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REGIONAL PLANNING COMMISSION COUNTY OF LOS ANGELES

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FREEWAYS FOR THE REGION

THE REGIONAL PLANNING COMMISSION
COUNTY OF LOS ANGELES 1943

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UNIVERSITY OF CALIFORNIA
INSTITUTE OF TRANSPORTATION

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ARTHUR H. ADAMS

FOREWORD

This book presents graphically and without too many bewildering statistics, the need for a regional system of freeways. A freeway plan which is believed to meet this need is submitted for consideration by citizens of the region.

Official adoption of this Plan of Freeways as a part of the Master Plan for the Los Angeles Region is urgently needed in order that the development of detailed alignments may be begun without delay.

The plan here presented has been made by the Regional Planning Commission in fulfillment of an order of the Los Angeles County Board of Supervisors, given on July 13, 1936. It is one of the results obtained from the Transportation Planning Project, and is also a combination of several plans that have been worked out by various agencies, as noted in the body of the report. Routes proposed in the plan of the Transportation Engineering Board and adopted by the Los Angeles City Planning Commission, are the result of substantial work and study already done. Any freeway in the system there proposed would obviously contribute much to regional convenience, but certain of the routes appear to be of more immediate importance to the region as a whole than do others, and they have therefore been designated in this Regional Plan. This action does not imply that the remaining routes in the "city" plan should be ignored, but that they may be added to the freeway system, when appropriate.

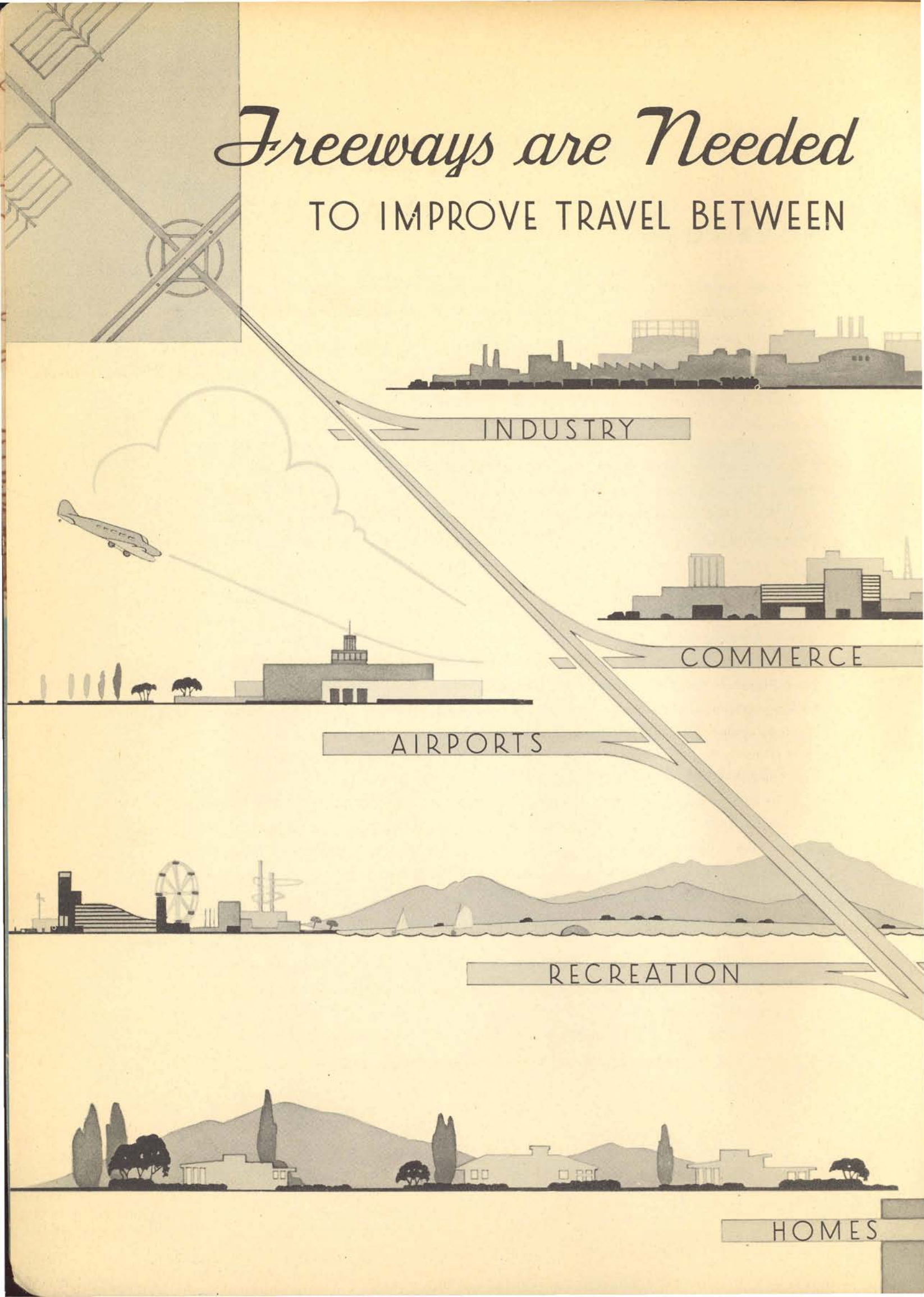
The Commission acknowledges gratefully these contributions as well as those of the Planning Commission of Long Beach, the City Engineers of Los Angeles and Long Beach, the Division of Highways of the State Department of Public Works, the Work Projects Administration, the Central Business District Association, the Haynes Foundation, the Southern California Chapter of the American Institute of Architects, and many other official and civic organizations. The criticism, suggestions and interest in planning extended by these groups aided greatly in the preparation of this Regional Plan.

The coordination of proposals from these many sources was accomplished by Werner Ruchti, then head of the Land Planning Division of the Regional Planning Commission. I. S. Shattuck, Transportation Consultant, made a substantial contribution in the formulation of this report as a part of his duties in direction of the Transportation Planning Project.

A. H. Adams

Freeways are Needed

TO IMPROVE TRAVEL BETWEEN



INDUSTRY

COMMERCE

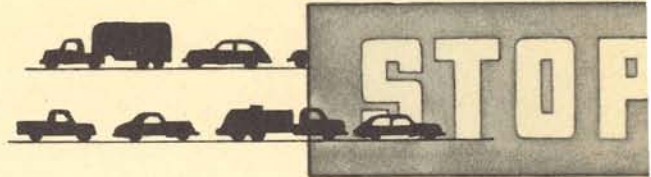
AIRPORTS

RECREATION

HOMES

ALL MOTORISTS IN LOS ANGELES COUNTY

. . . and this means all of us, have for many years felt the need for some superior form of motorways in this region to supplement the existing highways. The tremendous number of delays and accidents which have grown out of the indiscriminate mixture of through and local traffic, heavy and light vehicles, numberless crossings at grade, uncoordinated traffic regulations and jurisdictional attitudes toward roadway standards have convinced all parties — motorist and pedestrian, truck driver and traffic officer — that something drastic would have to be done, even though they haven't always agreed on the solution.



But, for at least ten years, leading planners and traffic engineers have been describing and urging development of freeways: parkways or other named special ways which would physically prevent traffic conflict and keep vehicles moving freely.

Travelers to the east have found on the parkways of New York, New Jersey and Connecticut freedom from the usual annoyances. This pleasant experience has caused many of our California motorists to reconsider the merits of what they had often proudly called "our most highly perfected system of highways." There was a time when California really led the nation in fine highway development. That was some years ago. The Bel Geddes designs in the General Motors Exhibit at the New York World's Fair of 1939-1940 generated enthusiasm which spread to all corners of America, and Americans turned a hopeful eye toward the tomorrow when such "fantastic" highways and the communities designed about them would be a reality. The interest and enthusiasm expressed by users of the Arroyo Seco Parkway and the partly completed Cahuenga Parkway, reflect the attitude of motorists in all parts of the land as this type of motorway is introduced here.

We must not permit this interest to wane — we must not allow this potent support to disappear — we must take heroic measures to solve this increasingly important transportation problem.

We must do the planning, both general and precise, NOW!

What is a Freeway?...

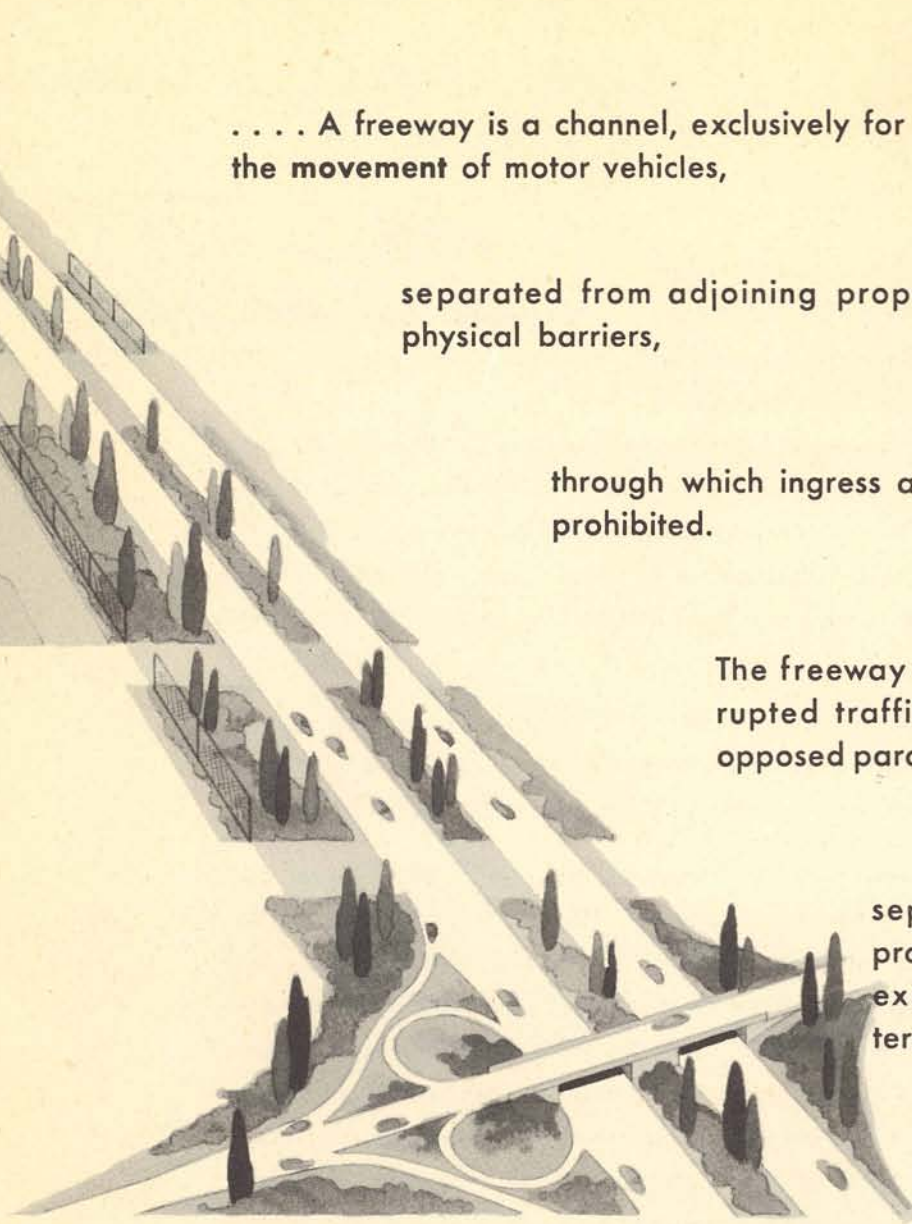
... A freeway is a channel, exclusively for the movement of motor vehicles,

separated from adjoining property by physical barriers,

through which ingress and egress are prohibited.

The freeway provides for uninterrupted traffic flow by division of opposed parallel traffic streams and

separation of cross traffic with properly designed entrances and exits at reasonably spaced intervals.



... and parkways ...

may fit this same definition, although they differ from freeways in that they are generally considered as scenic or recreational drives passing through park-like strips of generous width and frequently connecting park or recreation areas. Parkway may also provide not only pavement, for the movement of pleasure cars, but also bridle paths, cycling and walking ways.

The term *Parkway*, as used in the recent reports on this subject by the Transportation Engineering Board and City Planning Commission of Los Angeles, is identical with the word *Freeway* as used herein.

In either case ...

the freeway does, and the parkway may, offer practical means of removing many of the unsatisfactory characteristics of the traditional highway. To develop and apply this idea to the Los Angeles region is the purpose of this report.

... why we need a FREEWAY SYSTEM

In the year immediately preceding America's entry into World War II, approximately one and one-third million motor vehicles were registered in this county. The money spent for gasoline, oil, tires, and repairs on these vehicles, figured at two cents per mile, amounts to more than 200 million dollars per year. There were then in the county some 13,000 miles of streets and highways representing an investment of almost 600 million dollars for acquisition and construction, and costing 10 million dollars per year for their improvement, maintenance, and upkeep.

The automobiles of the county traveled ten and one-half billion miles per year on these highways, at a general average rate of speed estimated at only fifteen miles per hour. These automobiles were involved in thousands of accidents in 1941 which took a toll of 1,103 lives and 29,740 injured.

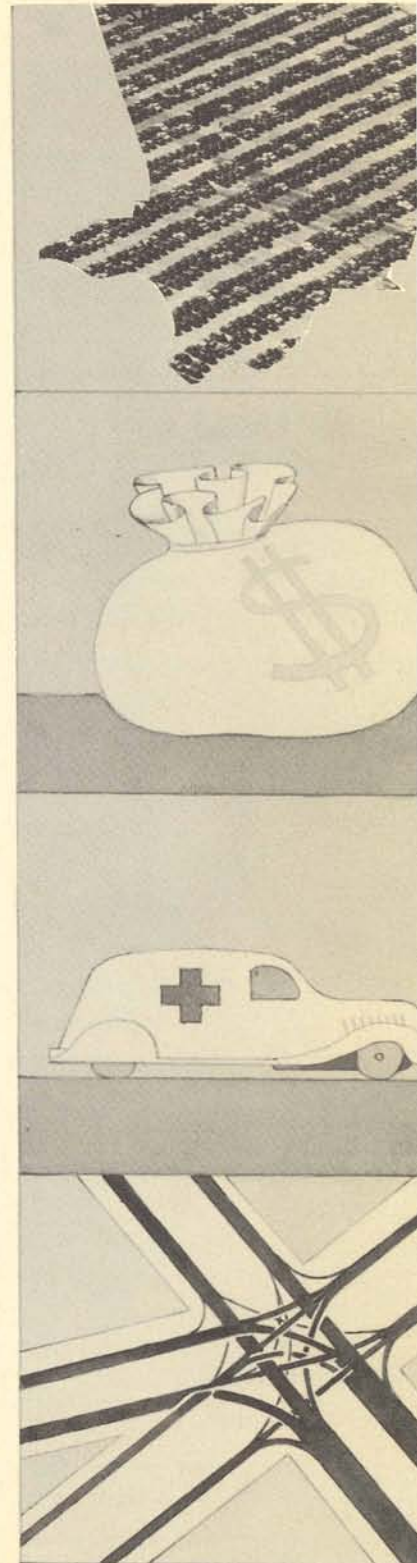
The National Resources Planning Board says, in *Transportation and National Policy*, "Analysis of traffic in cities indicates that average speed will drop as low as 4½ miles per hour during hours of congestion in business districts. Recent urban speed investigations in Boston indicated that the average trip speed was 8½ miles per hour.

"The economic loss from congestion and frequent stops . . . has been determined by vehicle-operating-cost comparisons. Traffic tests in Boston revealed that during hours of congestion the test car ran 12.1 miles per gallon in contrast to 18.2 miles without traffic interference . . . the additional gasoline cost resulting from traffic delays on the streets investigated, amounts to about \$18,000 per mile per year . . .

"Comparisons have been made between vehicle-operating characteristics on the German freeways and the older highways. . . . Instruments were installed to record the number of times the speed changed more than 6¼ m.p.h., and how many times the steering wheel was turned more than 2.3 inches. . . . Manipulations of the steering wheel were 570 on the highway to 1 on the freeway, and there were 440 speed changes during the trips on the ordinary highway. The brakes were used 491 times on the highway and three times on the freeway."

It can be seen then, that:

- (1) The automobile, the roadways, and the allied industries connected with the automobile form a going concern of major proportions.
- (2) The money already expended for highways is a staggering amount (\$600,000,000), and if presented at one time as a possible



... they have been tested

"Studies in New England, comparing operations on the Merritt Parkway and the old Boston Post Road, have demonstrated that the presence of 116 traffic lights on a 48-mile section of the Post Road required 41 stops, or nearly 1 per mile. Comparing this situation with the free flow of traffic on the parkway, it was estimated that for the trip between Pelham Manor, N.Y., and Milford, Conn., the gasoline cost would be the same at 52 miles per hour on the parkway as at 25 miles per hour on the Post Road; and that the parkway trip, in spite of being two miles longer (55.5 miles, compared with 53.5 miles) would save 40 minutes." *Transportation and National Policy.*

NEW YORK

... has spent over \$600,000,000 for its freeway system, and displays with pride the finest, safest system of motorways in America. One need but use this system of freeways to realize its value to the entire New York region. Additions to the existing routes are part of its post war public works program.



CHICAGO

... has developed its Outer Drive and other portions of a freeway system, and has found that they have greatly reduced the pressure of the traffic entering the Loop. A system of terminal facilities was included in the Lake front development plan. The safety record of the Outer Drive has justified the construction costs.



PENNSYLVANIA

... recently completed the now famous 160-mile Turnpike between Harrisburg and Pittsburgh, reducing travel time by many hours. Operating as a toll road the Turnpike appears at present to be paying for itself and eventually will become a public thoroughfare.



LOS ANGELES

... first experienced the benefits of a freeway in 1940 when the Arroyo Seco Parkway was opened for use. This 9-mile section of freeway reduced traveling time between Pasadena and Los Angeles to twelve minutes at legal speeds.





"A proposed complete system of parkways . . . for the entire region . . . is grouped chiefly along three main east and west routes and six north and south routes. . . . The aggregate length of the proposed routes is 440 miles."

*Parks, Playgrounds and Beaches
For The Los Angeles Region, 1930*

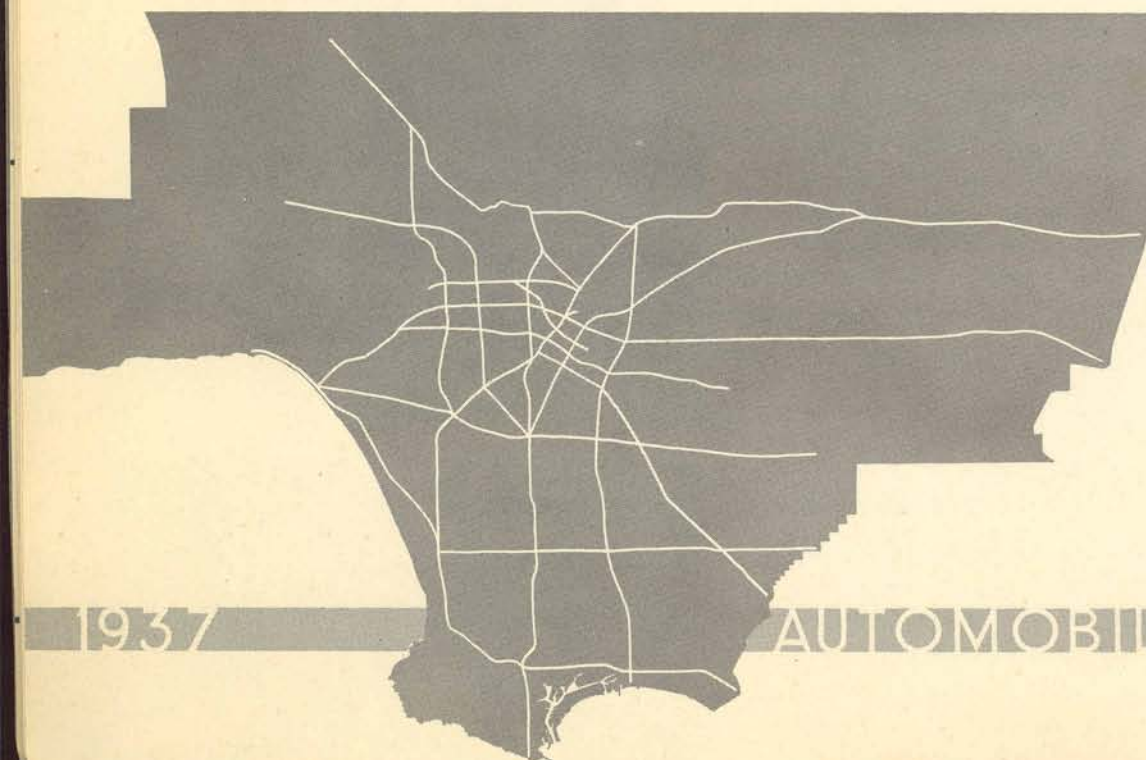
1930

CITIZENS' COMMITTEE PLAN

The principal features of a freeway system in this area have been advocated many times. The Parks, Playgrounds and Beaches report of 1930 (Citizens Committee Plan) had a completely developed parkway plan which shows striking likeness to more recent proposals for freeways. Thereafter all general plans for a County highway system always included proposals for such parkways and highways along our rivers, where interference from cross traffic could be avoided by taking the parkways under the river bridges. Even earlier, in 1924, voters of the city of Los Angeles had adopted a Major Traffic Street Plan including a "River truck speedway from the San Fernando Valley to the harbor."

During 1933 professional planners were describing and calling for the establishment of a new type of parkway which they called **freeway** and which had been completely defined and described by Edward M. Bassett. The 1934 sessions of the California Planners' Institute made the first organized effort to procure state legislation for the establishment of freeways, and in September of that year the cities of Pasadena and South Pasadena approved the plans for the Arroyo Seco Parkway prepared by the Los Angeles County Regional Planning Commission.

Acceptance of the freeway principle was urged in the Automobile Club *Traffic Survey* of 1937 and more completely developed in the Transportation Engineering Board's Report of 1939 and the subsequent modification of that plan by the Los Angeles City Planning Commission. Actual construction of some portions of freeways by the State Highway Department gave the greatest impetus to the movement and popular acceptance of the idea.



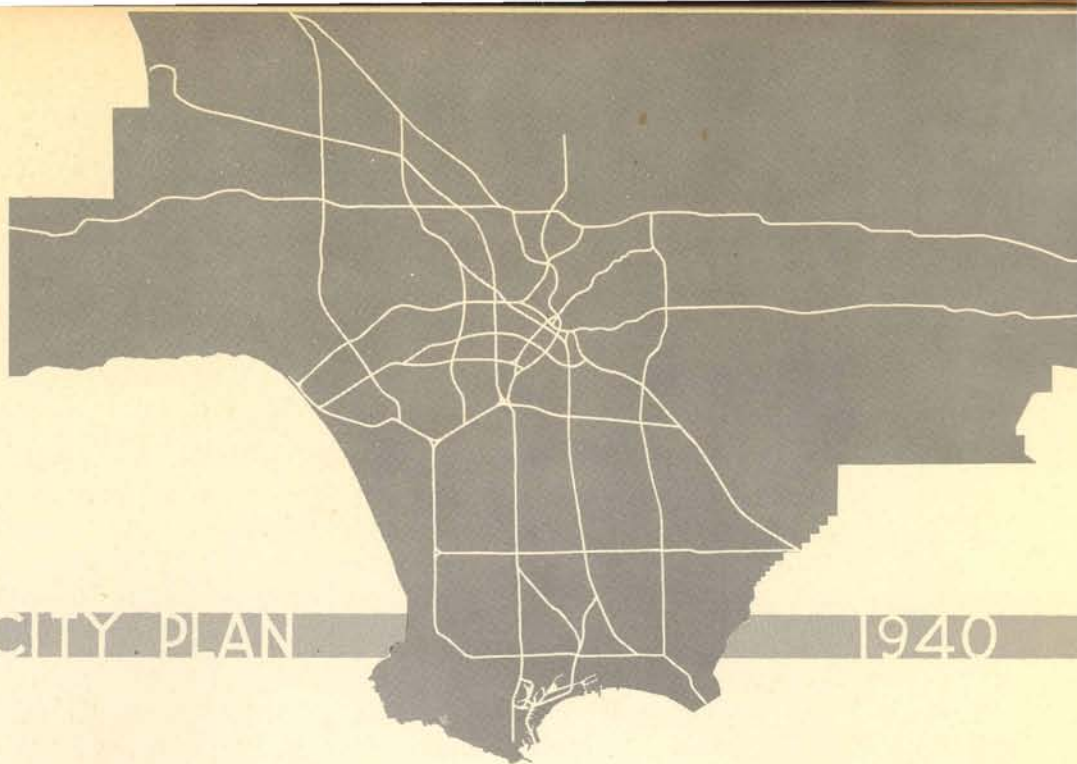
"These motorways should be developed upon a right of way of not less than 360 feet in width through residential territory. . . . The center portion of the right-of-way should be paved to accommodate from four to six lanes . . . with a physical barrier . . . dividing opposing lanes of traffic."

*Traffic Survey, 1937,
Automobile Club of
Southern California.*

1937

AUTOMOBILE CLUB PLAN

"The plan provides for a system of radial parkways from the central part of Los Angeles into all parts of the region, readily accessible to suburban communities as well as commercial and industrial centers. It provides essential by-pass routes around congested centers, and well placed routes across the city and region." *A Parkway Plan for the City of Los Angeles and the Metropolitan Area*, Dept. of City Planning, 1941.



LOS ANGELES CITY PLAN

1940

Again, in 1941, the Regional Planning Commission's report on a *Master Plan of Highways* made this comment relative to the growing recognition of the need for freeways: "The inescapable conclusion is that as the population of the Metropolitan Area passes from four to six millions, one of two eventualities will have to be faced — a drastic reduction in the proportion of automobiles to population, or the relief of the highway system by supplemental freeways, which will necessarily have been undertaken and partially completed long before that time."

This progress toward a program of freeway building would appear to have been interrupted since the end of 1941, with events demanding that all of the nation's efforts be concentrated upon winning the war. But freeway planning has not been actually dropped; in two different ways it is important in the war effort and cannot be dropped completely, even for a short time.

In the first place, a network of military highways — which would more efficiently link war industries, centers of transportation and areas of military operations — is a necessary factor to the immediate conduct of the war. A system of freeways, if already in operation, would permit uninterrupted movements of men and materials without greatly disrupting civilian activity. If freeways were in existence now they would assist in carrying out the war effort more efficiently and with greater safety. The necessity of conserving strategic materials, however, limits new construction to only the most vital projects. In the Detroit region two such freeway projects have been so recognized and constructed during the past year.

The rationing of rubber, and finally of gasoline, has, of course, notably reduced the total load on the highways and the immediate need for new road building that would normally be expected. But this reduction of traffic, due to artificial restrictions, may come to an end somewhat quickly after the war, and the local demand for freeways may soon be more pressing than we have so far dreamed. This leads to the second and more important way in which the freeway program is vital to conduct of the war.

Planners are included among the many public leaders who are constantly insisting that winning the war is only half the battle — that winning the peace is the other half.

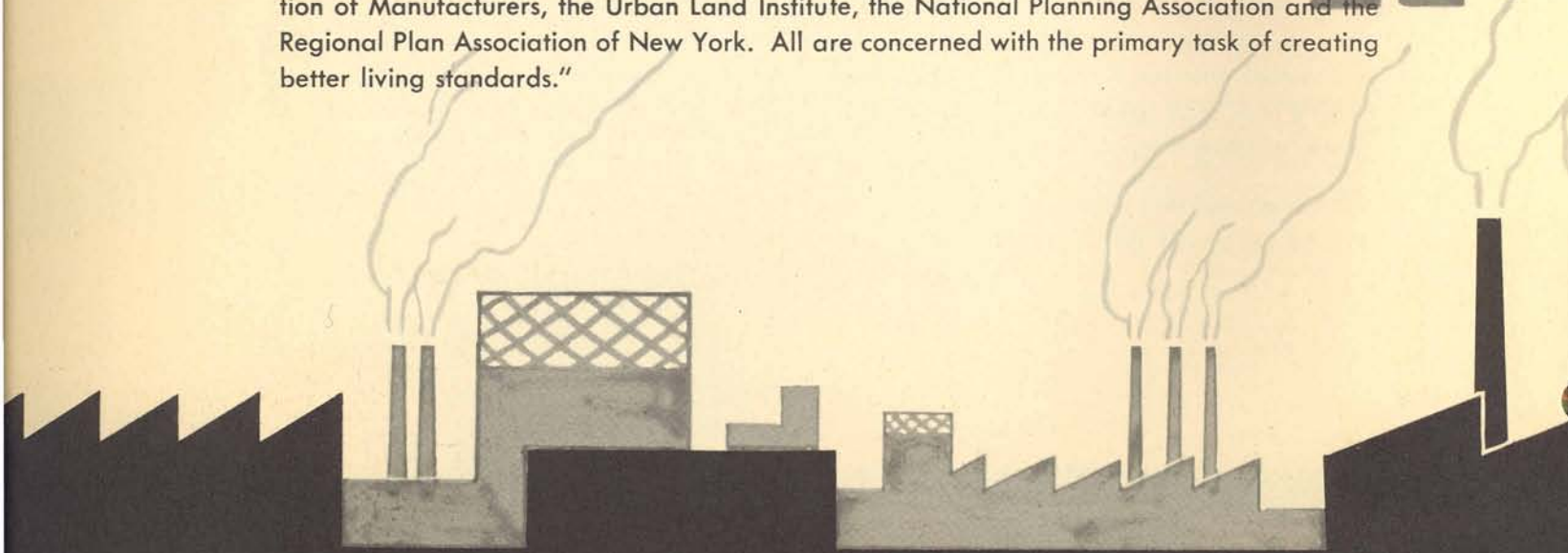
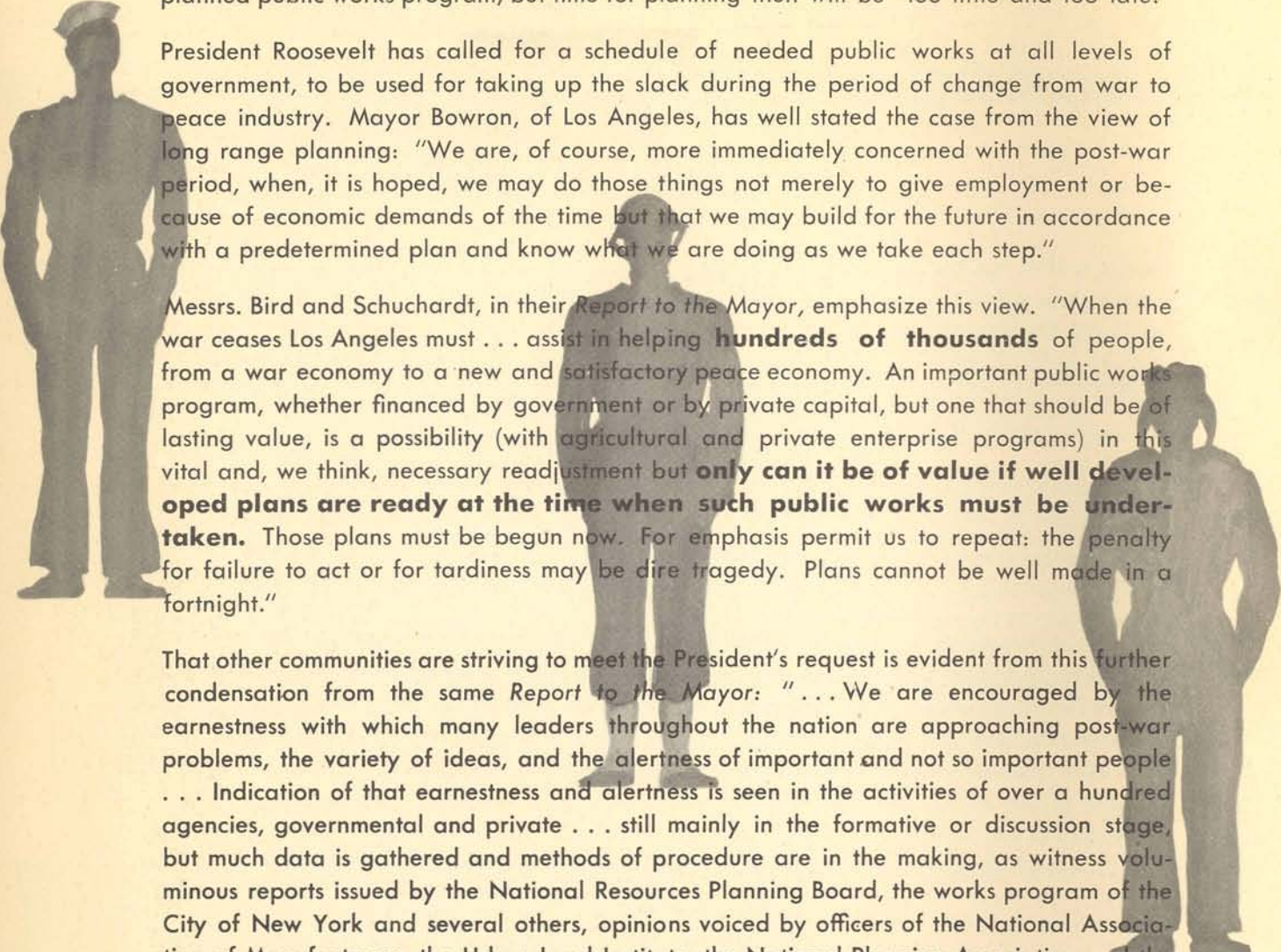
Now Is The Time To Plan . . .

. . . the procedure and projects that will be needed after the war. The readjustments will include a staggering employment problem as industrial workers and military personnel will be discharged in large numbers. This problem will be extremely acute in Los Angeles County. A large part of the readjustment can, and probably must, be made through a planned public works program, but time for planning then will be "too little and too late."

President Roosevelt has called for a schedule of needed public works at all levels of government, to be used for taking up the slack during the period of change from war to peace industry. Mayor Bowron, of Los Angeles, has well stated the case from the view of long range planning: "We are, of course, more immediately concerned with the post-war period, when, it is hoped, we may do those things not merely to give employment or because of economic demands of the time but that we may build for the future in accordance with a predetermined plan and know what we are doing as we take each step."

Messrs. Bird and Schuchardt, in their *Report to the Mayor*, emphasize this view. "When the war ceases Los Angeles must . . . assist in helping **hundreds of thousands** of people, from a war economy to a new and satisfactory peace economy. An important public works program, whether financed by government or by private capital, but one that should be of lasting value, is a possibility (with agricultural and private enterprise programs) in this vital and, we think, necessary readjustment but **only can it be of value if well developed plans are ready at the time when such public works must be undertaken**. Those plans must be begun now. For emphasis permit us to repeat: the penalty for failure to act or for tardiness may be dire tragedy. Plans cannot be well made in a fortnight."

That other communities are striving to meet the President's request is evident from this further condensation from the same *Report to the Mayor*: ". . . We are encouraged by the earnestness with which many leaders throughout the nation are approaching post-war problems, the variety of ideas, and the alertness of important and not so important people . . . Indication of that earnestness and alertness is seen in the activities of over a hundred agencies, governmental and private . . . still mainly in the formative or discussion stage, but much data is gathered and methods of procedure are in the making, as witness voluminous reports issued by the National Resources Planning Board, the works program of the City of New York and several others, opinions voiced by officers of the National Association of Manufacturers, the Urban Land Institute, the National Planning Association and the Regional Plan Association of New York. All are concerned with the primary task of creating better living standards."



WE MUST NOT BE IDLE

A freeway plan should be an integral and important part of the program for Los Angeles County.

A freeway **system** is one of the few items of public works definitely needed in this locality and of such a scale as to be suitable for absorption of large quantities of both men and materials. We have no Boulder Dams nor Golden Gate Bridges to build in this immediate vicinity. Badly needed shoreline protection and flood control works can be extensive as well as socially profitable but will not call for labor or materials in the quantity necessary to meet transition conditions.

Housing — building adequate homes for our still growing population in the right location — will perhaps create an even larger demand for labor and materials. Preparation of plans and a program for extensive housing development is, however, a subject in itself and beyond the scope of this report. And regardless of the magnitude of a housing program, freeways will be needed to provide transportation facilities adequate for areas of new housing as well as for already developed areas.

Construction of a system of freeways covering the entire region will require the services of thousands of men as well as construction machinery and materials in vast amounts. The production of these machines and materials will themselves constitute a secondary source of employment of considerable importance.

In order to make such projects possible when they are needed, it is imperative that sufficient plans be prepared well in advance. The various agencies that will carry out these plans must have examined, criticized, revised and accepted them and made cost estimates. The legislative bodies of the city, county, state and federal governments must be ready with funds to set the projects in motion. Acquisition maps, working drawings, details and accurate estimates of quantities of materials and labor must be all but finished by the time the war ends. In many instances necessary land should be acquired, even before the war ends, while conditions for purchase are favorable for saving public funds. In fact, some freeway rights-of-way are being acquired now.

Another effect of the war and its close will doubtless be an increase in aerial transportation. The further development of airports in this region, reflecting the important place that air travel will take in our national life will create a new demand for freeways. *American Aviation* for January 1, 1943, in a significant editorial regarding air-borne freight, makes this point: "... the automobile and truck are natural flexible complements of the airplane. . . . They operate to each other's advantage. . . . The nation will have thousands of airplanes suitable for carrying people and cargo wherever they want to go." People accustomed to traveling by air will demand — and get! — a rapid, safe means of movement between air terminals and their urban destinations. Freeways will be one of the means by which this facility, now lacking, will be realized.

In time of war, then, it is our duty to prepare for return to a normal volume of automobile usage by planning for safer, more efficient means of travel. An adequate system of freeways will play a large part in this vital development.

In short . . .



KEEP MEN AND INDUSTRY WORKING

Traffic requirements are not adequately met by ordinary highways with their grade intersections, left turns, stop signals and usual congestion.

Freeways — free from these obstructions — provide for safe, rapid movement of people and goods.

The need for freeways has been apparent for many years.

Numerous civic organizations have urged the construction of a freeway system to relieve the wasteful traffic congestion in this area.

Construction of freeways, other than those of immediate military need, will be restricted for the duration of the war.

A few freeway routes, serving particularly vital sections of industry and defense, might be considered a war necessity.

**PLANS
for FREEWAYS
SHOULD BE PREPARED**

NOW...



NEEDS FREEWAYS...

... so that a post-war public works program can be established.

A freeway system is a large-scale, long-range planning project — requiring great numbers of men and great quantities of material. Freeway construction will provide a useful public works program when it is needed in solving employment problems caused by the transition from war to peace.

Continuing decentralization threatens harmful results unless it is planned.

Satellite communities, well planned within themselves and in relation to a freeway system can provide a better way of living and still preserve the social and economic advantages of the urban center.

Finally, in anticipation of aviation as a major influence in our time, freeways will be necessary to provide for an efficient means of distribution of people and goods from air terminals to centers of urban development.



"... But a glance at the huge landing field below and at the landscape round about tells us that we are at the nerve center of the airplane capital of America. Giant passenger planes and midget taxi planes land and take off every minute or two. Buses and private automobiles arrive and depart in steady streams along super motorways connecting the airport with every important point in the county. Since the days of the Second World War, when our aircraft industry gained ascendancy over all other local industries, aviation has assumed a dominant position in the life of the entire community."

Cities Are For People



A Freeway Policy

In order to steer a steady course during the period following this presentation of the plan for freeways, when it will be subjected to further critical study, probably to successive revisions and finally to pressures of expediency, it is necessary that a consistent freeway policy be followed.

Adherence to a carefully defined policy will make it possible to progress on a rational, basic program for freeways even before the ultimate plan is completely defined. This policy should be based upon all the logical reasons for the system as a whole and upon analysis of experiences here and in the east. It should further include generous standards covering questions of location, relation to the general land use plan, essential features of design, terminal facilities, acquisition, financing and programming. Both in drafting the plan as a whole, and in considering specific projects, clearly stated policy will make it possible to evaluate alternate or conflicting proposals and finally clear the way to a satisfactory decision and agreement.

In the matter of location, first attention must be given to the search for routes in position to give relief to areas where the greatest need existed prior to 1942, the last date for which normal traffic data are available.

Second only to this consideration of greatest need is consideration of two classes of routes that may normally be expected to develop either first or most easily. These are either:

- a—those where "natural" routes present outstanding advantages coupled with unquestioned usefulness or evidence of need; or
- b—those where some work already accomplished calls for completion in order to derive full benefit from initial investment.



The Arroyo Seco was a perfect example of the "natural" type: much of the property was already in public ownership; the character of the arroyo minimized property damage and made possible easy solutions of grade separation problems; and several existing bridges were easily adaptable. The traffic value of this route between Pasadena and Los Angeles was never subject to intelligent question.

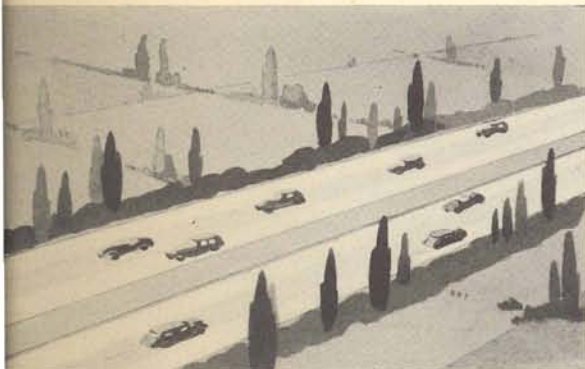
The connection between the existing Cahuenga Pass portion of the Hollywood Parkway and the present terminus of the Ramona-Santa Ana Freeway, is an outstanding example of the second type.

- Early consideration of these two classes of routes is not mere opportunism; they comprise projects of such great value, vigor, persistence and usefulness that they are bound to come, plan or no plan. Consequently they form an important part of the nucleus or core of any plan that could be successfully developed. Their importance, early in the planning stage, is that they will influence profoundly the direction and location of other routes which are not in themselves so easily determined. A suggested new route, considered alone, might appear to have few advantages, but when its connection to one of the "inevitable" ones is considered it is immediately seen to be tremendously useful.
- The exact location of routes depends on many factors including relationship to communities, topographic features, engineering and economic feasibility and social values. The number of freeways alone is of little consequence and will not determine an adequate system, for adequacy also depends on connections, service and standards of design.
- Again, the exact location of any route will also depend in many instances on special or unusual factors. For example, availability of land between blocks, in abandoned railroad rights-of-way or even in existing streets, may determine the cheapest or best route for a particular section which in turn becomes the controlling factor for a much larger section. A decision should be made only after detailed studies, route by route, have resulted in a complete evaluation of alternatives.
- Every effort should be made to guarantee that a given freeway shall be so located as to **serve, not isolate nor divide**, any community along its course. It is important in choosing an exact alinement to avoid creating conditions that will prevent the normal development of bordering lands. This consideration is subject to the widest possible variations, dependent upon possible and best uses of the land concerned. It is a problem of planning technique and cannot be described in words in the space available here.
- Alinement studies will not always seek the shortest distance between communities to be served, as in the case of the average highway. Instead they will attempt to find the route most advantageous in by-passing congested centers and in providing opportunities for such details as grade separations and easily understood interchange structures.
- The freeway system, in addition to giving service within the region, must also provide adequate connection to the state and national system of freeways, as outlined in 1939 in *Toll Roads and Free Roads*, report of the Public Roads Administration. This means recognizing the established main routes of vehicular traffic at points of entry to the region and providing access from them to the interior network. The freeway plan here presented does make these connections.
- Such planning on a broad scale is no easy matter. Habitual intercommunity travel by automobile, as determined by traffic surveys, provides some basis for estimating the needs of various areas, but the creation of freeways will in itself bring new possibilities for the use of land in a given area. Provision for service to airports or other mass transportation terminals, as well as other objectives beyond the immediate district being studied, will in many cases require routes where local need would not justify them.

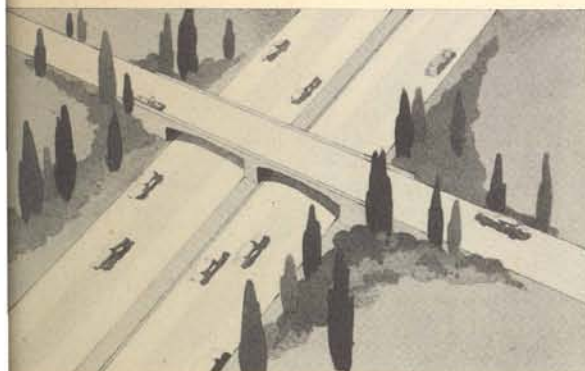
The freeway should be DESIGNED as a carrier of thru traffic exclusively...

. . . incorporating the most advanced features of traffic engineering. Typically a freeway will consist of two separate pavements, each several lanes wide and designed for traffic moving rapidly in one direction only. **No parking can be permitted on the roadway.** Grades and curves on each roadway may be completely independent of those required on the other. The two pavements will be separated by a dividing strip — generally planted — of varying width, as may be determined by topography, land value, curvature and necessary connections to other roads. The width and planting of the center strip offer the opportunity to screen the glare of opposing headlights. (Future improvements in lighting equipment of either vehicles or of the freeways may further eliminate this hazard.)

Properties abutting on freeways as defined by the California Freeway Act, have no rights of direct access. Such properties should be separated from the pavements of the freeway by fences and strips of land sufficiently wide to permit generous planting of both trees and low shrubs as protection against traffic noise and fumes. The psychological effect of thus **visually** isolating the freeway from adjoining property is highly important, contributing to both traffic efficiency and values of bordering property. This effect has been amply confirmed by experience with the parkways in the New York region. Besides, good planting adds greatly to the attractiveness of our communities and the pleasure of driving.

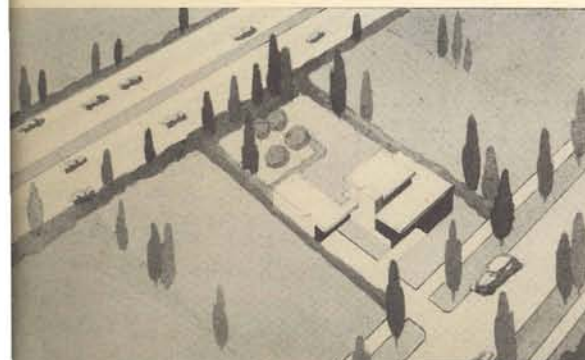


All roads, walks or railroads that cross the freeway will be carried over or under it. Connections to such cross streets will be provided if required by traffic need, but where they are made they will be individually designed to show unmistakably their purpose as entrances or exits. The exits or entrances will be separated from the main traffic streams by "directional islands" and their approaches designed as long, tapering widenings of the main freeway pavement, commonly called acceleration or deceleration lanes. All entrances and exits will be worked out in this way.



When only a portion of a freeway is constructed it should be built in conformity with the ultimate development plan, providing for addition of more pavement or structures without necessity for tearing up or rebuilding. The great waste in constructing a road only to rebuild it the following year is an inexcusable public loss. The original **plan** should include all facilities needed for the final development, and all of the land should be acquired on this basis so that the final work may be done as needed without excessive cost.

The essential features of a freeway are described above. Without all of them no project could truly be called a freeway. There are some other features also, without which our freeway cannot be expected to function properly under the conditions that usually bring freeways into existence.



SPECIAL FEATURES

Whenever a freeway is built to discharge a large volume of traffic within a small area, means will have to be provided either to spread this traffic out in an orderly way or to store the vehicles in easily reached parking areas. Provision of additional parking area or distributor streets demanded for the users of the freeways is properly a portion of the freeway program, and must be timed for construction accordingly. Intensive commercial, industrial or recreational developments served by freeways must be equipped with such terminal facilities before the freeway system can function at its best.

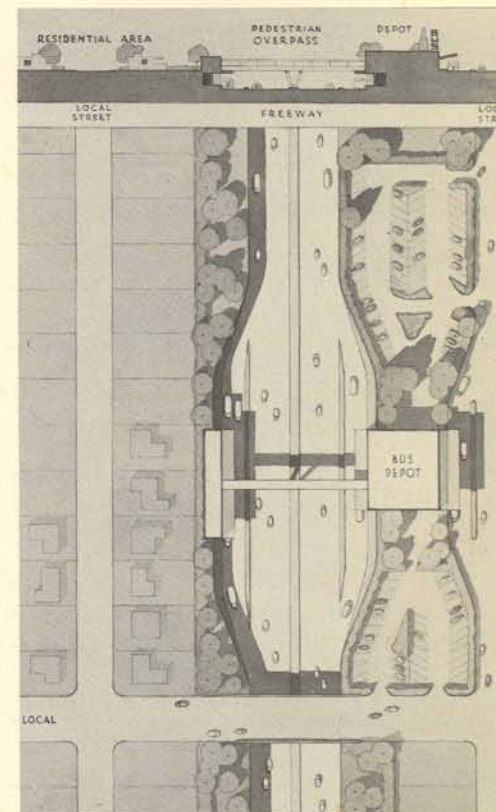
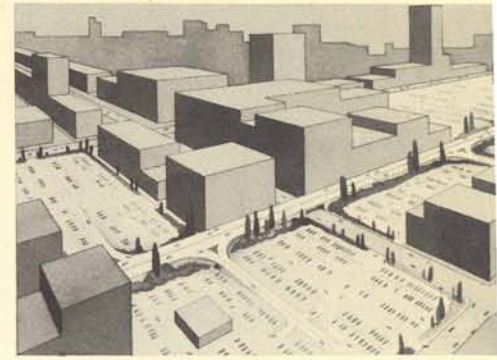
The prime function of freeways is to provide for safe, uninterrupted, rapid movement of **individually operated vehicles**. This is fundamental. If freeways are to be limited to usage by light "pleasure" vehicles, the only regulations need be on speed and the limitation of parking to certain areas designed and marked for that purpose. But the freeway plan must contemplate the use of certain routes, at least, by different classes of traffic, and the design, construction and regulations would vary accordingly.

Except for a few routes of very special nature, the freeway design must be such that rapid transit can be provided by the operation of modern buses. The Transportation Engineering Board has also proposed that freeways be designed with rights-of-way sufficient to accommodate also rail transit lines located within wide center strips and completely separated from automobile traffic.

Where buses are to use the freeway, **they must be required to leave it for loading and unloading**. Special bays, separated from the main pavement, can easily be provided as a means of controlling this situation while still deriving maximum benefit from the investment. The distance between bus stops must also be regulated so that they will not interfere with the continuous flow of traffic. Use of buses on the freeway must not be local in character. Another concept of bus operation on the freeway is described in the report of the Transportation Engineering Board as providing ". . . through service, without transfer, by running rapid transit buses for part of their route on the surface streets to pick up the passengers conveniently, then on the express highway for high speed over the long haul and then back on the streets again for distribution of their load at the usual street stops." The Los Angeles City Planning Commission recently published a study of bus routes and loads that would be feasible on some of the parkways in this area. Further analysis of data collected by the Regional Planning Commission's Transportation Planning Project should also help in reaching conclusions on this subject.

It can also be seen that many questions of right-of-way depend on having a fairly complete knowledge of the various functions that a particular project will have to perform. Width cannot be determined until details of design have been worked out. Alinement depends partly upon requirements of design. It will be necessary to design the right-of-way liberally in regard to width, in order to care for possible later developments, such as bays for bus stops. Another probable future development will be flight strips for airplanes at suitable intervals along the courses of some freeways, and conveniently connected to them. The real importance of this conclusion is that the **acquisition must be made upon a liberal basis**, in order that subsequent development will not be thwarted.

In any case, it is obvious that use of a freeway for other than a single class of vehicles will require inclusion of suitable features in the original design.



1945

1940

1950

1955

1960

1965

1970

1975

1980

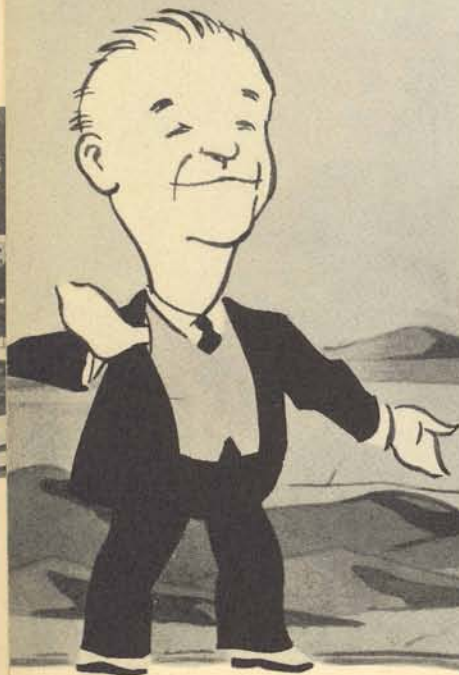
During the war period, when actual construction is not, for the most part, imperative, planners and members of legislative bodies should make efforts to solve the problems of securing adequate rights-of-way, at least improving the legal machinery for such acquisition. Fortunately, California already has legislation providing for the acquisition of freeway rights-of-way by the State. The possibilities of expanding and liberalizing the excess condemnation laws of this State are now being studied. Results of these studies should be so presented as to form a working mechanism for the legislators who will attempt to make it law, ready for use at the earliest possible moment.

Other methods of approach are indicated in *Toll Roads and Free Roads*. One of the points in the general outline for what is in effect a National Freeway Plan is the necessity of "the creation of a Federal Land Authority empowered to acquire, hold, sell and lease lands needed for public purposes and to acquire and sell excess lands for the purpose of recoupment." The opinion may be held that this is not the function of the planning bodies, yet few appreciate better than do the planning agencies the ramifications of land usage, acquisition difficulties, and land requirements for a successful freeway program. It would be a great public loss if these agencies did not present a land acquisition program.

Up to the present, freeways in this region have been constructed by collaboration of local and state agencies, with gas tax moneys as the chief source of revenue. It is to be anticipated, of course, that any portions of freeways constructed as war highways would be paid for by Federal allocations. The realization of the freeway system, as a part of a post-war public works program will perhaps find the Federal government a large financial contributor.

The establishment of toll charges for the use of freeways is a matter of economics, national and local policy and legislative authority. Experience on the Merritt Parkway in Connecticut, the Pennsylvania Turnpike, and portions of the New York Freeway System indicates successful use of tolls under certain conditions. The full analysis of this subject should take into consideration the various points raised in *Toll Roads and Free Roads*. This comprehensive report deals with an analysis of the types of freeway which might be amortized by a toll system.

In spite of the haziness obscuring questions of financing we should not hesitate to prepare and inaugurate a program of freeway planning. The fact that we cannot see the details of a plan for financing twenty or thirty years ahead, is no reason for failure to take the first step. In 1910, proposal of a 600-million-dollar highway program would have staggered our Los Angeles County population of only a half-million. Yet, as pointed out earlier in this report, we now have that 600-million-dollar highway system and have derived more benefit than financial burden from it. So it will be with the freeways although we may expect a more orderly, better organized procedure. With a sound physical plan to follow, we will find the appropriate method of financing early in the course of carrying out the program.



A freeway plan effectively established would contain as part of its recommendations a program for construction. A program of this type is made not so much for the purpose of establishing actual priority as to enable the administering and governing bodies to anticipate in general the amount of funds to be required from year to year, and to proceed with acquisition at the most favorable times. Out of such a program inevitably evolves a priority schedule, since it is impossible to begin on all parts of the system at once.

A rough schedule can indeed be made even now, even in the absence of a master plan representing full agreement of all parties. For it must be recognized that certain freeway routes are already being constructed and that working drawings and land acquisition are under way on others.

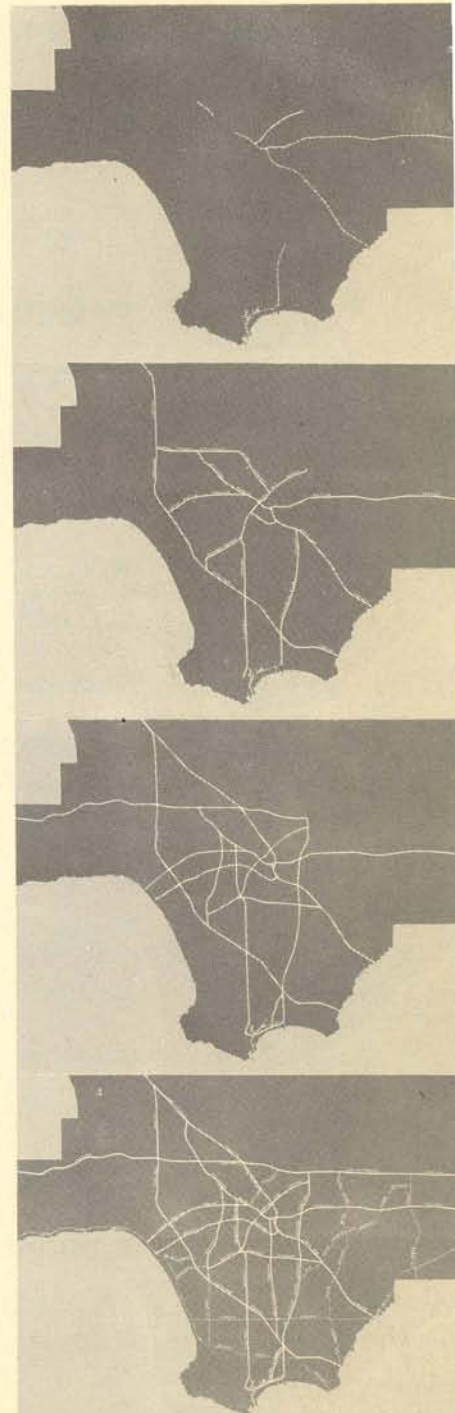
Whether or not these particular projects would be proposed at all or be given first attention in a master plan being created anew, from whole cloth, is of no consequence. As a matter of fact, they are so "natural" and economically "useful" that they would unquestionably rank high in any schedule. These existing freeways compose a pre-priority group and form the essential nucleus of any and all systems.

To create a **system** of freeways it will next be necessary to join up these pre-priority routes, in order that we may gain the greatest usefulness immediately from the heavy initial investment. Addition of certain other strategic routes then needed to round out a system that will provide a minimum coverage to all parts of the county. Some of these projects are the ones that connect with state and national highways. These Initial Development routes, when approved by all the highway and planning agencies, should compose the freeway portion of the Post-War Public Works Program for the region.

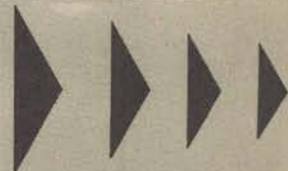
As the need and opportunity become more apparent in the future still more projects will be added from time to time, while adjustments will doubtless be made in many of the routes as first projected. Shown here are extensions to form the Basic Plan.

The ultimate plan will perhaps include in addition to an extended system of true freeways, a supplementary group of other ways with access limited in varying degree. For the entire system adequate right-of-way should be assembled as far in advance as practicable; development would then take place as required by the demands of traffic at that time . . .

We find then that while many details are clouded by uncertainty we can nevertheless set up a tentative plan which may be adopted as a part of the Master Plan while the final plan is growing.



**LET US PUT THAT PLAN INTO
WORDS AT THIS POINT:**



A POLICY for the creation of a Freeway System

Adopted by resolution of The
Regional Planning Commission
on February 2, 1943.

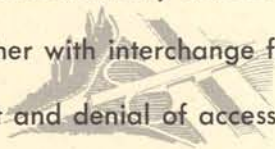
- There is no doubt that a system of freeways is a necessity for the Los Angeles Region. The location of freeway routes, in general depends on the following factors: (a) the existence of completed portions of routes; (b) opportunities for advantageous development as related to topographic and other features; (c) the communities to be served; (d) adequate connection to state and national transportation routes; and (e) coordination of plans of all agencies involved in freeway planning.



- Freeway routes should be so located as to interfere as little as possible with neighborhood character, and at the same time to provide all parts of the region with improved transportation facilities.



- Design of freeways should normally include divided roadways, separation of grades for cross traffic together with interchange facilities as may prove necessary, liberal landscape treatment and denial of access at any point except carefully designed exits or entrances.



- Terminal facilities, consisting of adequate distribution lanes or parking areas, or both, should be planned and executed as part of the freeway project, in all areas where concentrated loads are discharged.



- Before a right-of-way is acquired the functional uses of the freeway and the classes of traffic it is to carry should be determined, and the design should be made accordingly.
- Legislation simplifying the acquisition of land needed for freeways should be sought, with the object of facilitating actual construction by the beginning of the post-war period.
- The problem of a rational financial program needs to be studied, but is to be approached with confidence.
- A program, to be worked out in more detail as the design plan is perfected, will include the following groups:
 - Projects constructed or under way including those for which acquisition has been begun.
 - Projects for which advance or preliminary plans are now prepared and upon which all administering agencies are agreed. These two groups should comprise the first unit of the Post-War Public Works Program.
 - Others, classified as to urgency as the plan is completed, and upon further mutual study of the problem by various agencies.

● **THIS ENTIRE POLICY SHOULD BE VIEWED AS LONG-RANGE PLANNING**

There is no pre-determined time of beginning, nor is there any reason for statement of a time of completion. Events will determine these factors; it is up to the planners to prepare the plans and establish the base upon which the future construction can be built.



A Freeway Plan

for this region must have as its nucleus the freeways already constructed, those being constructed, and those for which detailed plans are prepared and rights-of-way being acquired. These freeways are the result of years of effort by many citizens from all walks of life, and the sections already in use have proven their worth in service to the areas which they tap. The value of these routes would increase many fold if they were part of a continuous system, instead of being isolated strands.

ARROYO SECO PARKWAY



The Arroyo Seco Parkway (1940) from Pasadena to downtown Los Angeles, was the first unit completed between two major centers of population in this region. Handling large volumes of automobiles at high speed with a very low accident rate, it has already justified the cost of construction. In 1941, the average daily flow of automobiles over this six-mile parkway was 33,000 cars. The cost of construction was \$5,048,487 and the cost of the present work doubling the facilities north of Castelar Street will be about \$2,600,000.

CAHUENGA PASS



The Cahuenga Pass portion of a freeway through Hollywood to San Fernando Valley points has been completed for about two years. Criticisms of this "freeway" are, in the long view, unwarranted, for here we have merely a portion of a freeway, not in itself complete. Preliminary detailed plans provide for extending this project both northerly and southerly. Appropriations have already been made for the extension northerly to Vineland Avenue, and \$2,500,000 have been budgeted for beginning work upon the section of Santa Monica and Ramona Parkways from Vermont Avenue to Aliso Street. The present mile-and-a-half section cost \$1,707,000, and the extensions described here are estimated to cost \$12,875,000.

RAMONA FREEWAY



Ramona Freeway is now being built as a conversion of an existing highway. The completion of the Aliso Street bridge across the Los Angeles River will open a section of freeway from Vignes Street to Indiana Street in the City of Los Angeles. Rights-of-way have been acquired and plans are complete for the section east of Indiana Street. The ultimate length will be thirty-one miles, to the City of Pomona, where connection with freeways to be built in San Bernardino County will be made. The twenty-five mile extension easterly from Indiana Street will cost approximately \$20,000,000.

LOS ANGELES RIVER FREEWAY



The Santa Ana Freeway, too, is partly under construction. That portion which branches from Ramona Freeway, east of the Los Angeles River, is being built as a part of the Ramona Freeway interchange structure. The next section southeasterly, in Boyle Heights, is now under construction in conjunction with development of the Pico Gardens Housing Project. Land acquisition and plan preparation for the remainder of its thirty miles to Santa Ana in Orange County are now under way, at an estimated cost of \$26,000,000.

That section of the proposed Los Angeles River Freeway south of Artesia Street is already advanced to the stage where approximately forty per cent of the right-of-way within the City of Long Beach has been acquired. This project will create a freeway from Ninth Street, Long Beach, northerly to a temporary connection toward Los Angeles via Atlantic Boulevard.

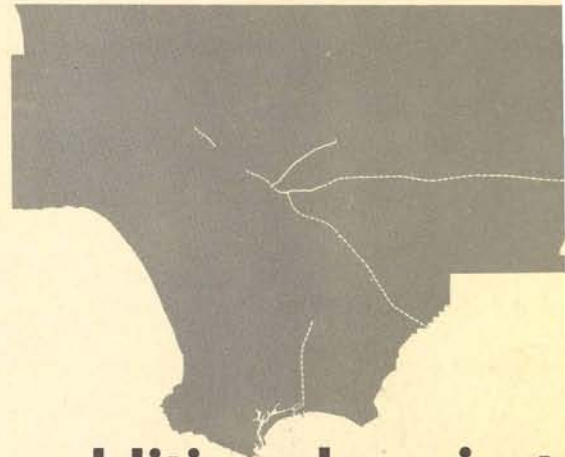
. these five elements

form the controlling nucleus for whatever system is finally developed.

When these pre-priority routes are plotted on a map it can readily be seen that the next progressive step is to join them so as to form a continuous system. To these should then be added several routes to connect major national highway routes through this county and to make connection to the several major airports. The Regional Planning Commission, in presenting this report recommends that the following routes should be considered as forming the initial elements in a final system still to be devised and seeks approval for the early adoption of this group as the first Freeway Section of the Master Plan.

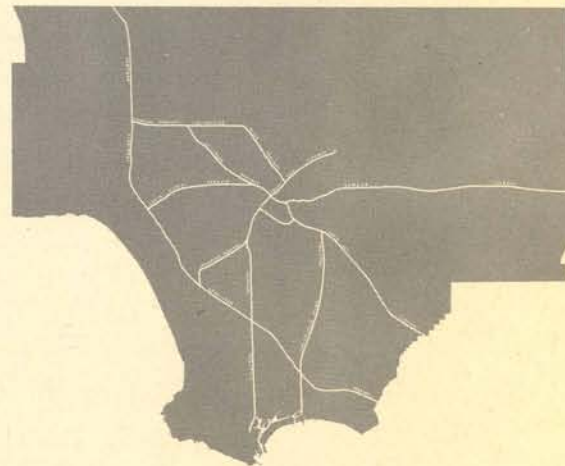
. . . completed or under way

- **ARROYO SECO PARKWAY** from Castelar Street, Los Angeles to Glenarm Street, Pasadena.
- **HOLLYWOOD PARKWAY** from Highland Avenue to Vineland Avenue, Santa Monica Parkway from Vermont Avenue to Figueroa Street, and Ramona Freeway from Figueroa Street to Vignes Street.
- **RAMONA FREEWAY** from Vignes Street to San Bernardino County boundary.
- **SANTA ANA FREEWAY** from Ramona Freeway to Orange County boundary.
- **LOS ANGELES RIVER FREEWAY** from Ninth Street, Long Beach, to Atlantic Drive.



. additional projects

- **HOLLYWOOD PARKWAY** from Vermont Avenue to Highland Avenue and from Vineland Avenue to Ventura Parkway.
- **LOS ANGELES RIVER FREEWAY** from Atlantic Drive to Santa Ana Freeway and from Arroyo Seco Parkway to Hollywood Parkway at Ventura Parkway.
- **VENTURA PARKWAY** from Hollywood Parkway to Sepulveda Parkway.
- **OLYMPIC PARKWAY** from Figueroa Parkway to Santa Ana Freeway.
- **FIGUEROA PARKWAY** from Castelar Street to Los Angeles Harbor.
- **SEPULVEDA PARKWAY** from Tunnel Station (Newhall Pass) to Orange County boundary.
- **INGLEWOOD PARKWAY** from Figueroa Parkway to Sepulveda Parkway.
- **SANTA MONICA PARKWAY** from Hollywood Parkway to Sepulveda Parkway.



There will doubtless be some minor adjustments to be made in the final alinement of each project, but such matters of detail can be settled by coordinated efforts on the part of the agencies involved. No attempt has been made to list these projects in order of importance.

- **Hollywood Parkway** must be considered for early development, in order to get the full benefit of heavy initial investment. The second step would fill in the link from Vermont Avenue to the Cahuenga Pass portion already constructed. Nearly four miles in length, cost of this section has been estimated, by the City Engineer of Los Angeles, at \$11,490,000.
- **The Los Angeles River Freeway** will serve the San Fernando Valley and the Los Angeles-Long Beach Harbor, as well as twenty-six cities and towns along its route. This proposed freeway is approximately thirty miles long and the cost has been estimated to be approximately \$23,000,000. (Los Angeles River Freeway Feasibility Report, RPC, 1941.) Completion of the portion southerly of Santa Ana Freeway would connect Long Beach to central Los Angeles, and via the Arroyo Seco, to Pasadena.
- **Figueroa Parkway** (the West By-Pass, as shown in the plans of the Transportation Engineering Board and City Planning Commission) extends the Arroyo Seco Parkway through downtown Los Angeles to San Pedro via a line adjacent to Figueroa Street.
- **Olympic Parkway**, when completed, will extend from the Santa Ana Freeway to Sepulveda Parkway along a line parallel to Eighth Street, Olympic Boulevard, and Venice Boulevard. The portion of this freeway included here is in agreement with the plan of the Transportation Engineering Board. This route will act as a collector for many heavily traveled east-west traffic arteries.
- **Sepulveda Parkway** will extend from Tunnel Station, north of San Fernando, to Inglewood, continuing on a diagonal alinement to Orange County in the vicinity of Long Beach. This route provides a necessary by-pass around the center of the Los Angeles Metropolitan Area and makes excellent connections with state and national highways outside Los Angeles County.

- **Inglewood Parkway** will form a direct connection from downtown Los Angeles to Inglewood and the Los Angeles Municipal Airport. It will also improve accessibility to the West Bay cities.
- **Ventura Parkway**, generally parallel to Ventura Boulevard, together with its connection to the Hollywood Parkway, will bring traffic from the west into Hollywood and the center of Los Angeles, and by way of the Los Angeles River Freeway to Glendale, Long Beach and Orange County.

These routes form the program for
INITIAL DEVELOPMENT



COMMUNICATION

During the process of studying the plans, a series of diagrammatic maps was prepared, roughly analyzing the lines of communication between centers of population. Each cross line indicates a traffic movement from a main entry point to the region or between various important communities within the region. A set of values was established to avoid producing a meaningless maze of lines which would have occurred if **all** of these points had been connected. In other words, the most important movements were established, and minor ones shown only where major ones did not cover. The choice of units of the freeway system was checked against, and partially based on, fulfillment of the needs indicated as most important in this study.

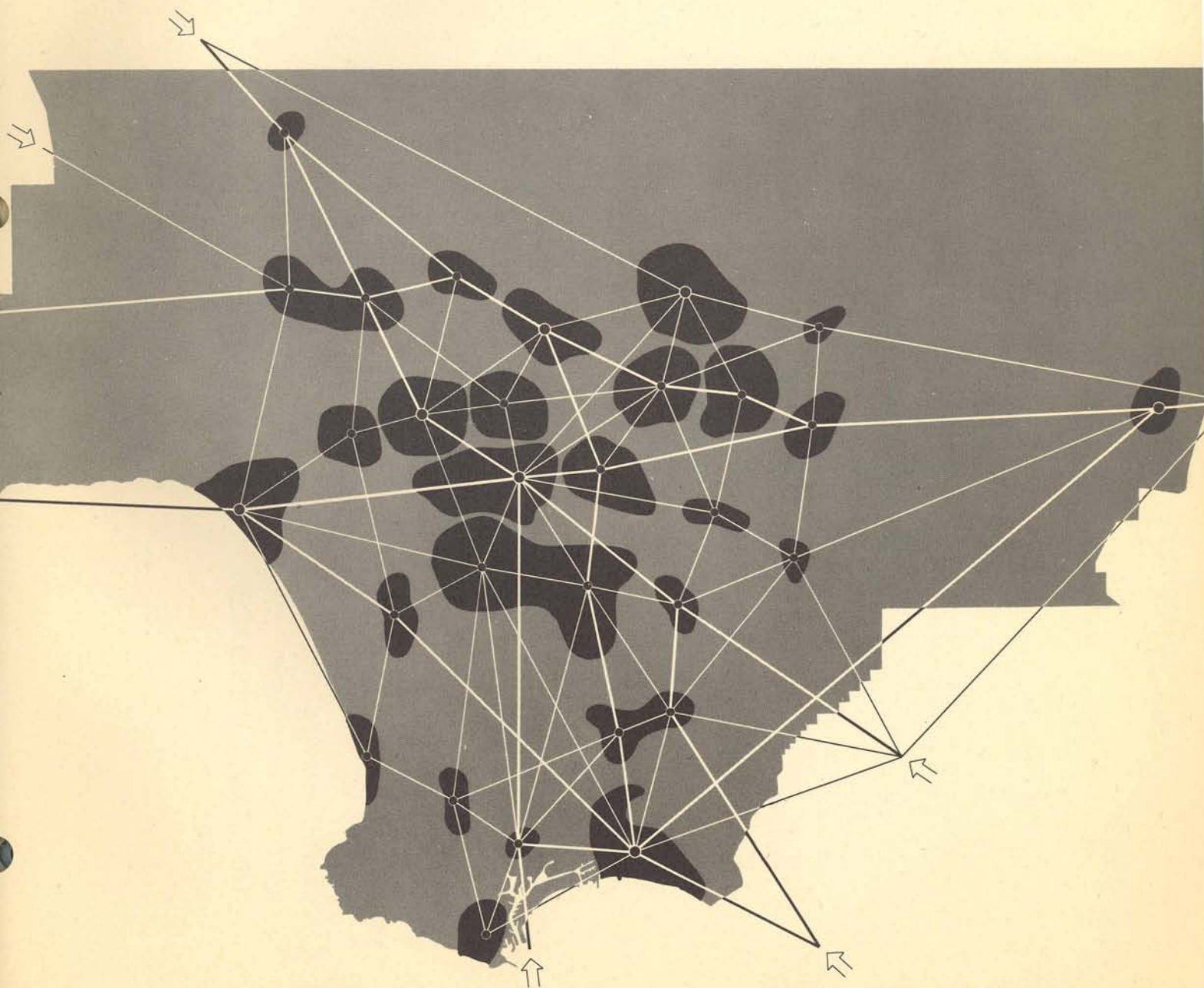
DECENTRALIZATION

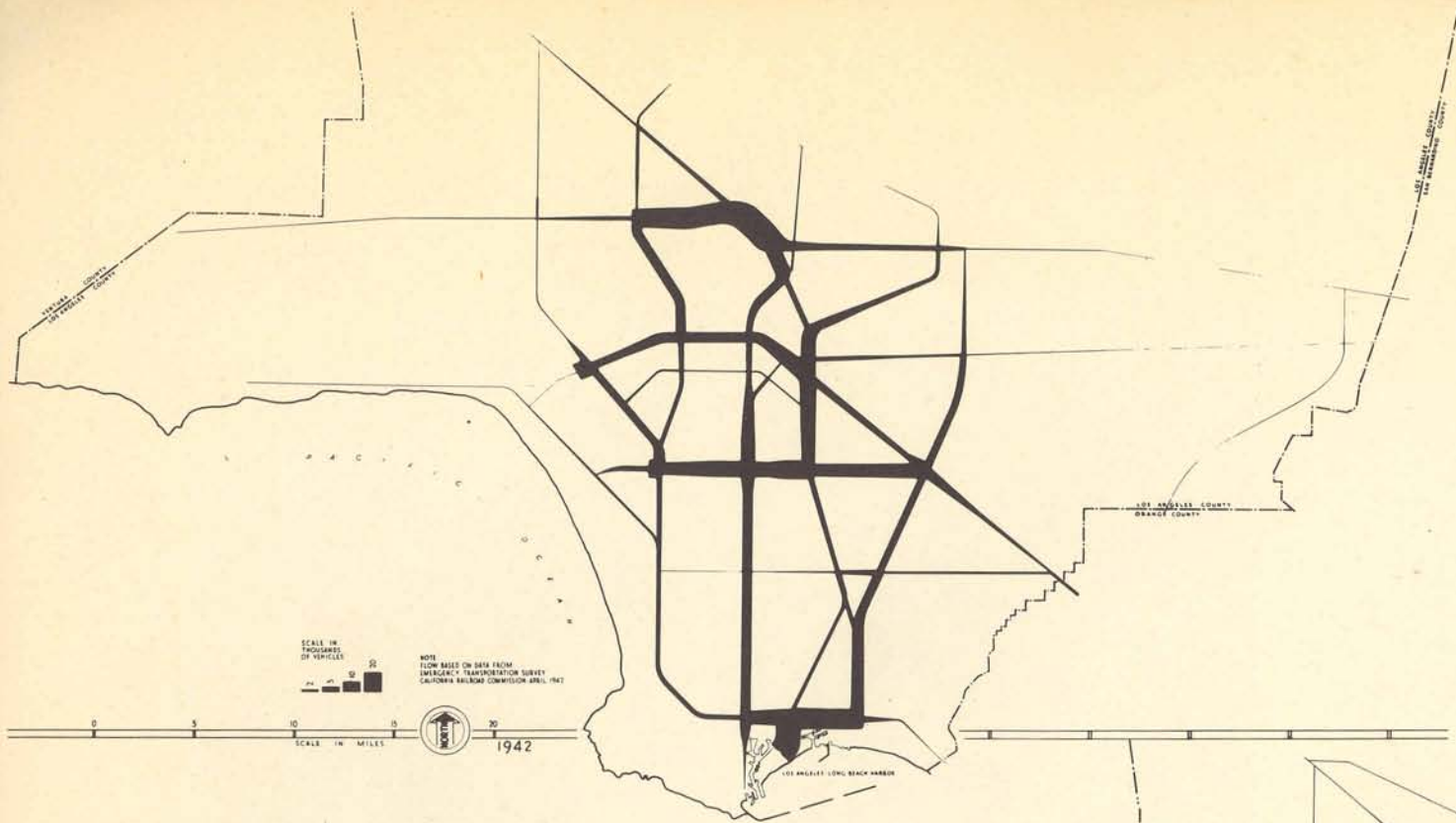
Even such a crude diagram illustrates clearly the advanced stage that decentralization has reached in this region. The wide spread of people and services is the chief cause of the maze which traffic itself has become. The repeated crossing of lines of flow has created one of our major problems. Existing highways connecting main centers of development are in many cases indistinguishable from the local streets serving within the communities themselves. The physical structure and roadside developments in commercial, residential and industrial districts have reduced the traffic-carrying capacities of some highways to little more than that of local streets, and have increased the danger of accidents many fold. To find a solution for this kind of problem, we must employ facilities which are deliberately designed for the decentralized community, but that design does not need to increase the destructive aspects of decentralization.

The establishment of arterial connections between the centers of population in a way that will aid their development and also permit them to function more efficiently as elements of the great metropolitan area is one of the main purposes of the freeway plan.

COMMUNITY UNITS

The freeway plan should not be considered merely as another set of traffic-carrying roadways, but it should contain an implication of, and obligation to develop, spaciouly planted borders. Thus followed out, it tends to produce minor "green belts," creating within its boundaries, community cells which can develop as real neighborhoods, with protection against encroachment by other types of development. The residents within the areas bordered by these freeways will be provided with a rapid means of transit to other communities, and inter-community travel may move freely without interrupting the serenity and security of the cell itself.





**GRAPHIC ANALYSIS
DAILY VEHICULAR FLOW
EMPLOYEES AND SHOPPERS
SELECTED BUSINESS DISTRICTS
METROPOLITAN AREA**

NOTE:
Flow based on registration address of 150,000 cars parked in four business districts — Los Angeles, Long Beach, Pomona, and Westwood Village. Data obtained under WPA O.P. 165-1-07-246.

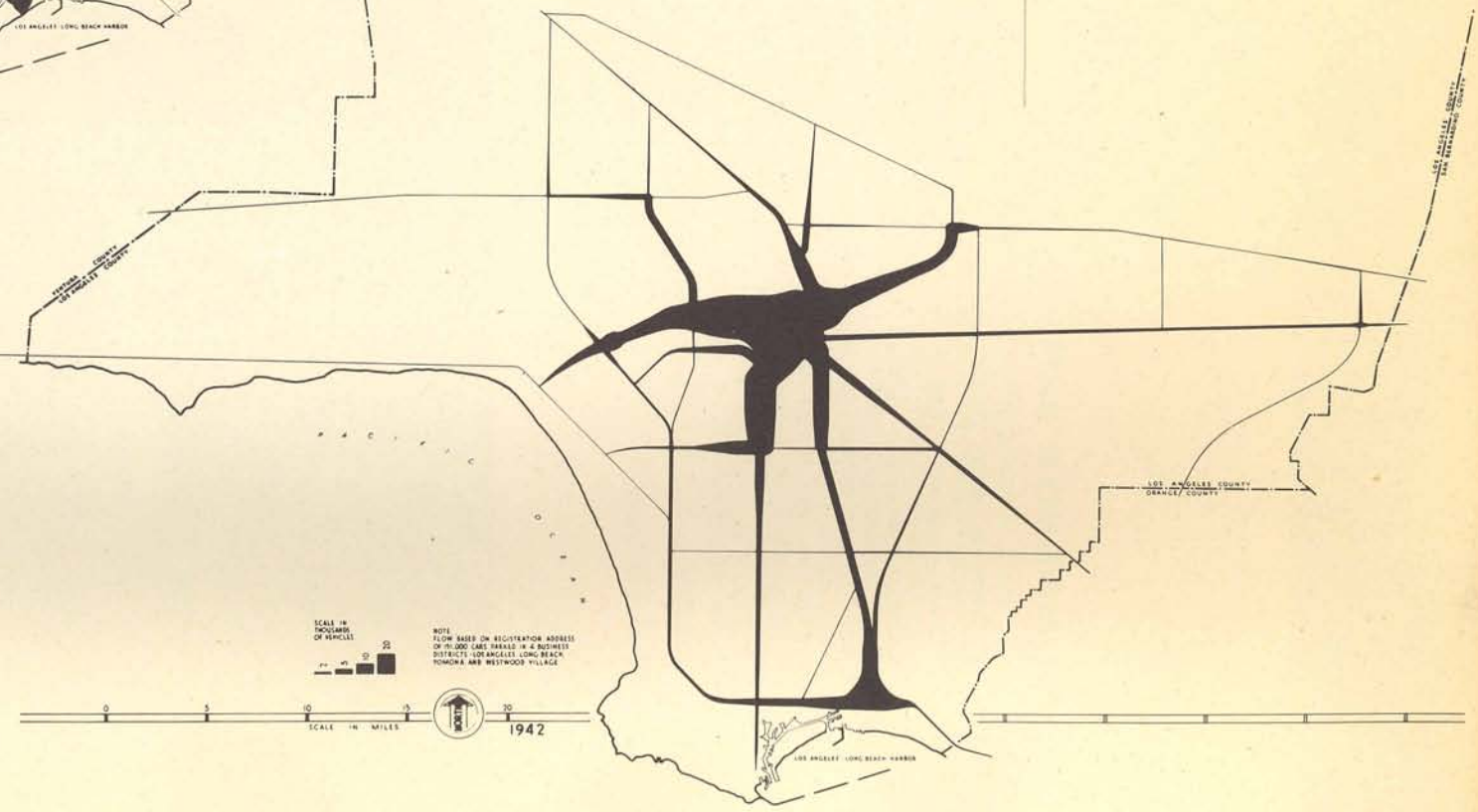
SCALE IN THOUSANDS OF VEHICLES
0 10 20

NOTE:
FLOW BASED ON DATA FROM
EMERGENCY TRANSPORTATION SURVEY
CALIFORNIA RAILROAD COMMISSION APRIL 1942

SCALE IN MILES
0 5 10 15 20
1942

**GRAPHIC ANALYSIS
DAILY VEHICULAR FLOW
INDUSTRIAL EMPLOYEES
METROPOLITAN AREA**

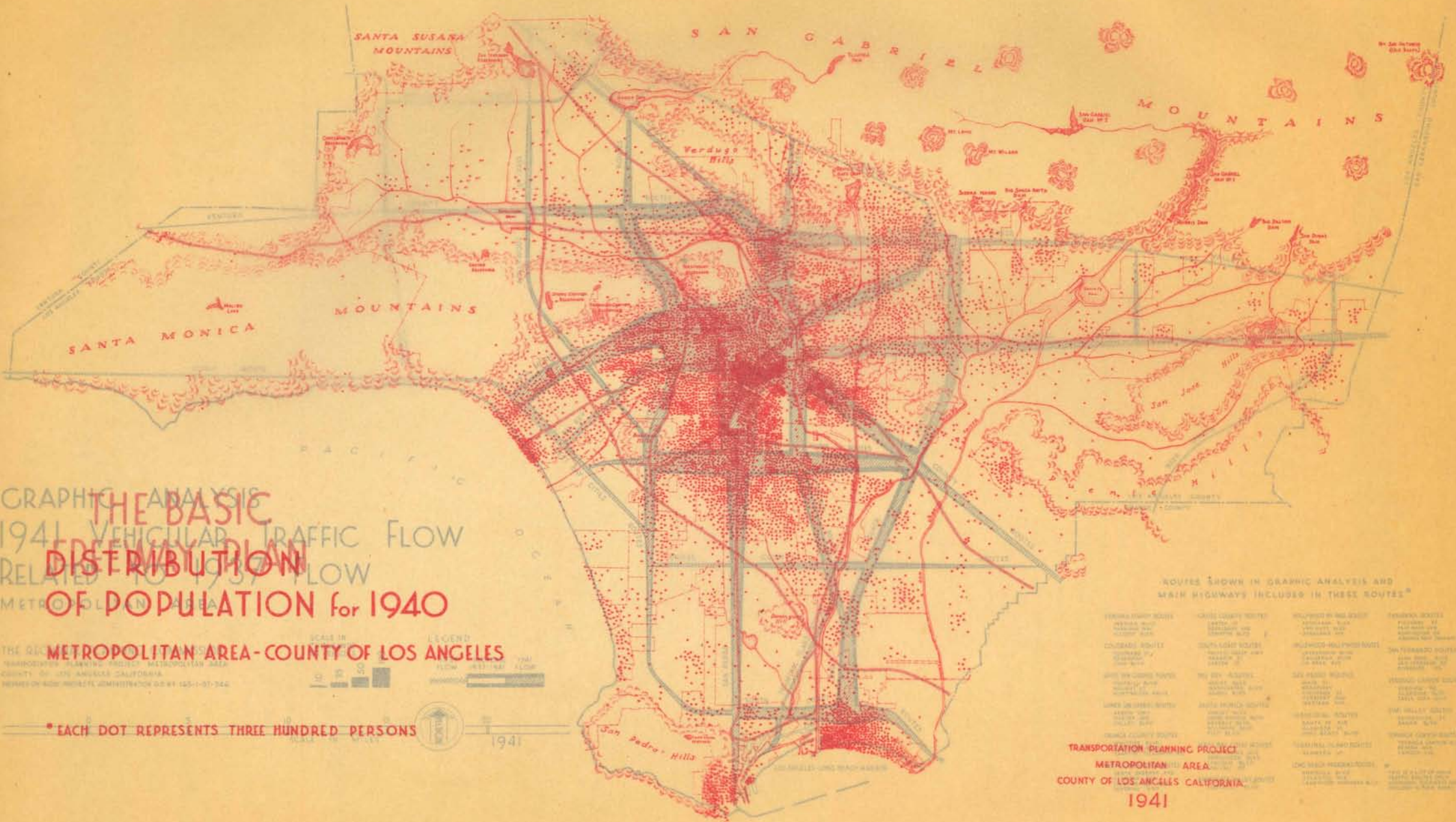
NOTE:
Flow based on data from Emergency Transportation Survey, California Railroad Commission, April, 1942.



SCALE IN THOUSANDS OF VEHICLES
0 10 20

NOTE:
FLOW BASED ON REGISTRATION ADDRESS
OF 75,000 CARS PARKED IN 4 BUSINESS
DISTRICTS: LOS ANGELES, LONG BEACH,
POMONA AND WESTWOOD VILLAGE

SCALE IN MILES
0 5 10 15 20
1942



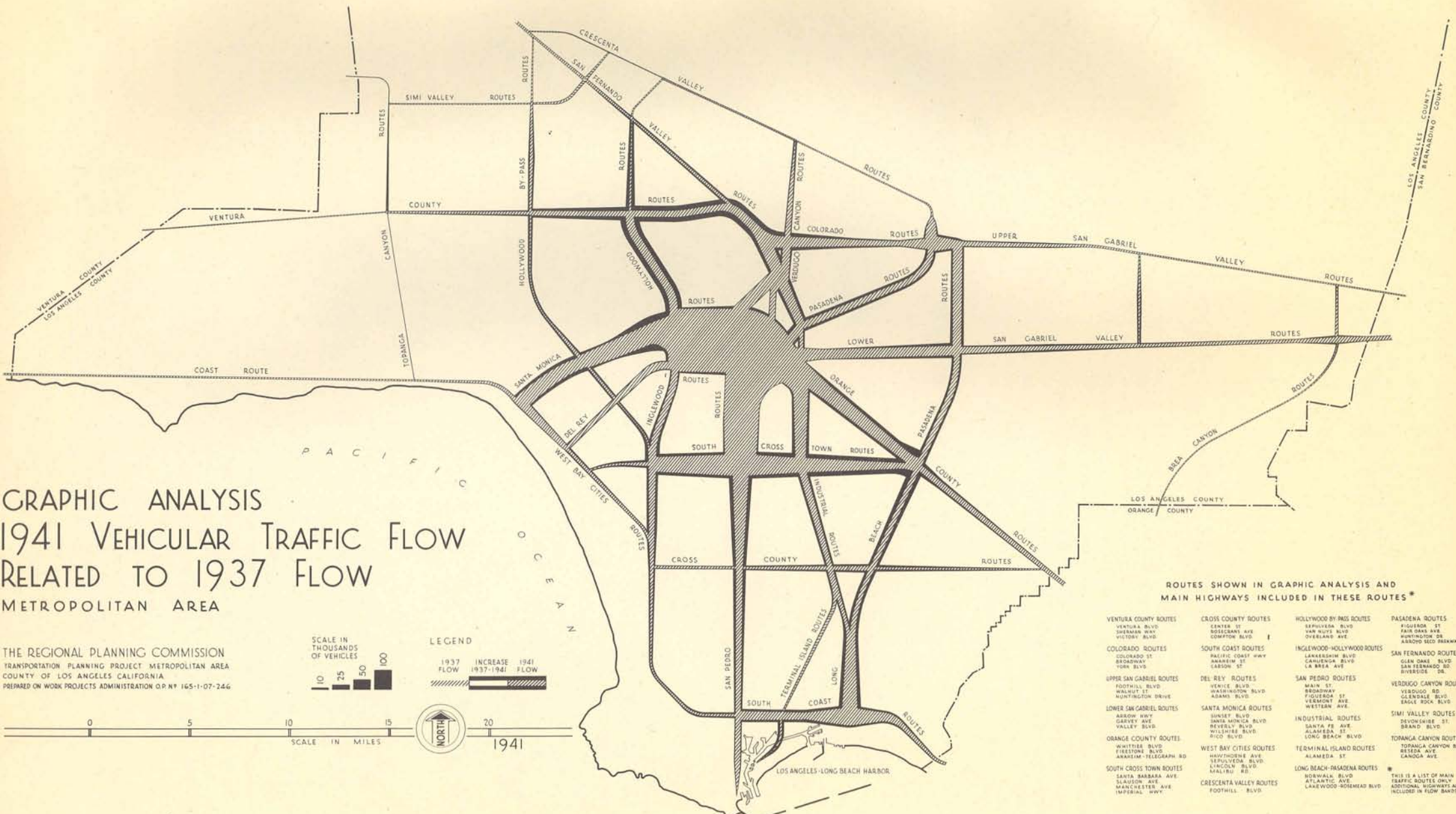
GRAPHIC ANALYSIS
THE BASIC DISTRIBUTION OF POPULATION
 1941 VEHICULAR TRAFFIC FLOW
 RELATED TO 1937 FLOW
 METROPOLITAN AREA for 1940

THE REGIONAL METROPOLITAN AREA - COUNTY OF LOS ANGELES
 TRANSPORTATION PLANNING PROJECT METROPOLITAN AREA
 COUNTY OF LOS ANGELES CALIFORNIA
 PREPARED BY ROAD AND TRAFFIC ADMINISTRATION U.S. 81 125-1-37-744

SCALE IN FEET
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 LEGEND
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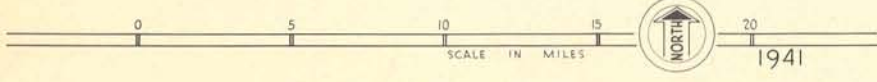
* EACH DOT REPRESENTS THREE HUNDRED PERSONS

- ROUTES SHOWN IN GRAPHIC ANALYSIS AND MAIN HIGHWAYS INCLUDED IN THESE ROUTES*
- | | | | |
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| VERONA COUNTY ROUTES
VERONA ROAD
VERONA AVENUE
VERONA DRIVE | SANTA MONICA COUNTY ROUTES
SANTA MONICA AVENUE
SANTA MONICA DRIVE
SANTA MONICA ROAD | HOLLYWOOD COUNTY ROUTES
HOLLYWOOD AVENUE
HOLLYWOOD DRIVE
HOLLYWOOD ROAD | PASADENA COUNTY ROUTES
PASADENA AVENUE
PASADENA DRIVE
PASADENA ROAD |
| COVINGTON COUNTY ROUTES
COVINGTON AVENUE
COVINGTON DRIVE
COVINGTON ROAD | SOUTH GATE COUNTY ROUTES
SOUTH GATE AVENUE
SOUTH GATE DRIVE
SOUTH GATE ROAD | HOLLYWOOD-HOLLYWOOD ROUTES
HOLLYWOOD AVENUE
HOLLYWOOD DRIVE
HOLLYWOOD ROAD | SAN PEDRO COUNTY ROUTES
SAN PEDRO AVENUE
SAN PEDRO DRIVE
SAN PEDRO ROAD |
| WEST VALLEY COUNTY ROUTES
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HOLLYWOOD ROAD | PASADENA COUNTY ROUTES
PASADENA AVENUE
PASADENA DRIVE
PASADENA ROAD |
- TRANSPORTATION PLANNING PROJECT
 METROPOLITAN AREA
 COUNTY OF LOS ANGELES CALIFORNIA
 1941



GRAPHIC ANALYSIS 1941 VEHICULAR TRAFFIC FLOW RELATED TO 1937 FLOW METROPOLITAN AREA

THE REGIONAL PLANNING COMMISSION
TRANSPORTATION PLANNING PROJECT METROPOLITAN AREA
COUNTY OF LOS ANGELES CALIFORNIA
PREPARED ON WORK PROJECTS ADMINISTRATION O.P. NO. 165-1-07-246



ROUTES SHOWN IN GRAPHIC ANALYSIS AND MAIN HIGHWAYS INCLUDED IN THESE ROUTES*

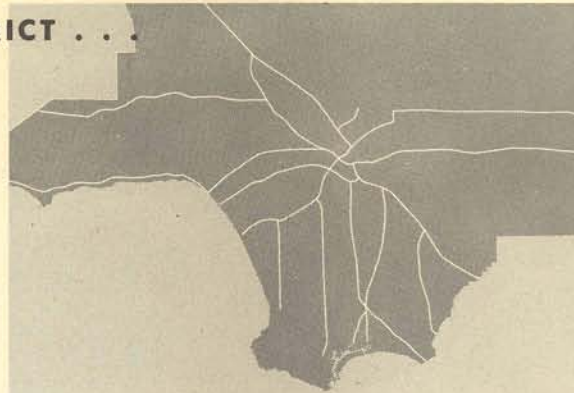
- | | | | |
|---|---|--|---|
| <p>VENTURA COUNTY ROUTES
VENTURA BLVD
SHERMAN HWY
VICTORY BLVD</p> <p>COLORADO ROUTES
COLORADO ST
BROADWAY
YORR BLVD</p> <p>UPPER SAN GABRIEL ROUTES
FOOTHILL BLVD
WALNUT ST
HUNTINGTON DRIVE</p> <p>LOWER SAN GABRIEL ROUTES
ARBON HWY
GARVEY AVE
VALLEY BLVD</p> <p>ORANGE COUNTY ROUTES
WHITTIER BLVD
FREESTONE BLVD
ARAHIM-TELEGRAPH RD</p> <p>SOUTH CROSS TOWN ROUTES
SANTA BARBARA AVE
SAUSON AVE
MANCHESTER AVE
IMPERIAL HWY</p> | <p>CROSS COUNTY ROUTES
CENTER ST
ROSSCANY AVE
COMPTON BLVD</p> <p>SOUTH COAST ROUTES
PACIFIC COAST HWY
ANAHIM ST
CARSON ST</p> <p>DEL REY ROUTES
VENICE BLVD
WASHINGTON BLVD
HUNTINGTON BLVD
VERMONT AVE
WESTERN AVE</p> <p>SANTA MONICA ROUTES
SUNSET BLVD
SANTA MONICA BLVD
REVELLY BLVD
WILSHIRE BLVD
RICO BLVD</p> <p>WEST BAY CITIES ROUTES
HAWTHORNE AVE
SEPOLVEDA BLVD
LINCLOW BLVD
MALIBU RD</p> <p>CRESCENTA VALLEY ROUTES
FOOTHILL BLVD</p> | <p>HOLLYWOOD BY PASS ROUTES
SERPULEVA BLVD
VAN NUYS BLVD
OVERLAND AVE</p> <p>INGLENWOOD-HOLLYWOOD ROUTES
LAKEMARSH BLVD
CARLENSA BLVD
LA BREA AVE</p> <p>SAN PEDRO ROUTES
MAIN ST
BROADWAY
FOOTBRAY ST
VERMONT AVE
WESTERN AVE</p> <p>INDUSTRIAL ROUTES
LAKEMARSH BLVD
CARLENSA BLVD
LA BREA AVE</p> <p>TERMINAL ISLAND ROUTES
ALAMEDA ST
LONG BEACH BLVD</p> <p>LONG BEACH-PASADENA ROUTES
HORNWALK BLVD
ATLANTIC AVE
LAKEWOOD-ROSEMAD BLVD</p> | <p>PASADENA ROUTES
FIGUEROA ST
FAIR OAKS AVE
HUNTINGTON DR
ALHAMBRA BLVD
RIVERSIDE DR</p> <p>SAN FERNANDO ROUTES
GLEN OAK BLVD
SAN FERNANDO RD
RIVERSIDE DR</p> <p>VERDUGO CANYON ROUTES
VERDUGO RD
SANTA ANA BLVD
SANTA ANA BLVD
SANTA ANA BLVD</p> <p>SIMI VALLEY ROUTES
SEVONSHIRE ST
BRAND BLVD</p> <p>TOPANGA CANYON ROUTES
TOPANGA CANYON BLVD
RESEDA AVE
CANAJO AVE</p> |
|---|---|--|---|

* THIS IS A LIST OF MAIN TRAFFIC ROUTES ONLY. ADDITIONAL HIGHWAYS ARE INCLUDED IN FLOW BANDS.

freeways will serve . . .

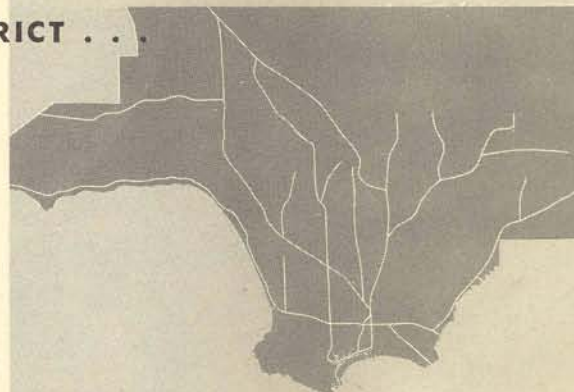
THE CENTRAL BUSINESS DISTRICT . . .

The routes that will carry traffic into and out of the Los Angeles Central Business District assume a familiar radial pattern, determined largely by topography. This primary regional influence, that caused the original development of this center where it is, continues to operate, putting these freeway routes among the most obviously, urgently needed.



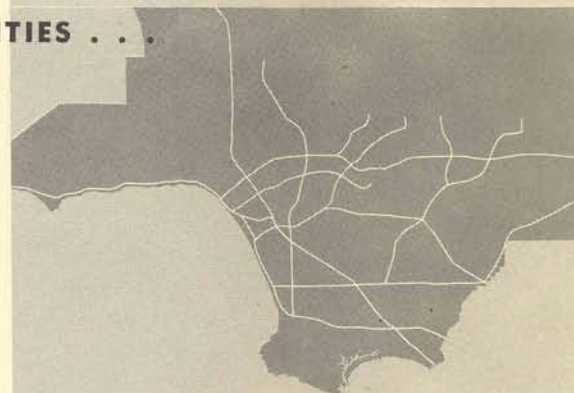
THE HARBOR DISTRICT . . .

The Los Angeles-Long Beach Harbor, with its terminal characteristics, involving interchange of truck, rail and ship cargo, will be provided with freeways connecting it to all parts of the region. Over these freeway routes travelers as well as agricultural produce and industrial materials can be moved with great efficiency.



THE WEST BEACH CITIES . . .

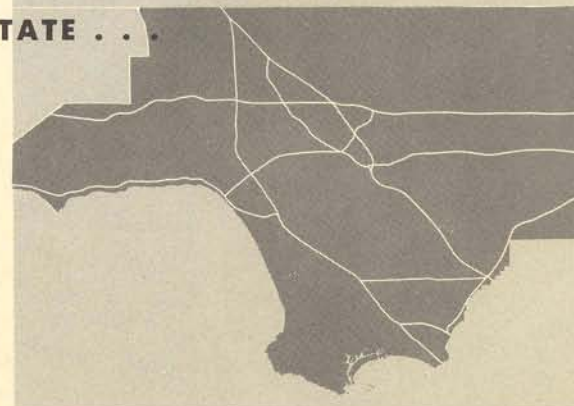
The cities and beaches of Santa Monica Bay have long needed more direct connections to both the central Los Angeles area and to the other centers of population in the county. The great recreational value of these cities to the people of the region will be more fully and comfortably realized when freeways make the beaches more accessible.



THE STATE . . .

For through traffic — national, state or intercommunity — no adequate system of by-pass routes has yet been developed to carry traffic around the congested centers of the region.

This is one of the strongest arguments for freeways. Several by-pass highways recently built at considerable cost, but without the "freeway" protection of their frontage, have become nearly as congested as the older routes and the centers that were by-passed. The freeway plan recognizes these shortcomings in the highway system and deliberately provides routes to fill the need.



In general, the freeway routes in the ultimate plan are so located that they will provide service to all of the major traffic centers in the region. Shown here are graphic analyses of the lines that lead to four important objectives. Similar diagrams could easily be made for many other centers in the region. It will be noted that several of the routes appear in each system shown here.



The Feeder System

In order for the freeway system to work to greatest advantage the highways and local streets should be **designed** to act as feeders, and as distributors to and from local communities. It can be seen that not all travel will be on freeways and that the surface highways will have a definite function to perform. In reality our aim is to provide for each type of traffic movement an appropriate type of road:

- (1) the freeway taking the long distance, uninterrupted movements;
- (2) the highway providing for local intercommunity travel and connection to freeways; and
- (3) the local street providing for service to residential and commercial areas and connection to highways.

Each of these systems has a definite service to perform, and the component parts will function most efficiently if they are not required to serve purposes for which they were not designed.

The design shown on this page indicates diagrammatically the types of traffic ways, and their relative scale in the pattern of community development. The diagram is not intended as a street design, but merely indicates the process of movement from the local streets in a neighborhood to the highways and then to the freeways, as would normally occur in a well designed freeway and feeder system.

Well placed, carefully designed entrances and exits will cause the feeder system to take its proper, active part in the freeway plan.

This gradation of traffic loads indicates the use of varying types of pavement; the resulting savings in pavement costs on minor streets and highways will pay for part of the freeway improvement.

As each freeway route is detailed and approaches construction it will be necessary to design the connections to the various highways in the Master Plan with the foregoing diagrammatic scheme as a model. Some highways, like many local streets, will not be connected to the freeway at all but will be carried over or under by a simple, inexpensive grade separation. In other cases a relatively simple connection will suffice, providing for only a single traffic movement, as indicated by the traffic survey, direction and population density of the neighborhoods tapped or served. In some instances, complete interchange structures, like the elaborate clover-leaf or universal, may be required.

The construction of the freeway system, then, will result in a long series of adaptations as the basic highway system is revised to take advantage of the improvement caused by the freeways.

terminal facilities . . .

A freeway must offer many opportunities for vehicles to leave it and quickly find adequate parking space in busy commercial, industrial or recreational districts. Otherwise the freeway traffic load would only increase our most aggravated traffic problem. The time gained on the freeway would be lost in the greater congestion produced within the business district. One can even imagine cars "backing up" on the freeway itself and interrupting the constant flow of traffic if there are too few exits from the freeway. Failure to provide adequate terminal facilities would speed the decline of central business districts, for shoppers would more and more avoid the crowded conditions at unplanned terminals of super-planned highways.

The reverse movement — entering the freeway from the central business district — is just as important. This load, too, must be spread out on enough access streets leading to enough freeway entrances to prevent congestion. Thus it becomes evident that a final freeway system must incorporate within its plan terminal facilities consisting of sufficient outlets leading into streets for **movement across the business district** as well as sufficient parking areas to accommodate all the vehicles that will need to be **stored within the area**. The entrances and exits for these parking areas must also be so arranged that they do not block movement on the streets carrying traffic off the freeway. It may prove necessary to provide direct connections from freeway to parking area, without use of the surface streets.

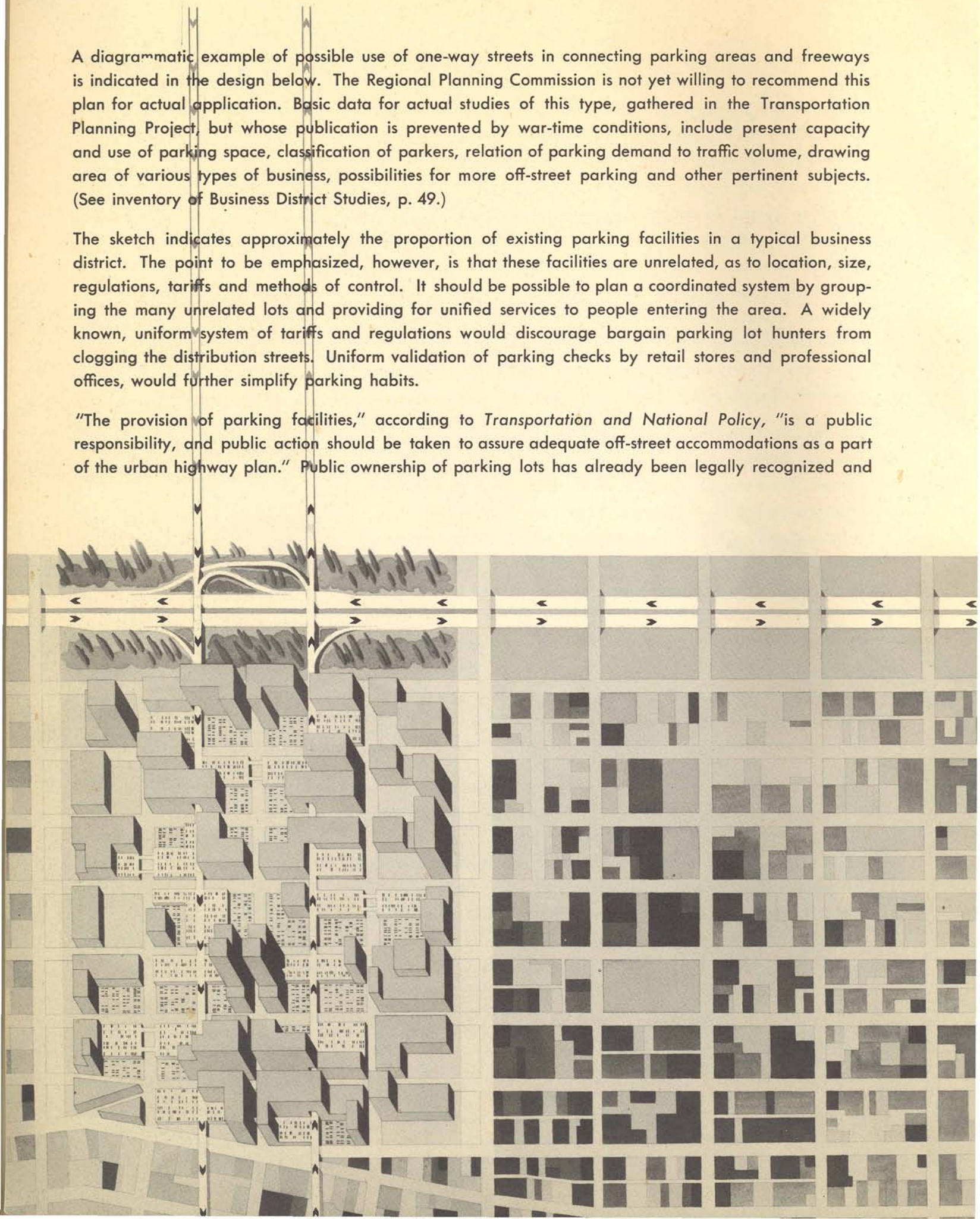
Conflict between traffic entering or leaving parking lots and traffic moving along the streets can be reduced by the use of one-way streets in some cases. Constant flow of directionally separated traffic is a principle of freeway operation, and the extension of this principle through a distribution system is logically as much warranted as it is in the freeway system itself. This does not imply that **all** streets should be one-way streets. In New York streets adjacent to freeways are so controlled and lessen the cost of interchange structures, since simpler ways to get on and off the freeway prove sufficient.



A diagrammatic example of possible use of one-way streets in connecting parking areas and freeways is indicated in the design below. The Regional Planning Commission is not yet willing to recommend this plan for actual application. Basic data for actual studies of this type, gathered in the Transportation Planning Project, but whose publication is prevented by war-time conditions, include present capacity and use of parking space, classification of parkers, relation of parking demand to traffic volume, drawing area of various types of business, possibilities for more off-street parking and other pertinent subjects. (See inventory of Business District Studies, p. 49.)

The sketch indicates approximately the proportion of existing parking facilities in a typical business district. The point to be emphasized, however, is that these facilities are unrelated, as to location, size, regulations, tariffs and methods of control. It should be possible to plan a coordinated system by grouping the many unrelated lots and providing for unified services to people entering the area. A widely known, uniform system of tariffs and regulations would discourage bargain parking lot hunters from clogging the distribution streets. Uniform validation of parking checks by retail stores and professional offices, would further simplify parking habits.

"The provision of parking facilities," according to *Transportation and National Policy*, "is a public responsibility, and public action should be taken to assure adequate off-street accommodations as a part of the urban highway plan." Public ownership of parking lots has already been legally recognized and

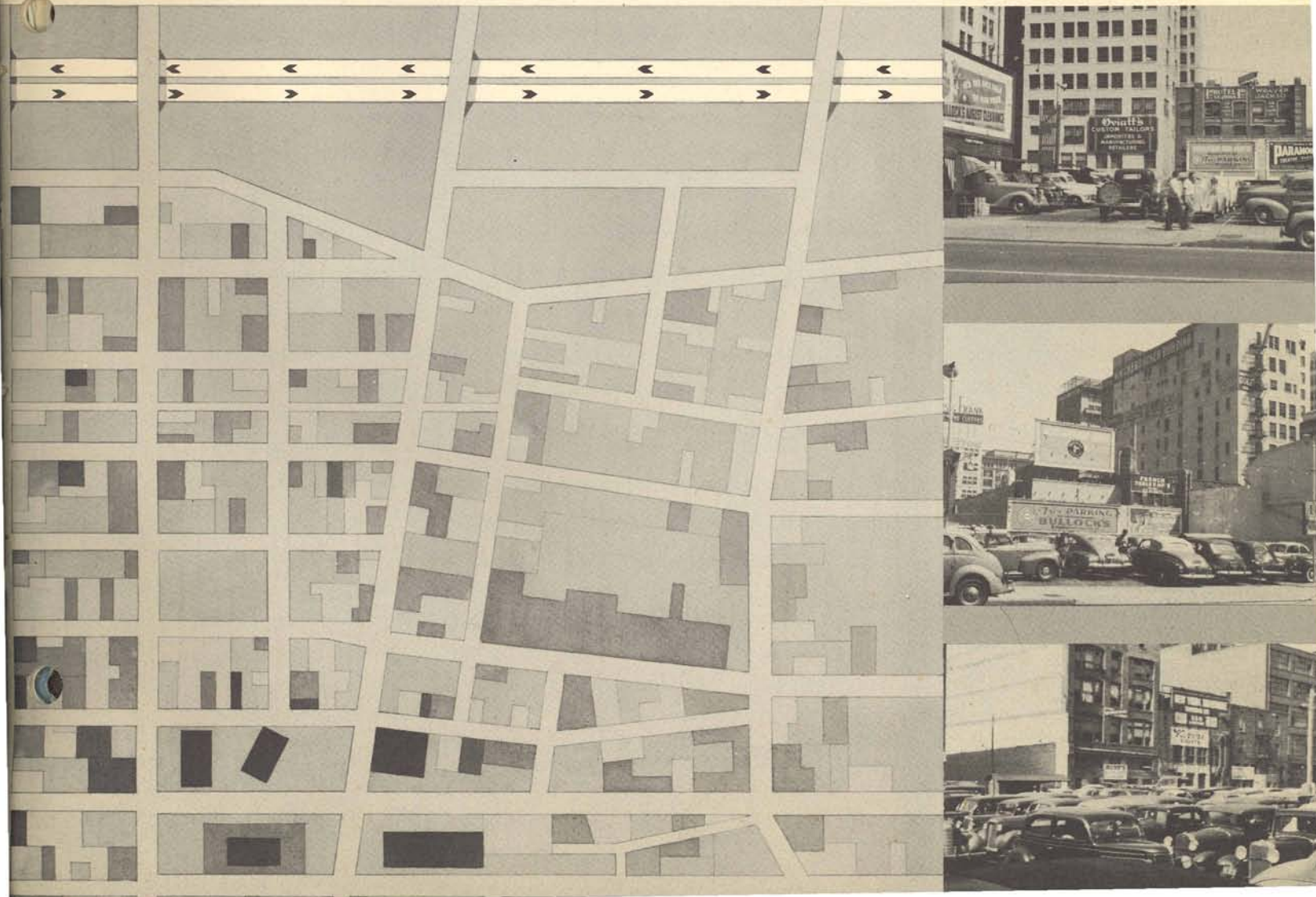


. . a typical business district

lots are being operated by many cities. The advantages of publicly owned parking lots are clearly seen in case of freeways or parkways financed by tolls, as proposed by the Transportation Engineering Board. Where tolls are collected on the freeway, a ticket stub serving as a parking lot check in any lot in the system would be a convenience to the motorist and a strong inducement for willingness to pay the toll. By this means a maximum of order could be planned for in the terminal area.

Lastly, in developing these freeway parking systems consideration should be given to the economic possibility of **parking buildings** so well presented in the *Traffic Survey* of the Automobile Club of Southern California in 1937. Whether parking lots or multi-story garages are to be used, the parking space needs to be definitely planned as a detail in the freeway design.

Another aspect of the terminal character of a central district lies in the probability of bus operation over the freeways. The Los Angeles City Planning Commission report, *Mass Transit Facilities and the Master Plan of Parkways*, takes the view that parkway bus lines will, at least in part, replace street railway lines. The number of buses coming into the central district in that case would inevitably create a new downtown traffic problem. A bus system of such magnitude would certainly require far more carefully and extensively planned terminal and transfer accommodations than can be provided on our downtown streets. Here again, the design and construction of the bus terminals would logically be done best if recognized from the beginning as an integral part of the freeway system.





Freeway Standards

Essential to the perfection of a detailed freeway plan is conformity to a series of freeway standards.

Standards in this instance does not imply standardization. Attempts at this time to fix definite standards for thickness of pavement, width of lane or radius of curvature would probably be a waste of time.

New developments in the mechanics of either the vehicle or the roadway will doubtless produce material changes in such details in the next few years.

By standards, we mean here, essentials of the fundamental freeway principle — a separate way for each movement — to be applied when each freeway alignment is designed so that adequate rights-of-way may be acquired. And rather than concern ourselves with the exact dimensions we are anxious to describe as simply as possible the details which are necessary, in varying forms, to make freeway traffic really free.

Probably the two features most apparent to the motorist on the freeway are the dividing strips and the various types of grade separations. A minimum width for dividing strips could be determined rather easily, but it is more important to design each segment for its particular needs. On a complete freeway, extremely narrow strips can be used successfully, because no opportunity is given for any crossing or turning movements. In some cases, however, a wide strip may be required to accommodate the various interchange lanes at grade separations, or even rapid transit rail lines as proposed by the Transportation Engineering Board. Other plans call for gasoline service stations within such a wide strip. On some types of limited access highways where the freeway principle is less rigidly applied, such as Fritz Malcher's *Steadyflow* system, the center dividing strips should be designed to provide shelter for cars making U-turns, in which case the width must be enough to accommodate such a turning movement with safety.

Grade separations and their accompanying interchange structures have been so much publicized in serious presentation as well as by the highly successful fun-making of cartoonists that it may seem unnecessary to examine them here. Nevertheless an outline of the types used should be helpful.

SIMPLE GRADE SEPARATIONS

Not every street will cross the freeway, but in many cases continuity of local streets or highways will be required to maintain existing neighborhood circulation. Under these conditions a simple grade separation can be provided, either **over or under** the freeway, without the expense of connections to the freeway.

BRAIDED or Y-INTERSECTIONS

Where a highway or another freeway branches from a freeway route, forming a Y, the braided intersection can be used. The simplicity of movement in changing directions is evident. Construction costs for this type of structure are comparatively low since only one small, simple bridge is required. Where a freeway is crossed by other important traffic routes it may become necessary to provide for both right and left turns as well as straight through movements, and thus more elaborate structures are required.

CLOVER-LEAF INTERCHANGE

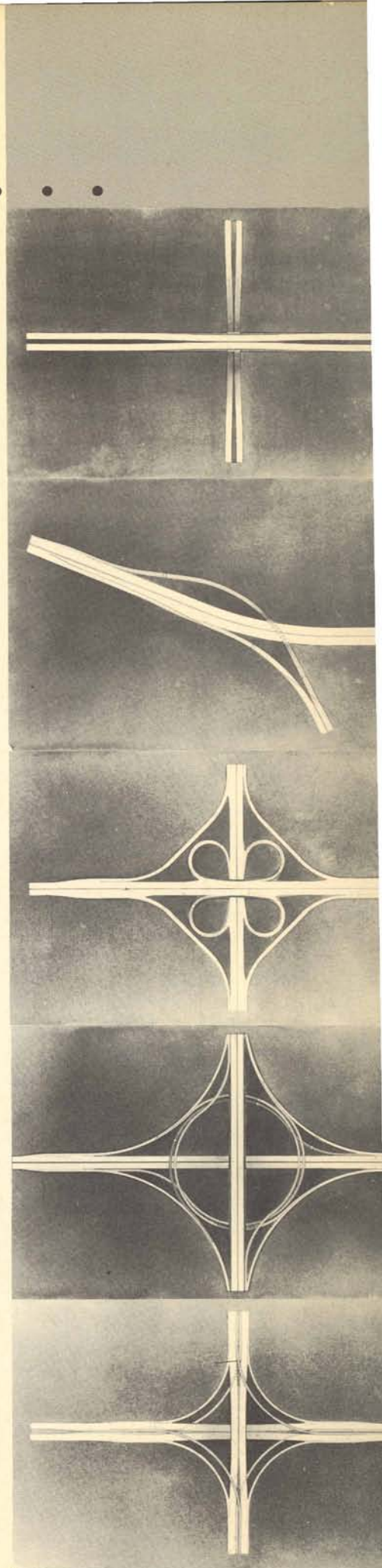
The clover-leaf interchange provides for all possible movements, but requires that all turns begin as right turns, the center lane remaining for through traffic. The difficulties with this interchange are that: (1) vehicles turning to the left must pass beyond the cross roadway (either above or below it) in order to approach the ramp which provides for entrance into the cross street; (2) the necessity to turn to the right to make a left turn is not a natural action; and (3) the radii of curvature on the inside loops are frequently small, making the turn difficult. The confusion that has resulted has been eloquently publicized by scores of cartoons during the past few years.

THE UNIVERSAL

An alternate to the clover-leaf interchange is the universal. In this case also all turns from the freeway are made from the right-hand lanes, but they are made **before the intersecting highway is reached**, and radii of curvature are many times greater than on the clover-leaf type of interchange. The objections lie in the greater construction costs, since much more extensive structures are required.

BEL GEDDES DESIGN

Norman Bel Geddes in the *Futurama*, at the New York World's Fair during 1939 and 1940, displayed a new type of interchange. This design presented several proposals in advance of present freeway design but had certain basic features applicable to freeways. The scheme requires 3-level separations, but it goes a step farther than the others by recognizing "natural" traffic movements; left turns turn left, from the center of the freeway, and right turns to the right, just as they do now on our streets and highways.



Other forms of interchange have been developed and we may expect time and ingenuity to produce still better ones. In the meantime the freeway system must incorporate at each point the method best suited to the particular circumstances.

PLANTED DIVIDING STRIPS

Dividing strips are not new to road design. Their first use as a means of beautification soon led to recognition of their effectiveness in separating opposing traffic, and in masking with shrubbery the blinding glare of headlights. "The separation of opposing traffic lanes has been one of the most successful methods of accident prevention on heavy traffic routes," it was stated in *Highway Research Abstracts*, October, 1927.

LANE COLORING

Lane striping has notably increased highway safety in recent years. The practice of developing traffic lanes of different colors offers additional advantages in this regard. The use of light grey concrete and black premix has been the normal variant. There is no reason why concrete coloring materials could not be used in the future in coloring traffic lanes, to differentiate between through lanes and deceleration lanes. Uniform practice in this detail would result in simple marking of exit and entry features and assist greatly in regulation of speeds in various lanes.

BORDER TREATMENT

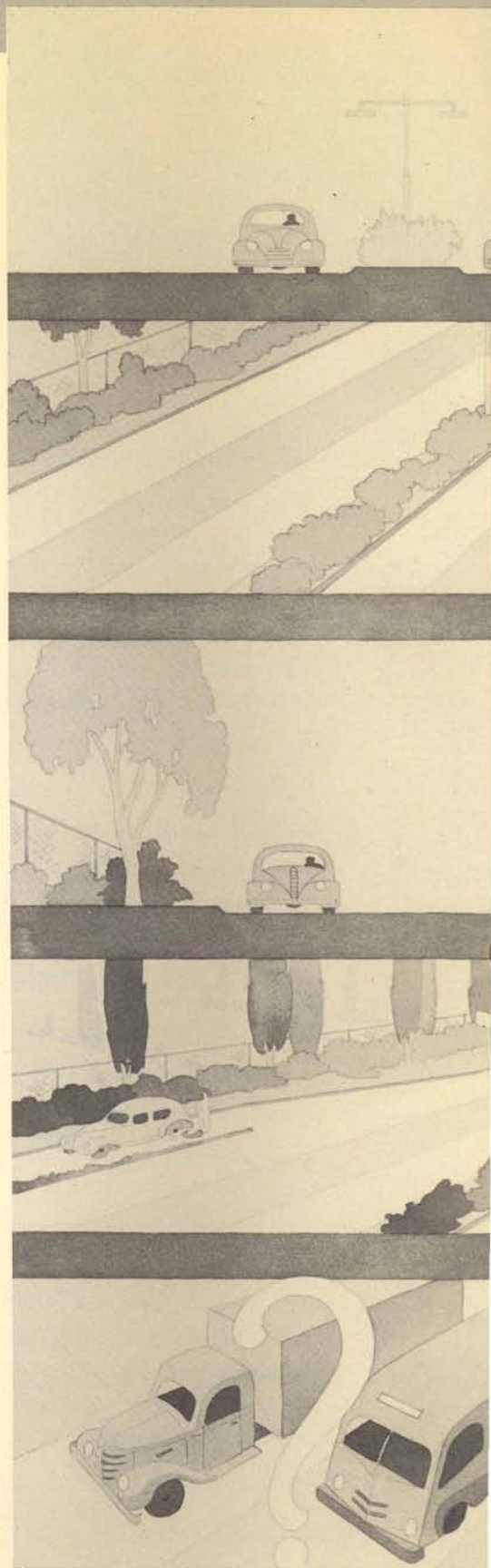
Park-like development of a wide border along the freeway is a real aid to free flow of traffic and also tends to stabilize adjacent property values. Dense planting will insulate abutting private grounds from the noise and fumes of vehicles using the freeway. Careful selection of plant material will provide a scenic setting for both the freeway and its bordering properties. Use of native plants which are drought-resistant can preserve a naturalistic landscape without prohibitive cost. The fence for the right-of-way is placed, of course, within this border area.

EMERGENCY PARKING

Parking will be prohibited on the freeway. But there are, of course, occasions when stopping cannot be avoided, and for this reason there should be some provision for emergency parking. Under some eastern conditions it has been found satisfactory to permit emergency parking on the grass shoulder at any point. Since this practice would probably be unsatisfactory in Southern California, it would appear necessary to prepare graveled or lightly paved parking bays in the shoulder area at points of maximum safety. To be effective they would have to be almost regularly spaced, conspicuously marked and approached by distinctive deceleration lanes, in order that the motorist would be aware that such an opportunity for stopping is always within range when it is needed.

TRUCKS and BUSES

No agreement has been reached in regard to the future restrictions as to type of vehicle permitted to use the freeways in this region. Until this question is settled the design of the pavement and the various features should follow standards which would permit maximum possible variations in types of vehicles permitted to use the roadways. Accommodation of either buses or heavy trucks will require somewhat heavier pavements than if light "pleasure" vehicles only are permitted. Where buses are permitted they must, of course, be required to leave the freeway proper for loading and unloading. This can be accomplished in various ways if the design is carefully made.



LOCAL STREET

FREEWAY

freeway standards

INGRESS and EGRESS

Fundamental to the successful operation of a freeway system is the limitation of the number of points of ingress and egress; further, every one must be so designed that vehicles cannot enter the freeway going in the wrong direction. The location of entrance and exit points, as well as interchange facilities, will be determined by detailed studies, based on traffic survey data and the location of existing and proposed centers of industry, commerce, recreation and residence. These points of access will be planned to form the highway routes and local streets into a feeder and distributor system.

SERVICE STATIONS

Where the width of available right-of-way permits, the freeway can advantageously be designed to include gasoline service station sites at reasonably spaced intervals. Service stations are really a necessity for efficient use of the freeway: besides selling gasoline and oil they should provide for emergencies with tow-cars, telephone, fire extinguishers and first aid that would otherwise be unavailable on the freeway. Since they would be owned completely by the freeway authority, no question of architectural control of private property is involved. In eastern states, service stations, within the freeway right-of-way and harmoniously designed, have been operated satisfactorily by concessionaires. Complete control of the conduct, appearance, signs, etc., is thus retained. Finally, the concession is valuable and is a source of revenue that helps to pay for the freeway.

SPEED LIMITS

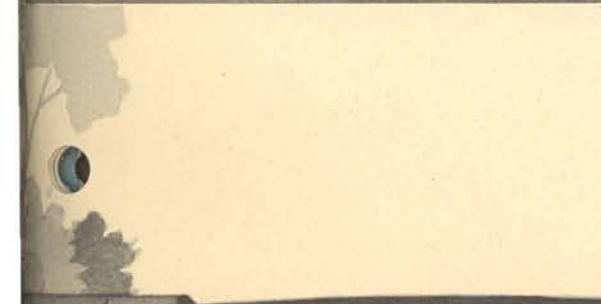
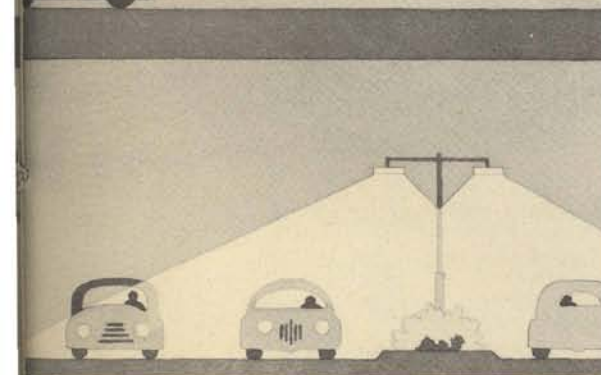
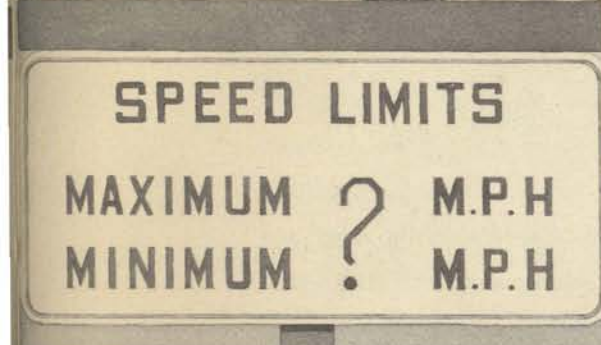
Maximum and minimum speed limits have been established on certain freeways in order to provide for the most efficient movement of a great volume of traffic. Traffic engineers have cautioned freeway planners not to be misled by statutory speed limits, however, in designing sections for specific speeds. Ordinarily the freeway should be designed for unlimited speed, but where restrictions of right-of-way, topography or similar factors require operation at lower than normal speeds, the limit should be conspicuously posted at the points affected.

SIGNS

No commercial signs can be permitted on the freeway in any case, but the size and location of signs guiding motorists to their destinations are of great importance. Signs to guide traffic through interchanges must be simple and clear so that flow will not be retarded by indecision on the part of motorists. Directional signs should be large enough to be easily read at high speeds, and preliminary signs located at some distance ahead of the interchanges have been found necessary so that transition from through lanes to deceleration lanes is made without disturbing through movements. The technique of using these signs is progressing rapidly.

LIGHTING

Headlight glare has caused several methods of control to be studied. Three major suggestions have been made: (1) the use of shrubbery in dividing strips to mask out headlights of approaching vehicles; (2) use of polarized glass, in windshields and head lamps, which dims direct lights without sacrificing roadway illumination; and (3) adequate lighting of the freeway so that vehicles could be required to drive with parking lights. Some combination of all three of these methods will undoubtedly be necessary. Because of relatively high uniform speed on freeways the matter is of even greater importance than on ordinary highways, although in many cases the same solution for the problem will be used.



FREEWAY

LOCAL STREET



Finance

The Master Plan for a system of freeways, even when adopted officially and followed up by precise plans and a schedule of construction, cannot be considered as really complete until one more step has been taken. A program of building freeways will include also a plan for financing the projects.

Several factors make it virtually impossible to prepare a complete program at this time. Estimates based on careful study of individual routes, prepared by the Los Angeles City Engineer, are available for about 90 miles of projects in the initial development program. Beyond this point, however, cost estimates prepared now, when neither labor nor material costs can be anticipated with any confidence, will be subject to wide fluctuation. Secondly, the urgency of public works in general will be profoundly influenced by the need for employment after the war, and while we may be able to foresee how large this need may become, we cannot yet see how large a share of it can be met by private enterprise. Thirdly, the source of funds for such public works is unpredictable; with federal taxation mounting there is strong pressure to reduce the taxes of lower jurisdictions.

We must expect the present low level of gasoline tax collections to be continued for at least a year or two after the close of the war, and in any case repairs and additions to our highway system will require most of these funds; certainly they cannot be used exclusively for freeways. Some federal assistance to a freeway building program can be expected, but we cannot gauge the amount now, for other reconstruction problems, both domestic and foreign, may be more acute.

It is therefore difficult to say where the money to build the freeways is coming from, how much will be available or how much will be needed.

What will it cost us not to build freeways? In preparing for the future we must keep this question constantly in mind. For while the post-war employment problem may not be so large as present conditions indicate, it will probably be at least as large as that of the depression years of the early thirties. We must be prepared with public works plans ready to be used, when needed to provide employment, and these public works must be genuinely useful — additions to our public plant that promote increased production and better living. Freeways fulfill this requirement. The subject of the cost of freeways must therefore be approached, even if we cannot make detailed estimates at this time.

The relative cost of freeways is greatly influenced by the choice of alinement, for this factor affects the cost of both the land and construction. A right-of-way cutting diagonally across built-up urban lands will cost far more than one crossing open country. At the same time the urban route will require more grade separations and interchange structures and may require considerably more elaborate landscape treatment.

The Bureau of Public Roads estimates in *Toll Roads and Free Roads* that, on the average, freeways will cost \$1,158,400 per mile in urban areas and \$63,450 per mile in rural areas. The variations result principally from differences in cost of right-of-way, number of lanes required, amount of grading, number of access points, and number and character of separations required at highways, railroads and streams.

Examples in this region exhibit even more variation. The Hollywood Parkway is estimated by the Transportation Engineering Board to require about \$3,000,000 per mile, through entirely urban territory. Arroyo Seco Parkway cost about \$840,000 per mile but the true costs are obscure since both right-of-way and bridge structures in earlier park developments could be used. The Santa Ana and Ramona Freeways are estimated to cost about \$800,000 per mile, each including both urban and rural sections. The fact is that "rural" areas in this metropolitan region are, with only a few exceptions, too highly developed to be comparable with typical rural areas throughout the nation.

In order to get a preliminary idea of the overall size of our program such estimates as can be made at this time have been applied to the freeway routes proposed in the plan. In the first stage, extension of existing freeways, 55 miles of new freeway are proposed, at a cost of about \$55,000,000. To complete the Initial Development Plan requires the addition of 108 more miles, mainly of more expensive urban sections, bringing the total cost to \$243,000,000. Completion of the Basic Plan with an additional 103 miles would raise the total cost at that stage to \$403,000,000.

This is a large sum, to be sure, but it does not yet approach the \$600,000,000 already invested in our streets and highways, mainly during the past thirty years, or an average of \$20,000,000 per year. If spread over a thirty-year period this freeway system would require an average expenditure of \$13,400,000 per year. While this amount is about the same as annual expenditures for all streets and highways in the past few years, we cannot assume that these freeways can be built merely by transferring our attention and funds from streets to freeways. For we must continue to build, repair and maintain local streets and highways with these funds.

But the necessity for public works to provide employment may be most acute during the first part of the post-war period. We should be prepared, therefore, to construct at least those freeways in the Initial Development Plan during the first five or six years, if they are needed for the sake of employment. Totalling \$243,000,000 this would require an annual expenditure of about \$40,000,000, an amount far beyond any highway program to which we are accustomed.

How, then, are we to pay for the freeways that we need?

There are many possible ways of financing and amortizing a system of freeways. The present practice in California is to provide for the construction of specific units in the biennial budget of the State Division of Highways. The funds allocated to the Division for this purpose come principally from gas tax collection. (For the next few years, until the restoration of normal tire and gasoline consumption, this source will be drastically curtailed.) All of the present construction work has been financed mainly in this way.

In the east, other methods have been used. In Westchester County, N. Y., the parkways were built by the County Park Commission, by means of bond issues. Authorities have been established such as the Port of New York Authority, or the Triborough Bridge Authority, and bond issues have provided funds for the acquisition of land and construction of the express highways. Refinancing of R.F.C. loans, when cheaper private capital became available, in some cases afforded large savings to the Authorities. Private capital has thus been invested, in the cases of the toll bridges and their related highways, and it is being amortized at a rapid rate.

Although not favored in recent years, state, local or district bonds have been used in California to finance highway construction; the only recent use of bonds was in construction of the San Francisco Bay bridges, where tolls are successfully amortizing the bonds. But there is no reason to think that tolls must be used to retire a bond issue. "Concerning the question of whether bonds should be serviced by motor-vehicle taxes or by tolls, the answer," according to *Transportation and National Policy*, "depends largely upon the type of facility. The collection of cash tolls on any extensive scale would obviously constitute a barrier to efficient highway operations; yet such payments for special high-cost projects have generally been a highly satisfactory financial method, and in most cases the alternatives are not so much the use of tolls or some other revenue sources, but rather the use of tolls or the abandonment of the project.

"Tolls, of course, need not be paid in cash. It is quite possible that a regional super-highway system might be financed through the sale of special plates or stickers which would permit admission to the super-highway system. Except in limited cases, however, it appears that **the toll principle embodied in the collection of highway-user taxes** must continue as the basis of supplying funds to service revenue bonds . . . "

Toll Roads and Free Roads indicates that there are few freeways which could be constructed with assurance of being wholly amortized on a toll basis; the charges thought feasible work out to an average of 1½ cents per vehicle mile. Further study in the Los Angeles region may reveal that toll operation would be practicable on certain routes of unusual character or where some arrangement might be made for coupling terminal parking charges and tolls.

The possibility of establishing a freeway or parkway authority for this region has been discussed recently, and various agencies are studying this subject. *Transportation and National Policy* goes a step farther than this, saying, "The immediate necessity for removing legal and financial obstacles to land acquisition calls for the establishment of a Federal land authority empowered to acquire and finance right-of-way for the States and local jurisdictions to repurchase on a time-payment basis."

Greatly expanded financing of public works after the war will probably be undertaken by the federal government, and it is anticipated that this will be the largest single assistance in the development of a freeway system. It must be recognized that local agencies may be called upon to contribute a share of the costs, probably the acquisition of the land, as has been the case in certain public housing projects. They probably will also be required to bear the cost of preparing plans and the general supervision of the work.

It has been suggested that, with the undoubtedly growing understanding of and demand for freeways on the part of the public, it might even be feasible for the state, a region or a county to levy an extra cent per gallon tax on gasoline, to be used exclusively for the acquisition and construction of freeways. On the basis of 1941 traffic conditions, such a levy would produce about \$7,000,000 per year for Los Angeles County. There will be, of course, many objections to so increasing the load on the motorist, and on the sale of gasoline, but it would nevertheless appear to furnish an equitable way of distributing the burden while raising substantial amounts. Because of the great size of this region thousands of tourists enjoying the benefits of our freeways would contribute directly to their creation. Our own citizens would also benefit in reduced congestion on highways and, if the freeways are opened to commercial traffic, in speedier mass transportation and delivery of goods.

If the public is interested enough in having freeways to be willing to pay for them at least in part in this way, the proposal is of great significance for it offers a means of taking immediate advantage of the probability that federal funds will be made available upon the basis of substantial local contributions.

Let us assume for the moment that Los Angeles County could raise by bonds, by special gasoline tax, by some other means, or by a combination of all methods, a freeway fund of \$7,000,000 per year. We might then expect state and federal funds to somewhat more than match this, producing about \$17,000,000 a year to apply toward the freeway program.

Various cities in the county should also be able to make substantial contributions from time to time to advance freeway projects within their own limits. In fact, they are doing so now. If the cities together furnished a little more than a million dollars a year on the average, we would then be able to build the Initial Development routes in thirteen years.

This assumed program might be considered to indicate a normal rate of progress under conditions of normal times and employment. If post-war dislocations produce widespread unemployment other funds must be drawn upon to provide employment. The sources may be local, state or federal; there is no way of knowing at this date which they will be. Whatever the source, some of the funds used to combat unemployment should be devoted to freeways, building them at a rate faster than normal.

Finding the money with which to build freeways for the region is only a part of the larger problem of funds for post-war redevelopment in all of its many phases. This is not the proper place to urge or discuss either the need or machinery for a post-war reserve fund. But one important step in financing post-war operations should be taken now.

The technicians of the various planning and road building agencies, state, county and city, should be authorized now to prepare preliminary and detailed plans for the individual freeways in the Initial Development Program. Their staffs are at present depleted and could hardly more than make a beginning on the job. Their organization and budgets should then be expanded immediately, to make possible the rapid production of detailed plans. The amounts of money required for this are small — minute compared to the costs of the freeways themselves — and can well be provided out of the usual sources. If the nation's post-war program as called for by the President is to be successful, both federal and local administrators will have to recognize that planning for re-employment is vital, that the planning must be done now and that the planning agencies must increase their manpower — not decrease it.

Only under these circumstances can our regional planning agencies do their jobs: to work out with care, not haste, the plans for future construction of needed, permanently satisfactory

FREEWAYS FOR THE REGION

**THIS BOOK WILL HAVE FAILED TO
ACHIEVE ITS MAIN PURPOSE**

UNLESS . . .

- It is recognized that the need for freeways is beyond the stage of academic argument.
- These preliminary plans are completed.
- A portion of the ultimate plan is officially adopted as a Master Plan.
- Sufficient funds are set up for the preparation of precise plans, estimates and essential details, based on the Master Plan.
- The Board of Supervisors and the City Councils immediately order their Planning Commissions and Engineering Departments to prepare these plans.

- **WE MUST NOT WAIT – Clarity of purpose and directness of approach are of vital importance.**

NOW

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BASIC DATA



TRANSPORTATION PLANNING PROJECT

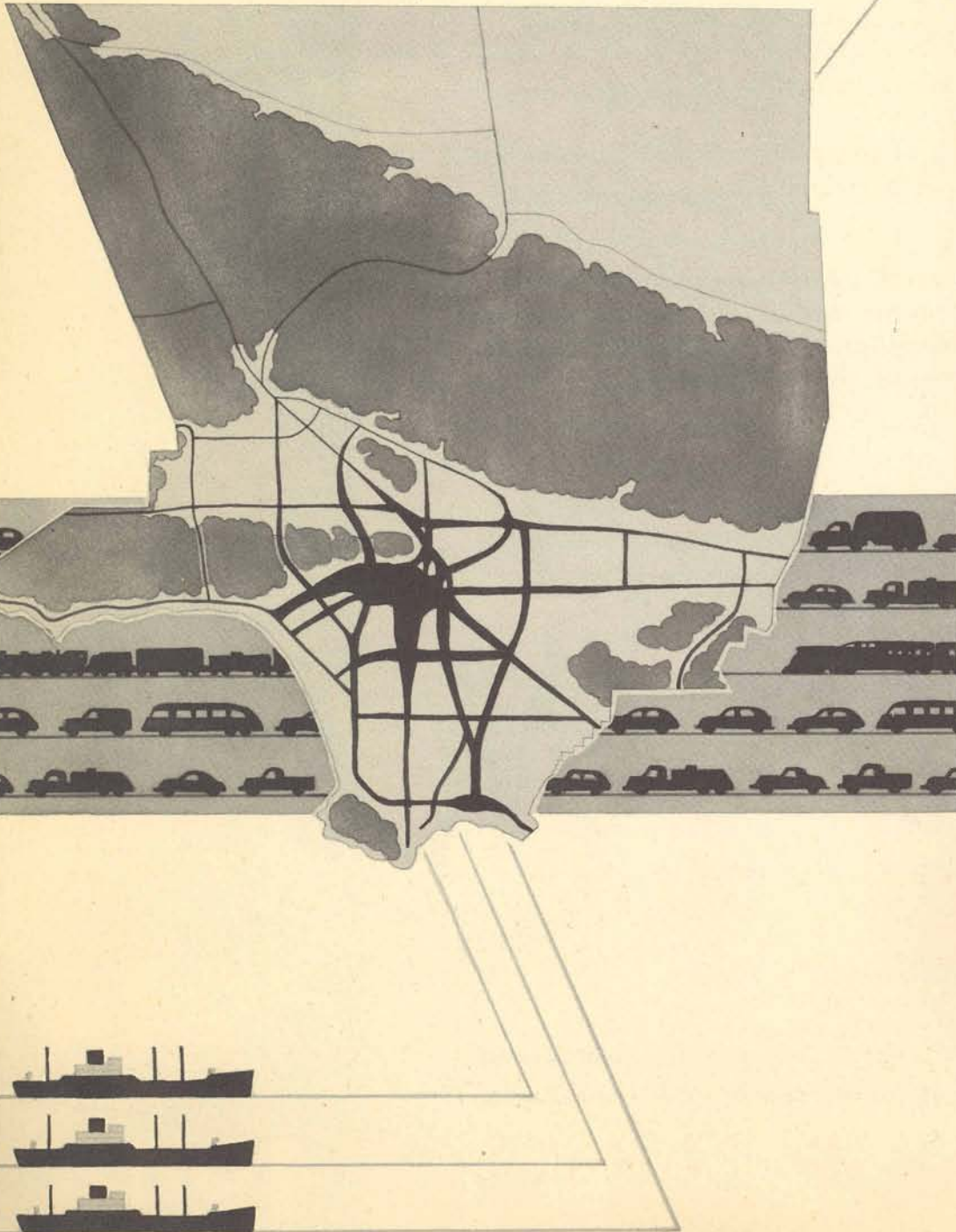
This freeway plan and report have been based largely on data collected and analyzed under the Transportation Planning Project conducted by the Regional Planning Commission in 1940-42 with the assistance of the Work Projects Administration (O.P. No. 165-1-07-246). The information obtained will be of even greater value as time goes on, in the continuing studies necessary to the preparation of detailed plans.

The Transportation Planning Project was organized and carried on under the direction of I. S. Shattuck, Transportation Consultant, who was retained by the Regional Planning Commission for that purpose. Werner Rucht, to whose division of the department the project was assigned, acted as direct supervisor under the consultant.

The field and office work of collecting, compiling and analyzing data was the direct responsibility of John P. Commons, assisted by John L. Richerson (now in active military service) and H. D. Markle. George J. Sleight supervised office computations and analysis. S. H. Carsten, assisted by A. H. Meredith and K. W. Kirkgaard, supervised the field personnel and later assisted in drafting and computation.

At the height of activity, the Work Projects Administration furnished slightly over 200 workers. This force gathered and compiled traffic data at over 750 intersections. The special studies in four business districts included observation of approximately 200,000 automobiles parked at the curb or in garages and lots; pedestrian counts on sidewalks and in and out of buildings; movement of people in and out of districts; mass transportation use; origin and destination data; building heights and predominant uses; and zoning.

Some of the auxiliary studies originally planned for the second phase of the survey had to be deferred when war interrupted normal conditions. The project is therefore by no means complete, but much information of value to the Commission and others has been compiled in useful form. Prior to publication of that data in whatever form may eventually prove suitable, we are here submitting an inventory of the material that can be examined in our office. In a few cases, particularly interesting maps or charts have been reproduced in this report.



LIST OF MAPS, CHARTS, DIAGRAMS AND TABLES PREPARED ON THE TRANSPORTATION PLANNING PROJECT

VEHICULAR TRAFFIC

Maps — Traffic Flow — Average Week Day (Monday to Friday) adjusted to control counts made between May 1st and November 30, 1941. Flow scale 1" = 50,000 vehicles.

- Metropolitan Area
- Central Metropolitan Area
- Central Business District and Surrounding Area
- Harbor Area

Map — Graphic Analysis 1941 Vehicular Traffic Flow Related to 1937 Flow, Metropolitan Area (shown on p. 29).

Map — Graphic Analysis 1941 Vehicular Traffic Flow, Metropolitan Area.

Diagrams — Typical Traffic Flow, Grade and Separated Intersections (1941). Lincoln and Sepulveda Boulevards; Rosemead Boulevard and Anaheim Telegraph Road; Victory Boulevard, Victory Place and Burbank Boulevard; Highland Avenue and Cahuenga Boulevard.

Diagrams — Typical Traffic Flow — Selected Intersections (1941). Victory Boulevard and Van Nuys Boulevard; Rosemead Boulevard and Anaheim Telegraph Road; American Avenue and State Street; Sunset Boulevard and Figueroa Street.

Graph — Hourly variations at Master Station (1941). 15-minute and hour period as percentage of 24-hour flow. Sunset Boulevard and Figueroa Street; American Avenue and State Street; Victory Boulevard and Van Nuys Boulevard; Rosemead Boulevard and Anaheim Telegraph Road; average of nine Master Stations.

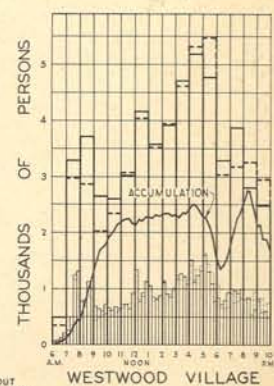
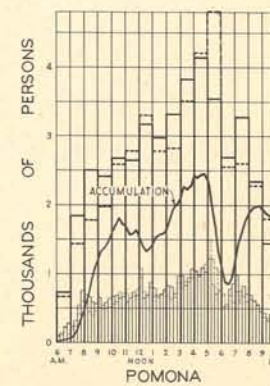
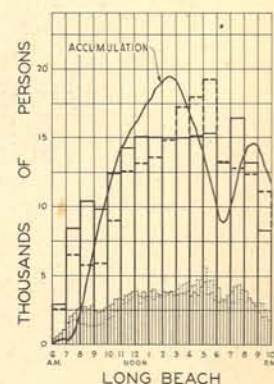
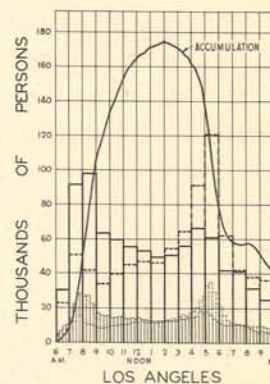
Graph — Monthly variation of Passenger and Commercial Vehicles 1937-1942. Shows Weldon Canyon, Foothill Boulevard and San Fernando Road, and Whittier Boulevard and Indiana Street.

Graph — Weekly, Monthly, Annual Vehicular Traffic Fluctuations. Shows nine Master Stations (1941); Weldon Canyon, Foothill Boulevard and San Fernando Road, and Whittier Boulevard and Indiana Street (1940-1942); Annual counts on State Highways by Master District 1935-1942.

Maps — Vehicular Traffic Flow — Industrial Employees, showing origin and destination (April, 1942)

- Harbor Industrial Area
- West Beach Industrial Area
- San Fernando Valley Industrial Area
- Central Industrial Area
- Downtown Industrial Area
- Southeast Industrial Area

Map — Vehicular Traffic Flow — Industrial Employees Composite (April, 1942)



LEGEND

IN SOUND OUT SOUND

CORDON CHARACTERISTICS
MOVEMENT OF PEOPLE IN AND OUT
TYPICAL BUSINESS DISTRICTS

THE REGIONAL PLANNING COMMISSION
TRANSPORTATION PLANNING PROJECT
METROPOLITAN AREA,
COUNTY OF LOS ANGELES, CALIFORNIA
PREPARED ON WORK PROJECTS ADMINISTRATION O. R. 48 163 1-07-246
P. 553. 0/242

Map — Vehicular Traffic Flow — Origin of automobiles observed parked in Business Districts (1941)

- Los Angeles Central Business District
- Long Beach Central Business District
- Pomona Central Business District
- Westwood Village Central Business District

Map — Origin of out-of-state cars observed parked in Los Angeles, Long Beach, Pomona and Westwood Village Central Business Districts (1941).

Map — Origin of out-of-county cars observed parked in Los Angeles, Long Beach, Pomona and Westwood Village Central Business Districts (1941).

BUSINESS DISTRICT STUDIES

Charts — Movement of Vehicles, Inbound and Outbound (1941). Showing passenger and commercial vehicles at each street from 6:00 A.M. to 10:00 P.M. Graphs showing: Total Vehicle In and Out by 15-minute and hour periods and accumulation; Passenger and Commercial Vehicles In and Out by hour periods and accumulation.

- Los Angeles Central Business District
- Long Beach Central Business District
- Pomona Central Business District
- Westwood Village Central Business District

Charts — Movement of People, Inbound and Outbound (1941). Showing total people by mode of transportation at each street from 6:00 A.M. to 10:00 P.M. Graphs showing: People by all modes of transportation In and Out by 15-minute and hour periods and accumulation; People by Automobile and Mass Transportation In and Out by hour periods and accumulation.

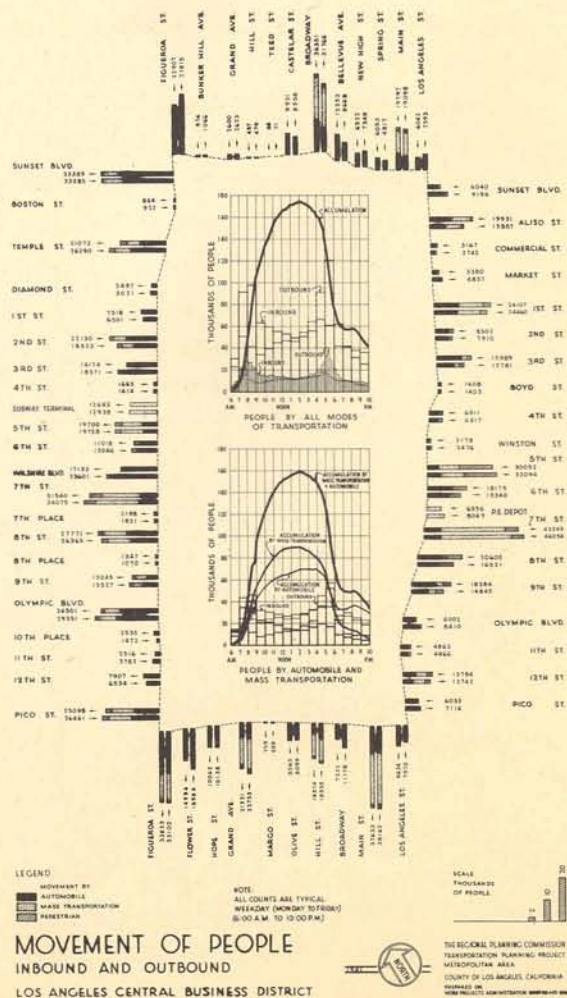
- Los Angeles Central Business District
- Long Beach Central Business District
- Pomona Central Business District
- Westwood Village Central Business District

Graph — Cordon Characteristics (1941). Shows In and Out movements by 15-minute and hour periods from 6:00 A.M. to 10:00 P.M. and accumulation for Los Angeles, Long Beach, Pomona, and Westwood Village Central Business Districts.

Graph — Cordon Counts, Los Angeles Central Business District 7:00 A.M. to 7:00 P.M. (1941). Shows total automobiles entering and leaving; automobiles entering on North, East, South and West sides of Cordon; persons entering by mode of transportation. All data on hour period.

Maps — Curb Parking Facilities (1941). Shows types and time limits of parking permitted at curb.

- Los Angeles Central Business District
- Long Beach Central Business District
- Pomona Central Business District
- Westwood Village Central Business District

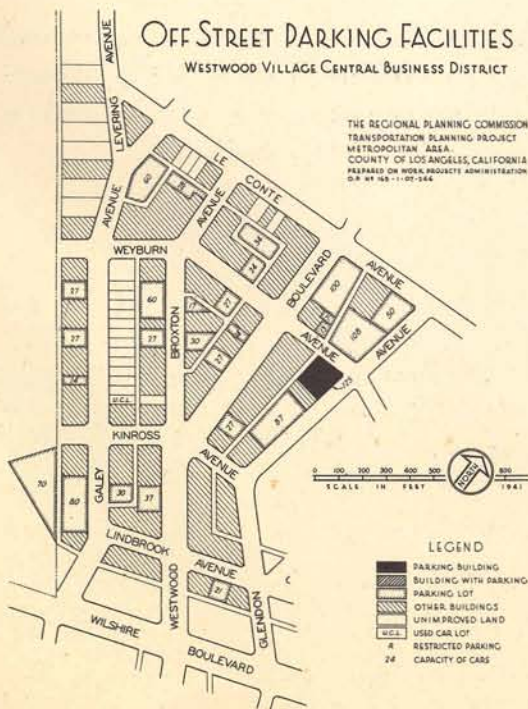


Maps — Off-Street Parking Facilities (1941).
 Showing parking lots; parking buildings; buildings with parking; other buildings; unimproved land; restricted parking; used car lots and car capacity of parking facilities.
 Los Angeles Central Business District
 Long Beach Central Business District
 Pomona Central Business District
 Westwood Village Central Business District.

Maps — Parking Facilities and Use (1941).
 Shows space available and use by type of parking from 6:00 A.M. to 6:00 P.M. for each block.
 Los Angeles Central Business District
 Long Beach Central Business District
 Pomona Central Business District
 Westwood Village Central Business District

Map — Sidewalk Pedestrian Flow (1941). 7:00 A.M. to 7:00 P.M.
 Los Angeles Central Business District

Maps — Building Heights and Predominant Uses (1941).
 Los Angeles Central Business District
 Long Beach Central Business District
 Pomona Central Business District
 Westwood Village Central Business District



Map — Existing Zoning (1941).
 Los Angeles Central Business District

Map — Transit Time Zones — Unserved Areas Metropolitan Area (1941). Peak hour transit travel time from 7th and Broadway.

TABLES

Movement of People by mode of Transportation, Inbound, Outbound and Accumulation (1941); 15-minute and hour periods, 6:00 A.M. to 10:00 P.M.

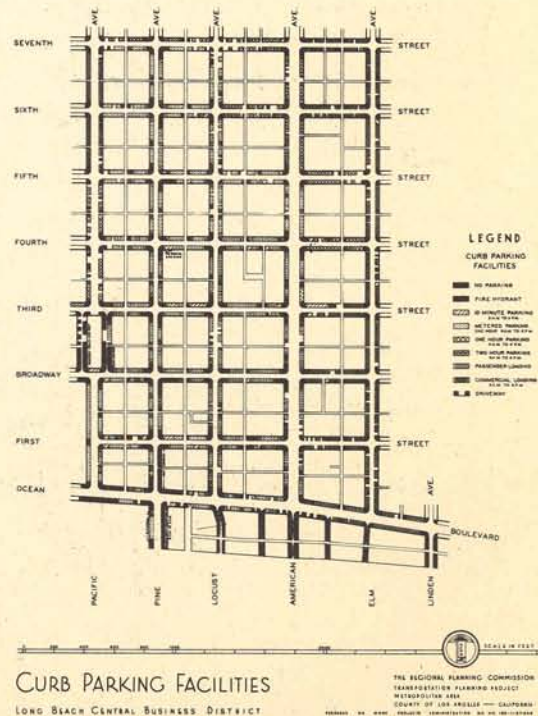
Los Angeles Central Business District
 Long Beach Central Business District
 Pomona Central Business District
 Westwood Village Central Business District

Movement of People by side, Inbound, Outbound and Accumulation (1941); 15-minute periods, 6:00 A.M. to 10:00 P.M.

Los Angeles Central Business District

Movement of Vehicles by side and type; Inbound, Outbound and Accumulation (1941); 15-minute periods, 6:00 A.M. to 10:00 P.M.

Los Angeles Central Business District
 Long Beach Central Business District
 Pomona Central Business District
 Westwood Village Central Business District



Movement of Vehicles, by street; Inbound and Outbound (1941); 15-minute periods, 6:00 A.M. to 10:00 P.M.

- Los Angeles Central Business District
- Long Beach Central Business District
- Pomona Central Business District
- Westwood Village Central Business District

Movement of Persons in Vehicles, by side and type of vehicle, Inbound, Outbound and Accumulation (1941); 15-minute periods, 6:00 A.M. to 10:00 P.M.

- Los Angeles Central Business District
- Long Beach Central Business District

Movement of Pedestrians, by side, Inbound, Outbound and Accumulation (1941); 15-minute periods 6:00 A.M. to 10:00 P.M.

- Los Angeles Central Business District
- Long Beach Central Business District

Movement of People by Mass Transportation by side, Inbound, Outbound and Accumulation (1941); 15-minute periods, 6:00 A.M. to 10:00 P.M.

- Los Angeles Central Business District
- Long Beach Central Business District

Persons per Vehicle, by type and street, Inbound and Outbound (1941); 15-minute periods, 6:00 A.M. to 10:00 P.M.

- Los Angeles Central Business District
- Long Beach Central Business District
- Pomona Central Business District
- Westwood Village Central Business District

Movement of people by Mode of Transportation at each street, Inbound and Outbound (1941); 15-minute periods, 6:00 A.M. to 10:00 P.M.

- Los Angeles Central Business District
- Long Beach Central Business District
- Pomona Central Business District
- Westwood Village Central Business District

Persons per vehicle, by side and type of vehicle, Inbound and Outbound (1941); 15-minute periods, 6:00 A.M. to 10:00 P.M.

- Los Angeles Central Business District
- Long Beach Central Business District
- Pomona Central Business District
- Westwood Village Central Business District

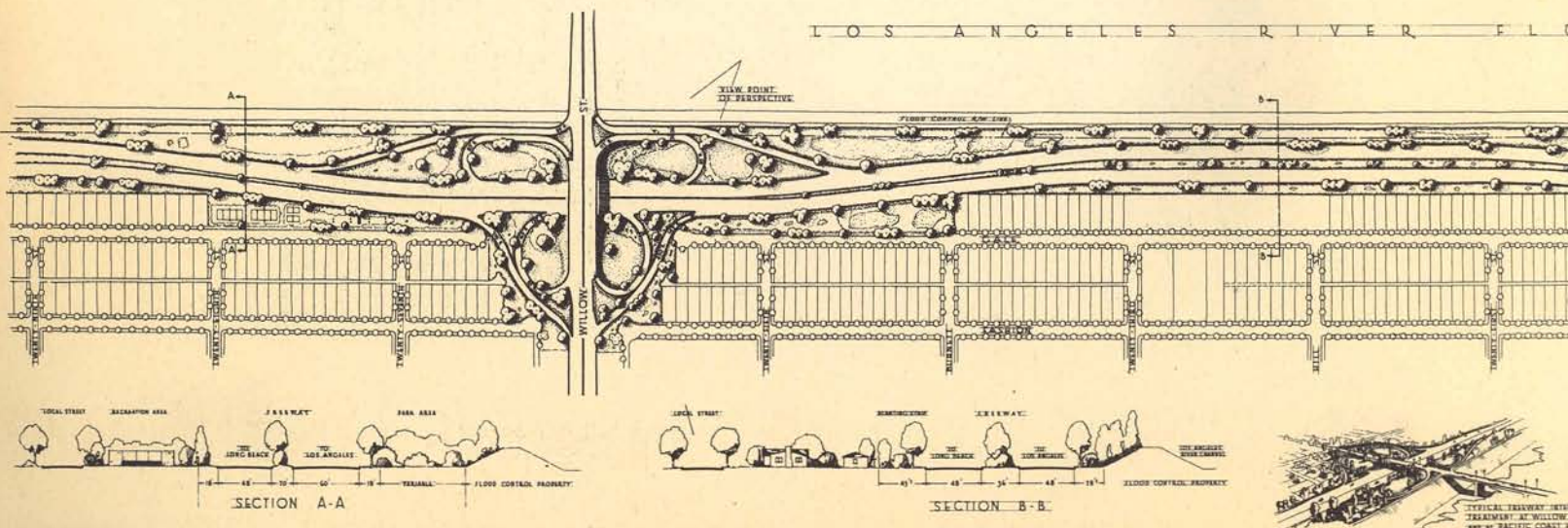
Movement of People by Pacific Electric Rail and Bus lines, by street, Inbound and Outbound (1941); 15-minute periods, 6:00 A.M. to 10:00 P.M.

- Los Angeles Central Business District

Movement of People by Mass Transportation other than Pacific Electric, by street, Inbound and Outbound (1941); 15-minute periods, 6:00 A.M. to 10:00 P.M.

- Los Angeles Central Business District

Note: Copies of maps, charts and tables listed here are available from the Regional Planning Commission at cost, subject to current military restrictions.



ACKNOWLEDGMENT

The Regional Planning Commission gratefully acknowledges the freely-given assistance of many agencies and individuals in choice of photographs and other materials used in this book.

Page 7: Outer Drive, Chicago, and Pennsylvania Turnpike; courtesy Portland Cement Association.

79th Street Cloverleaf, Henry Hudson Parkway, New York City; courtesy Paul J. Woolf.

Page 22: Ramona Freeway Perspective based on sketch by Division of Highways, State of California.

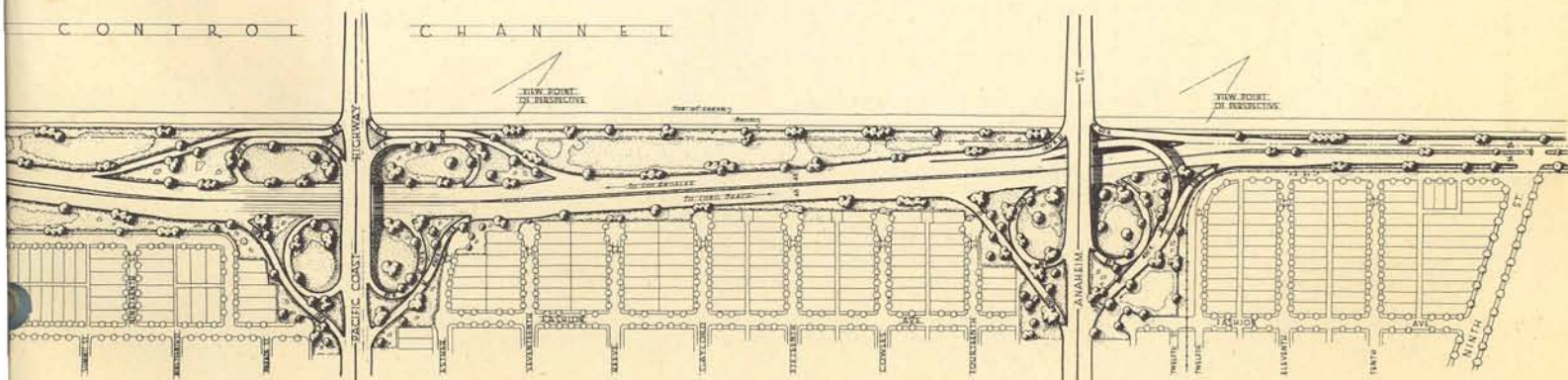
Page 33: Randall's Island Traffic Junction of Triborough Bridge; courtesy Triborough Bridge Authority.

Hollywood Park and Santa Anita Park; courtesy Los Angeles Chamber of Commerce.

Jones Beach State Park; courtesy Long Island State Park Commission.

Page 35: Three photographs, Parking Downtown, Los Angeles; courtesy Automobile Club of Southern California.

Lithographed in Los Angeles, 1943, by Homer H. Boelter, Ltd., Lithography.
Type Composition by The Magoffin Company.



Design Plan of
Scale: 1/4" = 100'
March, 1942

LOS ANGELES RIVER FREEWAY
NINTH STREET TO TWENTY-NINTH STREET LONG BEACH CALIFORNIA



INTERCHANGE TREATMENT
AT ANARHEIM STREET

"IT TAKES MORE THAN A GOOD IDEA TO MAKE A GREAT PUBLIC IMPROVEMENT. THE FACT IS THAT SUCH THINGS HAPPEN WHEN THERE ARE LEADERS AVAILABLE, READY, AND EAGER TO TAKE ADVANTAGE OF THE LOGIC OF EVENTS . . . TIMING IS EVERY-

THI

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Institute of Transportation Studies
412 McLaughlin Hall

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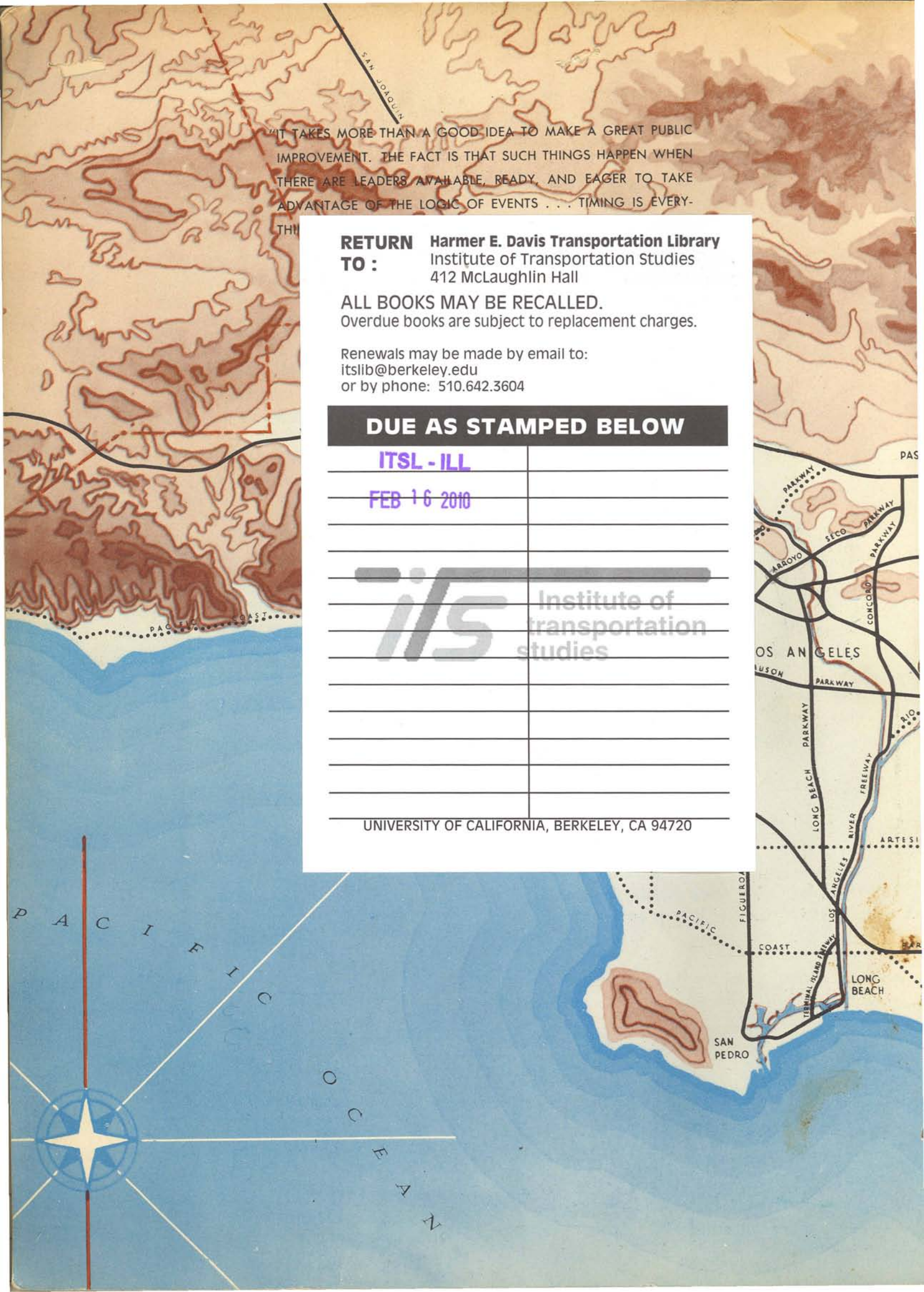
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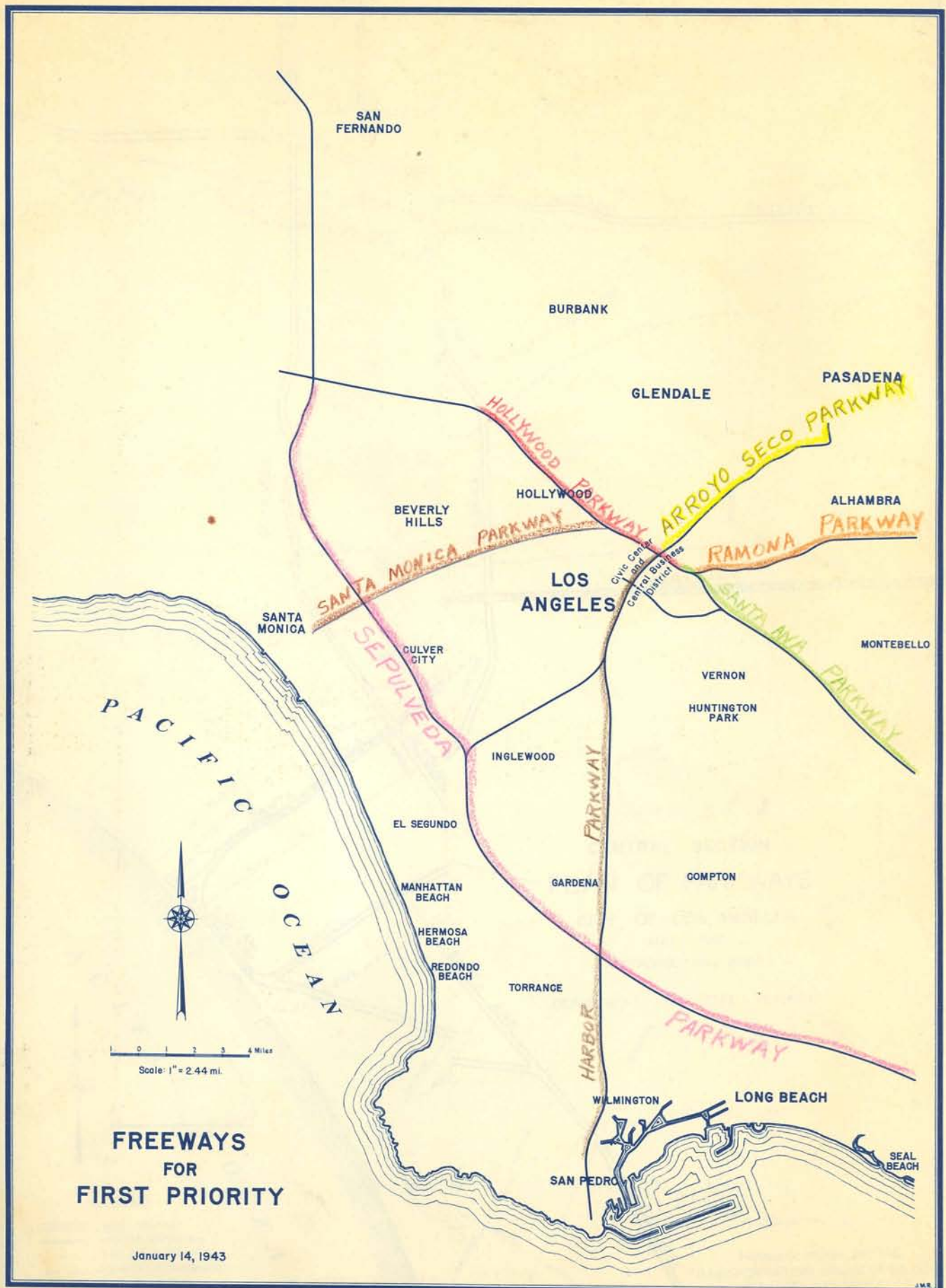
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UNIVERSITY OF CALIFORNIA, BERKELEY, CA 94720







CENTRAL SECTION
 PLAN OF PARKWAYS
 CITY OF LOS ANGELES
 AND THE
 METROPOLITAN AREA
 DEPARTMENT OF CITY PLANNING

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 MILES

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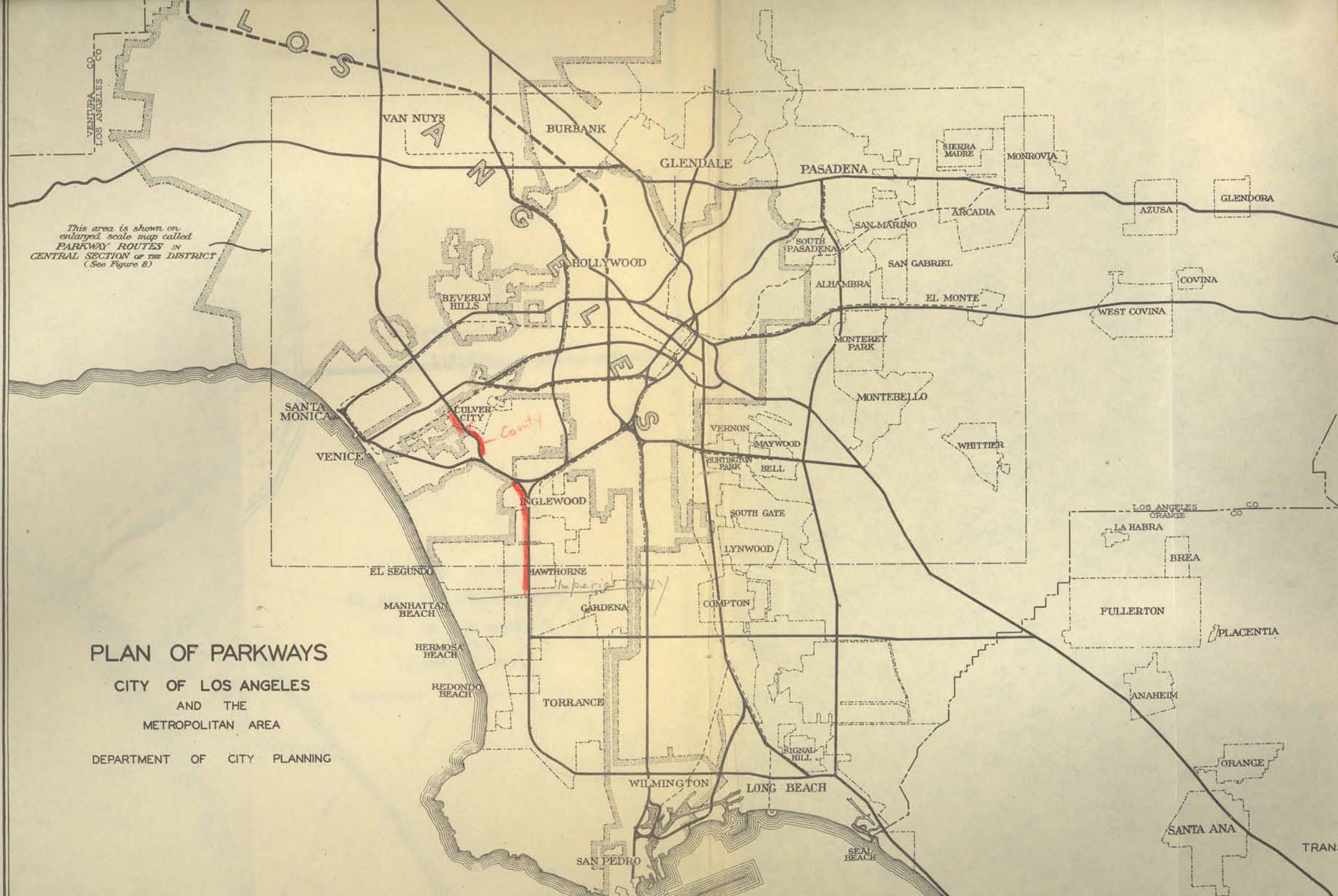
This area is shown on enlarged scale map called PARKWAY ROUTES IN CENTRAL SECTION of the DISTRICT (See Figure 8)

PLAN OF PARKWAYS

CITY OF LOS ANGELES

AND THE METROPOLITAN AREA

DEPARTMENT OF CITY PLANNING





CENTRAL SECTION
 PLAN OF PARKWAYS
 CITY OF LOS ANGELES
 AND THE
 METROPOLITAN AREA
 DEPARTMENT OF CITY PLANNING

