

EXHIBITS Nos. 95 to 100 appear in Hearings, Part 7.

EXHIBIT No. 101

A REPORT ON THE FEASIBILITY OF A FREEWAY ALONG THE CHANNEL OF THE LOS ANGELES RIVER, JULY 1941<sup>1</sup>

(Prepared in the office of the Regional Planning Commission, County of Los Angeles)

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Wm. J. Fox, Chief Engineer, the Regional Planning Commission; Arthur H. Adams, Assistant Chief Engineer.

PREPARATION OF THE REPORT

Werner Ruchtli, Head of Land Planning Division Supervision and Coordination.  
Earl J. Esse, Highway Engineer; Field Investigation, Collection of Data and Detailed Plans.

Simon Eisner, Assistant to Highway Engineer in all phases of the work.

Tom D. Cooke, Planning Engineer; Assistant in Drafting the Report.

Appreciation is expressed to Mr. I. S. Shattuck, Transportation Consultant, Oakland, California, for very helpful criticism on both the content and form of the report.

Grateful acknowledgment is given to the following organizations for their assistance in assembling basic data used in this preliminary study: Los Angeles County Flood Control District, United States Engineer's Office, United States Public Roads Administration, Los Angeles City Department of Water and Power, Los Angeles City Engineering Department, Southern California Edison Company, Office of Supervisor Gordon L. McDonough.

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<sup>1</sup> Included with this report were nine illustrations which are on file with the Committee.

LOS ANGELES RIVER FREEWAY

INTRODUCTION

The Los Angeles River, although its bed is dry ten months of the year is subject to casual brief and sometimes disastrous floods. These have resulted in, now largely executed, to control the flood flow by construction works including dams, reservoirs and channel improvement. From Sepulveda Boulevard in San Fernando Valley to the confluence with the Rio Hondo the bed of the river is being developed as a great concrete channel. Below the Rio Hondo the plans call only for lining the levee walls.

Preservation of the concrete paved sections, with heavy construction vehicles passing about over the heavily reinforced slab bottom during the dry season, has led to many people the idea of using that existing pavement as a roadway connecting the San Fernando Valley and the harbor area. The prospect of having this concrete channel, its levees and the adjoining land as a freeway presents a project viewed most favorably by many public-minded citizens.

The project proposed would permit more efficient functioning of Los Angeles City's rapidly developing defense industries. Some of these developments have already produced dislocations of population and housing facilities. The heavy volume of traffic generated by them has already caused congestion that in a few instances amounts to appalling delay and waste. The proposed river freeway offers the swiftest means of solving many of the traffic problems related to a substantial block of the defense industries. The best known of these industries are those near to indicate the importance of the group in relation to this project. Near to the northerly portion of the proposed freeway lie the Lockheed-Vega aircraft factories, and the Menasco and Kinner airplane motors plants. On the southern portion of the route are found the Lockheed downtown plant and the wholehearted Manufacturing District with its varied production. Just east of this lies the Vultee Aircraft plant. At the southerly end are found the new Douglas Beach airplane factory as well as the major oil refining area and the building areas of Wilmington and Terminal Island. It is at once obvious that these various industrial plants have need for constant speedy movement of men and goods along the line connecting them not only with each other but with the areas where their employees reside. Even if the emergency did not demand improvement in their facilities their efficient operation in normal times would usually require improvements comparable to the proposed freeway. The fact that the latter could be built more quickly than any other such improvement adds to its value when time is precious.

FREEWAY PROPOSAL VISUALIZED

The proposal as brought to the attention of the Regional Planning Commission contemplates the construction of a one-way roadway on each side of the channel. The roadways, on the levees or adjacent thereto, would be physically separated from abutting property and cross streets, passing under most of the existing ones. Thus no cross traffic could develop to interfere with the flow of vehicles along the freeway, and fast, safe passage from the San Fernando Valley to the Harbor area would be assured.

By providing access points to other highways at not too frequent intervals, the resultant would be a freeway: a limited way thoroughfare with no interference from abutting properties or from cross traffic and with access permitted only at locations where movements are controlled by carefully designed construction.

Obviously the development here described would provide possibilities for land-use treatment that would make the route attractive as well as useful. The most modern design features should be incorporated in the plans for this freeway. Rest stations, parking areas and terminal facilities should form an integral part of the final plans. Preliminary plans now being studied show exit and entry points permitting the most thorough distribution of traffic to the vital areas which the freeway would serve, and to connect it with the other freeways which are already constructed or which are being studied as part of a comprehensive plan. The multiple uses to which this freeway would be put are at once apparent. It would serve as a link between the vast San Fernando Valley and Los Angeles, the industrial areas and the beach recreation areas which extend far to the South. It would also serve to bring the people of these areas to industrial districts in the cities of Los Angeles, Vernon, and the Harbor area. It would further provide an efficient means of bringing raw materials to industrial plants and for conveyance of finished products to the harbor for shipment, or to the metropolitan centers for

distribution. It would save shipping concerns great amounts of money by avoiding the "snail's pace" necessary on most of the present main highways. The provision for four lanes of traffic in each direction for the major portion of this route would permit the segregation of pleasure and commercial vehicles, with the accompanying benefits of safety to both.

Fifty thousand cars per day is a conservative estimate of the capacity of the proposed freeway. This totals over 15 million vehicle miles each month (on the basis of a 10-mile average vehicle trip) of uninterrupted traffic flow, free from the "stop and go" wastes of time and fuel, which when translated into dollars and cents, represents a tremendous economic saving to the motoring public.

The immediate construction of the Los Angeles River Freeway would greatly facilitate the National defense works in the metropolitan area. The aircraft plants of the San Fernando Valley and the shipbuilding, shipping and fortification areas of the Los Angeles-Long Beach harbors would be linked by a highway which would permit speedy movement of men and machines without in any way dislocating the civilian activities of the area.

#### FEASIBILITY DETERMINED

The Regional Planning Commission, after considerable study, has determined that—

1. It is feasible to construct two units of a freeway, as suggested in the introduction, along the channel of the Los Angeles River from Soto Street to Anaheim Street, and from Sepulveda Boulevard to Dayton Avenue, a distance of 35½ miles; and
2. It appears infeasible to construct a freeway, as described, along or in, the channel between Dayton Avenue and Soto Street, a distance of 4½ miles, which is only 11% of the total length.
3. It is feasible, however, to construct a connecting link freeway from Dayton Avenue to the vicinity of Soto Street by an alternate route which follows the foot of the bluff several blocks east of the river and which offers several distinct advantages.
4. It would be advantageous to construct the two units first mentioned, (1) south of Soto Street, and (2) north of Dayton Avenue even if the portion between were not built immediately. In this case adequate entrances and exits, not yet visualized, would have to be provided to distribute the traffic over a number of ordinary highways leading into the central business district as well as connecting the two freeway units to each other.

#### RECOMMENDATIONS FOR DEVELOPMENT

The general features of the scheme to adapt the Flood Control construction along the Los Angeles River to the purposes of a freeway have been briefly described in the introduction. Variations in this general scheme are to be noted in various segments along the route. These variations have been studied in some detail by the Regional Planning Commission. They are caused by differences in terrain, amount of building, street and railroad development, width of channel and right-of-way, location and size of tributary water courses, and the traffic needs of the areas to be served.

The following paragraphs contain the recommendations for the development of the seven distinct sections into which for simplicity in the analysis of the above considerations the project is divided. The physical treatment recommended is further illustrated in the accompanying sketches and cross sections.

#### *Section 1—Anaheim Street to Artesia Street—Length 7½ Miles*

It is recommended that the top of each levee be developed into a 4-lane roadway, approximately 50 feet wide, with the west side of the channel carrying the south bound traffic and the east side carrying the north bound traffic.

An exception from this rule must be noted south of Willow Street. On the west side, where Pico Street exists as a major highway, the freeway should leave the levee and be constructed on the now private property that lies between Pico Street and the levee, in order to permit effective use of the bridges for grade separation. Pico Street would be retained as a two-way divided highway, distributing traffic from the freeway.

From Carson Street to Artesia Street the proposed Terminal Island Freeway will join the River Freeway along the west side of the channel. This section, therefore, should be developed as a two-way freeway. In this case north bound

would swing across the river at Artesia Street and continue northerly with traffic generated in the Long Beach area east of the river (See Map, page —.)<sup>1</sup> Additional right of way should be acquired from the Edison Company in this area. A connection would also be made with Atlantic Drive.

Detailed surveys would be necessary to locate the roadway and the several existing property uses which may cause minor changes in alignment of the road-

is recommended that interchange facilities be provided at Anaheim Street, Street, Willow Street, Terminal Island freeway, Long Beach Boulevard Artesia Street to serve the Harbor Area, Metropolitan Long Beach, Orange County, Long Beach Airport, North Long Beach, Signal Hill, Compton, and Downer.

*Section 2—Artesia Street to the Rio Hondo—Length 2 miles*

is recommended that the top of the levees be developed into 4-lane roadways, approximately 50 feet wide, with the west side of the channel carrying south-bound traffic and the east side carrying north-bound traffic.

The confluence of the rivers, the freeway, on the east side, should run parallel to the Rio Hondo for a short distance, crossing the Rio Hondo west of the U. P. bridge. (See Maps Nos. 13 and 14 in book of maps.) Some property may be acquired at the Rio Hondo to provide proper radii of curvature at the crossing.

Some property may have to be acquired from the Edison Company on the west side, and some of the transmission towers may have to be moved to make the freeway construction possible.

Detailed surveys would be required in this area to determine the exact location of the freeway.

is recommended that no interchange facilities be provided at present between Artesia Street and the Rio Hondo.

*Section 3—The Rio Hondo to Soto Street—Length 7 Miles*

is recommended that the top of the levees be developed into 4-lane roadways, approximately 50 feet wide, with the west side carrying the south-bound traffic and the east side carrying the north-bound traffic.

It would be necessary to acquire part of the transmission line right-of-way on the east side of the river, and possibly to move some towers in the area from the Rio Hondo to 61st Street.

It would be necessary to realign the Los Angeles Junction Railroad from 61st Street northerly to the river crossing now under construction.

It would be necessary to realign a short portion of Bandini Road and use the present portion adjacent to the river, as the freeway.

On the west side it may be necessary to acquire some private property upon which there is some scattered small home development between Firestone Boulevard and Randolph Street.

South Riverside Drive, which exists from Randolph Street to Atlantic Avenue, should be retained as a two-way service street, independent of the Freeway.

In this area it may be necessary to build the roadway out into the channel, increasing the height of the berms by constructing parapet walls so that the capacity of the river would not be decreased.

From Atlantic Avenue to Soto Street, the Los Angeles Junction Railroad would have to be realigned so that the top of the levee might be used for the Freeway. A portion of the Freeway, at this point too, might be built into the river channel, as mentioned above.

It is recommended that interchange facilities be provided at Firestone Boulevard, and Atlantic Avenue, to serve Huntington Park, Maywood, Bell, South Gate, Downer, and the East Los Angeles area.

*Section 4—Soto Street to Dayton Avenue—Length, 4½ Miles*

It is recommended that a freeway connection for this section be developed on the alternate route to be definitely determined upon more detailed study of future developments. It was found that none of the proposals for roadways in immediately adjacent to the channel was feasible because of the intensive development along the banks of the flood-control channel from Soto Street to

<sup>1</sup> See footnote supra, p. 1933.

Dayton Avenue. In this section, construction is practically completed on a concrete lined channel which occupies practically the full width of the right-of-way, so that there is no room within the right-of-way for roadways on the bank. This fact obviously eliminated any consideration of using the typical method.

The variation of locating the roadways immediately outside the right-of-way was investigated with little success. The land adjoining the river is occupied throughout most of this length by railroad lines of first importance both in the general transportation system and in point of service to the industrial district. Together with the fact that the many bridges in this area have been designed and built to accommodate these rail lines below the level of vehicular traffic, the general removal of rails to make way for the freeway could not be seriously considered.

*Roadways in the Channel.*—In this section then, the greatest effort was made to find a means of using the bed of the channel for roadways, even if this might mean closing the section to traffic during storm flow. Use of the existing concrete bottom as pavement proved difficult because of the numerous drains that empty into the channel at points all along the course, since even a trickle of water would render the pavement slippery and dangerous.

It was then proposed to meet this difficulty by having the roadways elevated above the bed of the channel, sufficiently to allow all drains to be carried underneath and empty into the center or summer channel. The building of such raised roadways would, of course, have lowered the capacity of the channel, so it was proposed to raise the side walls to compensate for this. It was still proposed that in rare periods of peak flow of water these roadways could be closed, to serve as waterways.

The need for entrance and exit ramps for connections to cross traffic arteries, so vital in this downtown location, created increasingly difficult problems.

These involved the conflicting needs of hydraulics and traffic, and such expensive construction as flood gates and tunneling through the channel walls underneath numerous rail lines.

The greatest problem was caused by the confluence of major washes with the Los Angeles River. The Arroyo Seco is the best example. How to conduct a stream of this magnitude across (i. e. under) the easterly roadway is a problem for which no reasonably practicable solution has yet been found. Raising the easterly roadway high enough to permit bridging the Arroyo, would create a major obstruction in the river at the point of confluence, creating hydraulic difficulties that could, of course, not be tolerated by the Flood Control Engineers.

*Channel Route Considered Impractical.*—It was at length concluded that, on the strength of data available to this department, the location of a freeway within or immediately adjacent to the Flood Control right-of-way is not feasible. Further study of the hydraulics involved, by the engineers of the Flood Control District and the United States Engineers Office, might possibly discover some suitable method, although such an eventuality seems most improbable.

This conclusion does not mean, however, that there is no solution for this central link in the project, nor that the project as a whole cannot be recommended. It means only that the freeway cannot be built economically in this exact location.

Even if no central link were ever built the two north and south units would be of such great value as to justify their construction. It must be noticed, however, that in this event it would be necessary to build a number of connections from each unit into highways leading into the central business district. The traffic load would have to be carefully spread over a number of such highways so as to avoid dumping too heavy a load on any one. Along these highways, near the center of the business district it would also be necessary to provide adequate terminal parking (and perhaps bus) facilities. It would further be necessary to provide suitable connections to north and south highways joining the north and south units to each other.

*Alternative Route Recommended.*—One possibility for an alternated all-weather route between Soto Street and Dayton Avenue has been investigated and is recommended for more detailed study. This route lies along the foot of the river bluff, some few blocks easterly of the river itself. Leaving the river channel near Soto Street, it would follow more or less the foot of the bluff, along Pecan Street, Echandia Street, Judson Street, Daly Street, and Avenue 21 to again rejoin the river route just north of Dayton Avenue. A variation on this route might be combined in part with the proposed Santa Ana freeway.

In any such route as these a considerable acquisition of land would be necessary for a right-of-way of adequate width for a distance of approximately four and a

This increase in cost would perhaps not be more than the cost of elab- gates, tunnels, etc., that were suggested for the river-bed location. te recommendation can be made for the location of interchange points ion until a definite route is fixed and the physical possibilities and unds can be studied in some detail. It is obvious that comparatively trances and exits will be needed between Olympic Boulevard and eway, to provide adequate access to and from the central business n this area it will be necessary also to provide for connection to other rving areas both east and west of the river.

*ction 5—Dayton Avenue to Victory Boulevard—Length, 7 Miles*

mmended that a 4-lane, one-way roadway be constructed on each side , using the existing paved portions of the top of the levee. tional property may have to be acquired, in the area between Dayton d Griffith Park, on the southwest side. There are some inexpensive lings near the flood-control right-of-way in this area. On the north- f the river it would be necessary to acquire some railroad property ve a portion of the existing railroad tracks in the classification yards onstruction of the roadway. There is sufficient unused space in the rmit this track realinement. uch areas it may be advisable to construct the roadway by extending hannel, and raising the height of the berms, to retain the river capacity. Section Diagrams, pp. \_\_\_\_\_ and \_\_\_\_\_.)<sup>1</sup> ion of the area in Griffith Park it would be necessary to slightly realine x Riverside Drive.<sup>2</sup> No additional private property would have to here, as the entire area is part of Griffith Park. ditional right-of-way would be required at interchange points and at ation structures.

mmended that interchange facilities be provided at Fletcher Drive, Boulevard, and Victory Boulevard to serve the Silver Lake District, c, Hollywood, Glendale, Burbank, and the San Fernando Valley.

*ction 6—Victory Boulevard to Colfax Avenue—Length 5½ Miles*

mmended that a 3-lane one-way roadway be constructed on each side acent to the channel, between Victory Boulevard and Lankershim- Boulevards. The latter would be the terminus of the north roadway stage of construction. The south roadway would continue along the a 3-lane one-way roadway to connect with Ventura Boulevard in the Colfax Avenue.

ditional right-of-way may be necessary in this area. The channel n has not been completed beyond Fairview Street, and it would be for the U. S. Engineering Department to complete its work in this to or in conjunction with the freeway construction.

mmended that interchange facilities be provided at Whitnall highway ructed), Barham Boulevard, Lankershim Boulevard, and Ventura near Colfax Avenue to serve the San Fernando Valley, as well as to nnections with Cahuenga Freeway and the various State highways orth.

*ction 7—Colfax Avenue to Sepulveda Boulevard—Length 4½ miles*

study should be given to the possibility of extending the freeway roposed channel improvements of the Los Angeles River to Sepulveda . This would provide a bypass for the through traffic from the western ndo Valley and from north coastal areas to metropolitan Los Angeles, l manufacturing district and the Los Angeles-Long Beach Harbor area. seem, however, that the Victory Boulevard and (proposed) Whitnall connections would serve the San Joaquin Valley traffic even better d a Sepulveda Boulevard connection to the freeway. Detailed surveys required in this area to determine what private property, if any, would e acquired.

it be necessary for the U. S. Engineering Department to complete the ol improvements prior to or in conjunction with the construction of this the freeway.

<sup>1</sup> See p. 1938, supra.  
<sup>2</sup> Riverside Drive might be incorporated into the freeway.

In every instance where the flood-control construction is still to be undertaken, the plans should be made to incorporate the freeway features in advance of construction.

#### REGIONAL FACTORS

The considerations that led to the conclusions and recommendations previously presented involved an analysis of the relation of the project to the region as well as varying construction details at different points along the course. Certain general observations may be made before proceeding to the analysis of the elements and difficulties found in this project. The favorable aspects of the project as a whole are so outstanding as to be almost obvious. There should be nothing surprising in the conclusion that the Los Angeles River forms an effective and superior route for a major artery of communication. For while the city was originally located near the river for the sake of a water supply, and the mouth of the river became an industrial harbor, the urban development has for the most part avoided the immediate banks because of flood hazards. Consequently, the river, penetrating to the industrial and commercial heart of the metropolis from two directions, fortunately preserves throughout most of its length the space necessary for such an artery.

More specifically the advantages to the metropolitan region to be found in the proposal are as follows:

1. The proposed freeway, approximately 40 miles in length, cuts through the center of the metropolitan area of Los Angeles County and would serve directly the cities of Burbank, Glendale, Los Angeles, Vernon, Maywood, Bell, Huntington Park, South Gate, Lynwood, Compton, Signal Hill, and Long Beach, and the communities of North Hollywood, Eagle Rock, East Los Angeles, Bell Gardens, Hynes, Bellflower, and North Long Beach. Indirectly (by means of feeder lines) many other communities would be greatly benefited, notably Downey, the Pasadena area, and the western San Fernando Valley.
2. The location of the proposed freeway, in respect to the region, is such that it would offer the fastest and most convenient route between the centers of population, commerce, industry, and recreation which are distributed along its route from the San Fernando Valley to the Los Angeles-Long Beach Harbors. The route would probably carry a greater amount of traffic into and out of the central business district than from southern to northern points. The pressure for adequate ways into the central area exists now. The proposed freeway, providing fast, uninterrupted service, would therefore be of great value considered as a pair of radial arteries serving the downtown area.
3. The Los Angeles River Freeway route has reasonable directness of alignment between the San Fernando Valley, the Central Business District of Los Angeles, the Central Manufacturing District, and the Los Angeles-Long Beach Harbor. For it must be noted from experience with other freeways (as in the New York region) that the saving in time through elimination of traffic delays (principally in surface intersection) far outweighs any disadvantage in slightly greater lengths or a somewhat roundabout route. Actually the Los Angeles River is the shortest route between many of the points which it connects.
4. Approximately 35 miles of the Los Angeles River Freeway would be located within Flood Control right-of-way so that expenditures for land acquisition would be comparatively small.
5. This project would take advantage of a majority of the 60 existing bridge structures carrying traffic across the flood-control channel. Certain structural modifications would be required at the abutments of bridge structures to permit the separation of freeway and cross traffic. Twenty-three new bridges, as contemplated by the Master Plan of Highways, would provide for the Freeway requirements when built.
6. Engineering Construction problems in this freeway project could be solved without excessive expenditures of funds.
7. The over-all costs of this project would be considerably less than for any other combination of freeway routes to serve this extensive area.
8. There is a possibility of using the freeway for rapid transit bus operation, although this subject has not been explored thoroughly. A decision would perhaps rest in the authority of the Railroad Commission or other jurisdictions for whom we cannot speak. Moreover, no data is avail-

ble to determine whether or not such bus operation could be undertaken economically. Since, however, such mass transportation would carry more people per vehicle, thereby using less roadway space, and eliminating parking problems at terminals, it might save costly expenditures at other points and should therefore be seriously considered. If convenient bus operation on the freeway should prove successful it would unquestionably and materially reduce highway congestion in many of the defense areas.

The tremendous industrial and residential expansion that has developed, and which continues to develop with increasing momentum, in the areas served by this route, with resultant increases in traffic volumes, indicates the imperative necessity of developing some type of traffic carrier superior to the ordinary highways. The river freeway offers the quickest opportunity for such improvement.

This project would form a vital link in the local network of military roads, access roads, and feeder roads.

Plans for the construction of roads of importance to National Defense should be available upon passage of bills now pending in Congress.

#### COMPARISONS WITH OTHER FREEWAY ROUTES

The importance of items 4 and 5 can be best illustrated by a rough comparison of the development of a freeway on some line such as Santa Fe Avenue or Alameda Street. On the latter route, for example, in a distance of nearly 17 miles from Olympic Boulevard to Anaheim Street, the number of necessary highway crossings, both existing and proposed, was examined. These amounted to 24 highway crossings, 11 secondary highway crossings, and 17 local street crossings as well as 12 railroad crossings. With the exception of a few of the local crossings, all of these would have to be separated from a proposed freeway, by at least 58 grade separation structures, all new. In the equivalent of the river freeway route, a distance of 18½ miles, there would be only 37 structures, 37 of which can utilize existing bridges. Sixteen of these 37 bridges are so constructed that the freeway can pass under them at a very less cost than would be required for building an entirely new structure. Further, the construction costs for each structure at the river location are less than on Alameda Street, because the existence of fewer underground lines, sewer, and drainage lines would demand less reconstruction. In all of these points, it appears that construction of grade separations on an Alameda Street line would probably cost about four million dollars on the river line.

Other features of construction, the costs on a line such as Alameda Street would vary with the general method of construction chosen. Large rights-of-way would be encountered in developing a surface freeway through the built-up sections lining Alameda Street from Olympic Boulevard to the river boundary of Compton. A large part of these right-of-way costs would be avoided by construction of an elevated freeway throughout this section, and construction costs would be materially increased and would greatly exceed the construction costs on the river freeway as proposed. It is estimated that construction would cost at least \$1,500,000 per mile, a total of \$15,000,000 for the 10-mile portion. Assuming somewhat lower average cost for the remainder of an Alameda Street line, construction from Compton to Anaheim Street would amount to about seven million dollars, giving a total of twenty-two million dollars for the entire route.

The cost of the river freeway as here proposed, the construction cost of the freeway from Olympic Boulevard to Anaheim Street is estimated at about twelve million dollars, ten million less than an elevated Alameda Street route.

It is possible to arrive at any figure for right-of-way cost on an Alameda Street route, at this time. If a surface construction were contemplated it would not merely the purchase of large amounts of land and improvements, but severance damages, but also the rights of access to Alameda Street property now enjoys. Even if an elevated highway should be contemplated it would still be necessary to acquire considerable amounts of right-of-way for access ramps. Because of their interference with existing buildings, these would cost much more than similar access acquisitions on the river

route, therefore, that right-of-way costs on any such route as Alameda Street or Santa Fe Avenue would greatly exceed the comparatively small amounts on the river freeway.

A further consideration not connected with costs should be brought out. In case of an elevated free way it would perhaps be considered economical to restrict the use of the elevated section to fast, lightweight vehicles, providing a surface-level road, underneath, for slower-moving truck traffic. In this case the large proportion of industrial truck traffic, which is vital to this portion of the county, would not derive any savings in travel time from the free way. One of the strongest arguments for the necessity and value of the free way would therefore be lost.

Lastly, it is clearly apparent that any proposal to follow a route such as Alameda Street or Santa Fe Avenue would involve very extensive delays. Lengthy detailed surveys would be required before any detailed planning or acquisition proceedings could be begun. Acquisition proceedings on so many highly developed properties would doubtless consume several years after that. In the case of the river location, enough survey data is already available that both preliminary detailed studies and detailed precise surveys can be begun immediately. The small amounts of acquisition necessary for interchange and other special points would not require a great deal of time in any case and in most instances would not delay the construction program at all. In most such cases the initial free-way construction could be undertaken on existing rights-of-way, the interchanges and widenings taking place later on as the traffic need develops and as the small parcels of land are acquired. The river free-way construction could be well under way before the complex preliminaries on any other route could be cleared away.

#### CONSIDERATIONS OF ROADWAY POSITIONS IN RELATION TO LEVEES

Investigations of the general proposition to construct a free way along the channel of the Los Angeles River presented three alternatives distinguished by the location of the roadways.

Various early proposals had suggested building these roadways:

- (a) within the channel proper,
- (b) on the levees or banks,
- (c) outside and adjacent to the levees.

A preliminary study examined the feasibility of using each of these schemes for the project as a whole. Later more detailed studies were made of the feasibility of applying one or another of these types along the various sections of the project which appeared to have differing characteristics. On the basis of information available at this time, the conclusion was reached that the first method, that of building roadways entirely within the channel, would be infeasible at practically all points along the route.

The points considered in each of these three cases are discussed in the following paragraphs.

*Roadways within the Channel.*—The construction of the flood-control channel with its heavily reinforced concrete base and walls, the movement of heavy vehicles used in the construction, and the ease of controlling the normal flow of water by means of sandbags and low earth dykes gave rise to the idea, in the minds of many observers, of using the bed of the channel as a roadway during the dry months of the year. It seemed to be a simple matter to construct low walls to form a center channel to confine the relatively small amount of water flowing possibly 95 percent of the time, so as to permit the use of the sides of the wide channel for freeway purposes.

The first proposal, therefore, was simply to use the concrete floor of the channel as a motorway during the dry season and to close the channel to vehicle traffic during periods of heavy flow.

Studies soon revealed that a serious problem would be created at the large drains and washes entering from the sides. Various methods of conducting the water into the center channel were examined in an attempt to find a means of providing for traffic on the side strips without interfering with the flow of the water. In the portions having a trapezoidal cross section it was proposed to locate the roadways high up on the inner slopes of the levees. These roadways would be built partly on a fill held by a vertical retaining wall, and partly cut into the levees, increasing the water capacity of the channel to compensate for the fill. In the portions having vertical side walls it was proposed to build the roadway in the bed of the channel but raised from four to six feet above the bed, to allow ordinary drainage structures to pass underneath. Hydraulic capacity would be maintained by heightening the parapet walls.

appeared, however, that at the mouths of major washes these devices would satisfy the hydraulic requirements. Moreover, in the already completed ones of the project either method would have required costly changes in the reted pavings or facings. If the channel were still to be built the designs l perhaps be economically adapted to the dual purposes proposed.

o solution has yet been found, however, that did not result in obstruction of low of water within the channel. Conferences with Flood Control District United States Army Engineers, disclosed that such obstructions would not be stable from the standpoint of the hydraulics involved.

condly, the cost of construction of ramps, floodgates, and various interchange ways and facilities would amount to considerably more, in this case, than roadway were located on top of, or outside, the levees. Possible hydraulic lems caused by these entry and exit facilities were not disposed of satisfirily.

was therefore concluded that the originally proposed use of the paved bed e channel as a freeway is not feasible.

should be noted, however, that had the Flood Control Channel improvement he Freeway been originally designed as one project it might have been possible lve the construction problems indicated above.

rther study by flood-control engineers might find some solution not yet coned, but in the light of information available to this office no satisfactory ion on this basis is apparent at this time.

adways on the Levees or Banks.— With the first alternate rejected, attention turned to the possibility of developing roadways on the levees or banks adja- to the channel proper and generally within the flood-control right-of-way. r “banks” is meant the flat surface adjoining the top of the channel in areas e the channel does not have to be built above the level of the surrounding try. The location contemplated on both levees and banks is well illustrated e Cross Section Study entitled “Trapezoidal Section between Hyperion Ave- and Victory Boulevard” (page —).<sup>1</sup>

his type of construction would not interfere with the flow of water in the -control channel. It would, however, require that the levees be developed rding to the ultimate plan of the United States Engineers prior to or at the of the free way construction.

me additional right-of-way would be required at interchange points and for e separation structures at some of the bridge heads.

nder this system roadways in this location would require a minimum of nditure for land acquisition, for:

- (a) The proposed freeway would make use of rights-of-way already owned or for which easements have been granted to the Los Angeles County Flood Control District, thus eliminating the need for extensive land acquisition. It may be necessary, however, to acquire, for road purposes, those portions of the Flood Control right-of-way which are not held for this purpose; these apparently amount to about 46% of the present length of the right-of-way.<sup>2</sup>
- (b) Payment of severance damages to properties adjacent to the river will not be necessary (as in most cases of freeway acquisition) since rights of access to property are already denied by the existence of the Flood Control channel as a physical barrier, and by the terms of acquisition of the Flood Control right-of-way; and further,
- (c) Ownership or control by public agencies of the Flood Control right-of-way and certain adjoining lands would tend to permit construction of the freeway in the immediate future, i. e., with much less delay than on any comparable route.

here are many places along the route where the width between the top of the nel bank and the boundary of the right-of-way is not quite wide enough to mmodate a four-lane roadway. This deficiency could be made up either by sional slight acquisitions, of slivers running up to as much as 10 to 20 feet in h or by building the roadway out over the sloping wall of the channel by this unt.

oadways outside the Levees.—The location of the roadways completely outside nd adjacent to, the levees where they exist appeared to offer many advantages. s condition obtains mainly between Anaheim Street and Soto Street.

<sup>1</sup> e footnote, supra, p. 1938.

<sup>2</sup> r an analysis of the status of the right-of-way, see Table of Ownership, p. 1948.

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Briefly the advantages of this plan are: no interference with flood control, ease of developing interchange facilities, use of bridge approaches as separations at comparatively low construction cost, use of roadways during flood periods, existence of a planned highway alignment, bridging of drains and washes in a normal manner, and great opportunity for parkway treatment. Moreover, the roadways could be constructed prior to final development of the levees.

On the other hand it would be necessary to move more physical obstructions, such as transmission towers. The principal objection to the plan, however, is that considerable additional right-of-way would have to be acquired, causing not only greater expense but also delay in procedure.

This factor appeared to be so important at the present time that it led to the decision not to recommend the location of the roadways outside the levees for the major portion of the project.

There are also a few points along the route where the bordering land is so intensively built up with substantial, valuable buildings that the latter method, extending the roadway out over the channel area for short distances, seems to be indicated. The construction of parapet walls on each side of the channel would compensate for the area so used by the roadways. (For variations of these conditions see Cross Section Studies on pages 42 and 45.)

With the roadways on the banks or levees interchange facilities with cross highways could be constructed with less complication. This type of development could be used between Anaheim Street and Soto Street and between Dayton Avenue and the northerly terminus of the proposed free way.

Due to the intensive development of the banks of the channel to industrial uses and the location of main-line railroad tracks immediately bordering on the channel between Soto Street and Dayton Avenue it appears to be infeasible to use the banks for freeway development in this area.

## *Summary of bridge crossings on the Los Angeles River between Colfax Ave. and Anaheim St.*

Highway bridges		Railroad bridges	Foot bridge and bridle path	Oil and water lines
Existing	Proposed			
40	23	18	2	2

## *Summary of ownership of right-of-way, Los Angeles River flood-control channel, between Victory Blvd., Glendale, and Anaheim St., Long Beach*

	Miles	Percent
<b>North and east side:</b>		
Fee ownership.....	13.3	41.2
Road and flood-control easement.....	2.0	6.4
Flood-control easement.....	16.2	51.5
<b>Total.....</b>	<b>31.4</b>	<b>100.0</b>
<b>South and west side:</b>		
Fee ownership.....	16.5	52.5
Road and flood-control easement.....	1.8	5.7
Flood-control easement.....	13.0	41.3
<b>Total.....</b>	<b>31.3</b>	<b>99.5</b>
Right-of-way questionable.....	.1	.5

EXHIBIT No. 102

[Copy of telegram]

AUGUST 13, 1941.

TRUMAN SENATE INVESTIGATING COMMITTEE ON NATIONAL DEFENSE PROGRAM,  
Washington, D. C.:

Due to present hazardous fire conditions existing in San Gabriel mountain range and for protection southern California water supply and metropolitan water district aqueduct and water sheds surrounding defense communities located