changes, the proposed Northeast Freeway is essential as presented in that plan.

In Sector VI there are only two radial routes coming all the way into the central business district: they are the Columbia Parkway and the Circle Freeway. The connection between the west end of the Circle Freeway-Ohio River Crossing and the Cincinnati business district is not part of the Interstate System. The interstate connection to the central business district is much farther west. Consideration should be given to converting the Columbia Parkway to freeway standards. The biggest problem would be the provision of adequate right-of-way of the roadway and interchanges. There would be relatively little problem with control of access; the area around Delta Avenue is the most intensively built up. The Kellogg Avenue improvement to freeway standards, should be connected into the Columbia Parkway at the southern-most point just southeast of Delta Avenue rather than into Eastern Avenue. This would allow more efficient traffic movement to the north of Columbia Parkway from Kellogg Avenue. Because the Miami River and the steep bluffs separating Wooster Pike and Kellogg Avenue respectively from the greatest area of outlying Sector VI, additional capacity is needed up the middle. This is provided by the Circle Freeway, Beechmont, and Cincinnati-Batavia Road north of Newtown. The latter would connect into existing U.S. 50 in Fairfax to relieve the present restriction of capacity on this route in Mariemont and east of Wooster Pike.

Crosstown and Circumferential System

The system of crosstown and circumferential thoroughfares is a particularly important element in the motorways system in the Hamilton County area. This is because so much of the employment of the area is industrial in nature and so much of the industrial employment is in turn concentrated in the Mill Creek Valley which divides the county in a north-south direction. Consequently, east-west roads connecting the various residential sections of the county within Mill Creek Valley are particularly important. Because both the circumferential (or bypassing) function and the crosstown function frequently occur on the same street



or highway these are both described in the same sections of the report. The more important elements in this portion of the motorways system are shown diagrammatically in the accompanying sketch.

The most important of the east-west routes is the Cross-County Highway. This route bisects the major residential areas both east and west of the Mill Creek Valley. The plan proposes a major street of six moving lanes in this area. A complete freeway is justified.

A second road of importance north of Galbraith Road is Fleming Road. The motorways plan shows Fleming Road connected with Shepherd

Lane leading to a major interchange on the Mill Creek Expressway. This routing has received a very considerable amount of study in the City of Wyoming. The routing as shown on the plan has not received local approval, the plan however suggests reconsideration as this heavy flow of east-west traffic is going to go through the City of Wyoming in any event and the only question remaining is whether or not to provide a more adequate and safer location for it, less harmful to local residential values and amenities.

Only one major east-west road is proposed between Fleming Road and the Circle Freeway. This is a route to be provided through a connection of Springdale Road, Sharon Road and Cornell Road. The two connections, one in Green Hills and one in Sharonville, are essential to the development of this important route.

Finally, important in the crosstown movements in east-west direction are North Bend Road which really completes an important circumferential and the proposed system of freeways around the central business district as previously described.

A second important element in the crosstown-circumferential system are north-south roads in the western and eastern portions of the county. These combine with the east-west system above described to provide the series of circumferentials.

In the western part of the county, important north-south arteries would be South Road connected with Van Blaricum. The second important road of this type would be provided through a connection of Race Road and Neeb Road. The most important north-south road in the western part of the county, however, would be Anderson Ferry Road connected with Boudinot Road. New sections of roads would be needed in two places with the connections proposed being the same as those of the 1948 Motorways Plan. Leading importance to this road would be the proposal to eventually provide a bridge across the Ohio River at its southern extremity.

A series of important north-south roads are proposed in the eastern part of the county. These would include Ridge Road which is a part of the intermediate loop system. Plainfield Road, Miami Road, Eight-Mile Road and finally a completely new north-south road connecting into Anderson Township which would leave the present U. S. 50 improvement at Fairfax. Insofar as the circumferential roads are concerned, the two most important elements are the loop system around the central business

district and the Circle Freeway going around the entire community both the parts in Ohio and the parts in Kentucky.

Summary of Plan

Comparison of the revised Motorways Plan with the 1948 Plan indicates that there are many more points of agreement than of disagreement. The major changes made have been the coordination of the revised plan with decisions made on the interstate and freeway system. These proposed freeway systems virtually all follow routes laid out in the 1948 Plan, however, in many cases the current planning consists of a development of freeways of higher standard than proposed at that time. Other changes include an increase in the standards for the Crosscounty Highway and a general strengthening of improvements for north-south circulation in both the eastern and western portions of the county. In view of the much greater population expected in the present study in comparison with the one made in 1948, it is not too surprising to find that the changes consist of adding more routes and upgrading the standards proposed in 1948 in order to allow for the necessarily increased traffic volume that will be utilizing the system.

Right-of-Way Widths Proposed

The detailed design of a highway has much to do, of course, with its traffic carrying capacity. A traffic lane twelve feet in width will carry more cars than a narrow traffic lane of ten feet. Adequate widths for parked vehicles will permit more traffic to be carried on an adjacent moving lane. Proper curbing, provision of median strips, adequate areas for sidewalks and utilities, provisions for left turns all affect the traffic carrying capacity. These various elements that enter into this matter are shown on Plate 24. Each of the cross-section elements is classified in accordance with its relative desirability.

Where existing right-of-way is narrow and extensive development prohibits widening, then it is essential to "get by" with the minimum possible standards. On the other hand, where new right-of-way is being acquired or where it is possible to widen existing right-of-way through the establishment of building lines, or otherwise then certainly it seems advisable to provide adequately for construction of a roadway with the maximum traffic carrying capacity. As can be seen from the various standards shown on Plate 24, the addition of only a relatively small amount of pavement greatly improves the classification of a street or highway.

These various classifications can be translated into the desirability of various widths of right-of-way. For example, it is possible to obtain four moving lanes of traffic on a sixty-foot right-of-way, however, it is best in providing for four traffic lanes to have 100 feet of right-of-way. It is possible also to provide six moving lanes of traffic on an 80 foot right-of-way; however, it would be best in this instance to have 120 feet of right-of-way. The Hamilton County area has not been noted in the past for the provision of generous widths of street right-of-way. Even though land is valuable and scarce now and may be even more scarce in the future, it would seem important to provide for this very essential land use in relatively generous quantities in the fairly few locations where it is needed. Consequently, the standards recommended for the Motorway System and the present are considerably higher than those recommended before.

The revised Motorways Plan (Plate 22) in addition to freeways, indicates four classifications of major streets. The most important of these is the classification that calls for six moving lanes of traffic. In order to provide for the essential left-turn lane at critical intersections and to provide for parking along the traveled way, a 150-foot right-of-way would be essential. This standard should be adopted for this portion of the Motorways Plan.

The second category includes streets that should carry four to six moving lanes. Here it is possible to develop a satisfactory street on a 120 foot right-of-way although here again 150 feet would be preferable. For this category of four to six moving lanes, the right-of-way width should be established at 120 feet.

In the next category are streets that should carry four moving lanes of traffic. For these arteries, as shown on Plate 24, the minimum right-of-way should be 100 feet. Finally, the lowest classification of major streets shown on the plan is that shown requiring two to four moving lanes. For these streets the minimum right-of-way provided should be 80 feet.

As shown in the following tabulation the Motorways Plan proposes a total of 723 miles of freeways and major streets. Of the total mileage, 593, about three-fourths, consists of existing right-of-way. The right-of-way standards outlined above would apply to the remaining 130 miles. Much of this new right-of-way can be provided through the control of land subdivision as has been the practice in the past. The summary of

the plan in relation to the various categories of freeways and major streets would be as follows:

<u>Type of Motorway</u>	<u>Miles of Existing Right-of-Way</u>	<u>Miles of Right-of-Way to be Obtained</u>
Controlled Access Freeways	137.2	92.1
Major Thoroughfares 6 Lanes	7.1	0
Major Thoroughfares 4-6 Lanes	116.5	1.0
Major Thoroughfares 4 Lanes	276.6	28.5
Major Thoroughfares 2-4 Lanes	185.3	8.1
Total	722.7	129.7

Next Steps

The revision of the Motorways Plan herein presented can serve a useful purpose by bringing up-to-date the 1948 Plan reflecting the various decisions that have previously been made and putting all of these various decisions into some type of a reasonable overall thoroughfare pattern. This may form the basis for more coordinated action on the part of the various political agencies involved. However, it must be emphasized that the plan presented is by no means a complete thoroughfare study. As previously brought out, a comprehensive traffic analysis should be prepared based on an up-to-date origin-destination survey and 1990 traffic estimated for all the various segments of the Motorways Plan. This will then enable final decisions to be made on the exact cross-sections and right-of-way that would be needed. It would also assist materially in establishing construction priorities.

Pending the comprehensive traffic analysis, the various municipalities involved, the county, and the State Highway Department should tentatively agree on the Motorway Plan as herein presented, or on some suitable modification of the plan. This will then enable the various municipalities and the Regional Planning Commission to protect the rights-of-way of the proposed road through the establishment of building lines on the streets that should be widened and through the coordination

of new subdivision layouts with the Motorways Plan. Finally, it should again be emphasized that carrying out of a Motorways Plan is essential to the economic growth and progress of the community.

MINIMUM STANDARDS FOR VARIOUS CROSS-SECTION ELEMENTS

CROSS-SECTION ELEMENT	TRAFFIC LANE (THRU OR LEFT TURN ^①)	PARKING LANE ^②	BARRIER CURB CLEARANCE (TO TRAFFIC LANES ONLY)	MEDIAN ^③	BORDER ^④ (GRASS STRIP & SIDEWALK)
BEST					
STANDARD					
GOOD					
FAIR					
ACCEPTABLE					
POSSIBLE WHERE NECESSARY					

RELATIVE DESIRABILITY OF VARIOUS CROSS-SECTIONS POSSIBLE IN VARIOUS WIDTH RIGHTS-OF-WAY

R.O.W. WIDTH	60' R.O.W.	80' R.O.W.	100' R.O.W.	120' R.O.W.	150' R.O.W.
CROSS-SECTION					
2 TRAFFIC LANES 2 PARKING LANES ^⑤	FAIR	BEST			
4 TRAFFIC LANES	POSSIBLE	GOOD	BEST		
4 TRAFFIC LANES 1 LEFT TURN LANE		FAIR	STANDARD	BEST	
4 TRAFFIC LANES 2 PARKING LANES		ACCEPTABLE	GOOD	BEST	
4 TRAFFIC LANES 1 LEFT TURN LANE 2 PARKING LANES		POSSIBLE	FAIR	BEST	
6 TRAFFIC LANES		POSSIBLE	FAIR	BEST	
6 TRAFFIC LANES 1 LEFT TURN LANE			ACCEPTABLE	GOOD	BEST
6 TRAFFIC LANES 2 PARKING LANES			ACCEPTABLE	GOOD	BEST
6 TRAFFIC LANES 1 LEFT TURN LANE 2 PARKING LANES			POSSIBLE	FAIR	BEST

- ① THE LEFT TURN LANES MAY BE 10' WIDE WITHOUT SERIOUSLY IMPAIRING OPERATION
- ② WHERE PARKING LANES ARE TO BE USED AS PEAK-HOUR TRAFFIC LANES, THEY SHOULD BE DESIGNED TO TRAFFIC LANE STANDARDS WITH REGARD TO CURB CLEARANCE, LANE WIDTH, AND PAINT STRIPE LOCATION.
- ③ IF THE MEDIAN IS TO CARRY THE POTENTIAL OF CREATING THE LEFT TURN LANE, THE LEFT TURN LANE WIDTH (10' TO 12') MUST BE ADDED TO THE MEDIAN WIDTH.
- ④ THE LARGER VALUES OF THE BORDER WIDTH RANGES SHOULD BE USED ON THE WIDER CROSS-SECTIONS
- ⑤ NO MEDIAN IS CONSIDERED ON THE "2 TRAFFIC LANES & 2 PARKING LANES" CROSS-SECTION.