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CALIFORNIA

HIGHWAYS AND PUBLIC WORKS

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OVER THE SIERRA NEVADA MOUNTAINS
(SEE ARTICLE IN THIS ISSUE)

AUGUST
1940

CALIFORNIA HIGHWAYS AND PUBLIC WORKS

Official Journal of the Division of Highways, Department of Public Works, State of California

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Table of Contents

	Page
State and Federal Officials Meet to Consider Problems Vital to Central Valley Power Market.....	1
<i>By Frank W. Clark, Director of Public Works</i>	
Secretary Ickes Letter to Director Clark Arranging Central Valley Project Meeting.....	2
Three Central Valley Project Milestones Passed.....	3
<i>By Edward Hyatt, State Engineer</i>	
Shasta Dam Site Picture Showing Location of First Pouring and Excavations for Power Plant and Flumes.....	3
First Buckets Poured at Shasta and Friant Dams Pictured.....	4
Views of Tail-Towers at Shasta Dam.....	5
Bayshore Freeway Plans Urged Before Highway Commission.....	6-9
<i>By Larry Barrett, Chairman California Highway Commission</i>	
Sketch of Proposed Freeway Intersection at Willow Avenue, Palo Alto.....	6
Sketches for Entrance to Mills Field and Millbrae Avenue Intersection.....	7
Photo of Director Clark Presenting Bayshore Freeway Report to Chairman Barrett.....	8
Sketch of Plan for 19th Avenue Intersection, San Mateo.....	9
Engineering Details and Route of Proposed Bayshore Freeway.....	10-13
<i>By C. H. Purcell, State Highway Engineer</i>	
Sketch Plan for Peninsula Avenue Intersection in San Mateo.....	11
Sketch Plan for Broadway Intersection in Burlingame.....	12
Sketch Plan for Dumbarton Underpass Near Palo Alto.....	13
Arroyo Seco Parkway Unit Opened.....	14
<i>By S. V. Cortelyou, District Engineer</i>	
Picture of Official Group Inspecting Arroyo Seco Parkway.....	14
Sectors of Arroyo Seco Parkway Recently Opened Pictured.....	15
Director Clark Congratulates Resident Engineer Hatfield—Photo.....	16
View of Arroyo Seco Intersection at Avenue 52.....	17
Myers Grade Relocation Opened Eliminating Switch-Backs.....	18
Picture of Echo Summit Relocation.....	19
Walter Chambers Takes Office as Highway Commission Secretary.....	20
Director Clark Tells Achievements of Public Works Department.....	21
Bay Bridge Traffic Reaches All-Time High.....	23
Public Works Department Will Exhibit at State Fair.....	24
Highways to State Fair and Scenes Pictured.....	25
Out of the Mail Bag.....	26
Highway Bids and Awards for July.....	27
Deputy Director Keaton Speaks at Oregon Highway Dedication.....	28

State-Federal Meeting Called To Consider Problems Vital To Central Valley Power Market

By FRANK W. CLARK
Chairman California Water Project Authority

OF PARAMOUNT importance to every section of the Central Valley and the future of the Central Valley Project, is the forthcoming conference between the Water Project Authority of the State of California and representatives of the United States Bureau of Reclamation. It is tentatively planned that the meeting will be held in the California Commission conference room on Treasure Island the last week in August.

The conference was called by Secretary of the Interior Harold L. Ickes in response to two resolutions from the Authority and a letter from Governor Culbert L. Olson asking for a clearer understanding between the State and Federal agencies in connection with the distribution of water and power developed by the Central Valley Project.

AUTHORITY REQUESTS CONTRACT

The Authority specifically asked:

1. That a contract be negotiated between the State and Federal governments defining the policies and practices of the United States relating to the distribution of Central Valley Project water and power, and specifying the functions and duties of both agencies.

2. The proposed plan of operation of Shasta Reservoir and power plant; the amount and characteristics of the electric power output; its cost; the area to be served and the facilities which will be provided by the Federal government for the transmission and distribution of this power.

Clarification of these points will be of inestimable value to the Water Project Authority and to public utility districts contemplating the



GOV. CULBERT L. OLSON

public distribution of water and power from the project. It will also provide an adequate basis for a State program to be presented to the legislature.

As chairman of the Water Project Authority I believe the forthcoming joint conference will prove a definite step forward in the administration's program of assisting municipalities and other public agencies to place themselves in a position to bid for Shasta dam power.

We anticipate that this conference will further to a great extent the program of Governor Olson to bring about public distribution and sale of Shasta dam power—a program for which the Governor has fought vigorously and consistently.

In letters to Governor Olson and the writer accepting the proposal for a conference, Secretary Ickes stressed the importance of cooperative endeavor on the part of the State and Federal governments in the public distribution of Central Valley power. He wrote:

"I am hopeful that through this meeting the Department of the Interior and the State of California may find firmer ground for cooperative endeavor to the end that the great power resource of the Central Valley Project may be made to serve, through publicly owned outlets, the best interests of the people on the widest possible basis."

STATE HAS RESPONSIBILITY

Secretary Ickes also pointed out that the State has a definite responsibility in connection with the project and should prepare itself to discharge this responsibility.

"I have, and will continue to encourage the State to help us in this matter," he wrote.

In connection with the preference which will be given to public agencies in the sale of Shasta power, Ickes declared:

"I am not overlooking the fact that the Reclamation Project Act of 1939 said, with reference to disposition of power generated at Federal irrigation dams, 'that in said sales or leases preference shall be given to municipalities and other public corporations or agencies; and also to cooperatives and other non-profit organizations financed in whole or in part by loans made pursuant to the Rural Electrification Act of 1936 and any amendments thereof.'"

Secretary Ickes repeatedly has emphasized the interest of the Fed-

eral government in the public distribution of power from the Central Valley Project. It is anticipated that the joint meeting will develop a basis on which such a program can be immediately and effectively inaugurated.

Up to the present time the efforts of the State, under the direction of Governor Olson, to develop a program of public distribution of water and power from the Central Valley Project have failed largely because of the lack of enabling legislation.

While no opposition has been met with regard to the public distribution of water from the project, the power interests have bitterly fought the project—particularly its power features—from its inception and have been instrumental in twice defeating legislation which would have placed the State in a position to assist municipalities and other public agencies in providing public outlets for Shasta Dam power.

OBSTACLE TO DEVELOPMENT

The Authority has also been handicapped by the absence of any definite understanding with the United States Bureau of Reclamation as to the operation of the project when it is completed. This coming conference, at which this matter will be one of the important problems discussed, therefore may result in the elimination of the greatest obstacle to the rapid development of a public market for Central Valley Project facilities.

I have accordingly directed that all State data on possible methods of operation of Shasta Reservoir be assembled for correlation with similar data which have been compiled by the Bureau of Reclamation under the direction of Reclamation Commissioner John C. Page.

MEETING PLACE SUGGESTED

At the last meeting of the Water Project Authority it was decided that an immediate reply be sent to Secretary Ickes informing him of the steps which the Authority is taking in preparation for the conference and suggesting that it be held sometime during the last week in August on Treasure Island.

The State is eager to establish a sounder understanding with the Federal government in regard to the Central Valley Project and will cooperate fully to make the forthcoming conference a success. The

Ickes Letter To Director Clark

Department
of the **THE SECRETARY OF THE INTERIOR**
Interior Washington

July 3, 1940

Mr. Frank W. Clark,
Director, Department of Public Works,
808 State Building,
Los Angeles, California.

My dear Mr. Clark:

I have received your letter of June 21 and the copies of two resolutions adopted by the Water Project Authority on March 28, 1940, which it enclosed.

I have written to Governor Olson that we were accepting your proposal that representatives of the Department meet with the Authority. I have asked Commissioner Page to get together data now being compiled by the Bureau of Reclamation and to designate qualified members of his staff to confer with the Authority. He will write to you directly to arrange the conference when the material has been digested. He informs me that it might be possible to hold this meeting during the latter part of August.

In preparation for the meeting I suggest that the Authority should also bring together such information as it has in order that the discussions may be concretely to the point.

As I said in my letter to Governor Olson, I am not unmindful of the fact that the Reclamation Project Act of 1939 said, with reference to disposition of power generated at Federal irrigation dams, "that in said sales or leases preference shall be given to municipalities and other public corporations or agencies; and also to cooperatives and other non-profit organizations financed in whole or in part by loans made pursuant to the Rural Electrification Act of 1936 and any amendments thereof."

You are familiar, of course, with the attitude consistently maintained by the Department of the Interior and the Bureau of Reclamation, that the State has a responsibility in connection with the Central Valley Project and should prepare itself to discharge this responsibility. My letter to Governor Olson of January 18 went more specifically to this point.

I am sure that the conference will prove helpful both to the Bureau of Reclamation and to the Water Project Authority, and I am hopeful that a practicable plan may result by which the power to be generated by the Central Valley Project can be marketed to and distributed through public agencies.

Such of the information which the Authority has requested as is available will be given to you at the time of the conference. Whether negotiations can be entered looking toward a contract between the Authority and the United States will depend, I believe, on what the conference develops.

Sincerely yours,

(Signed) **HAROLD L. ICKES**
Secretary of the Interior.

meeting should result in the clarification of numerous problems which face both the State and Federal agencies and materially assist the

program of providing adequate outlets and a competitive market for Central Valley Project water and power.



Shasta Dam site ready for pouring. First bucket of concrete was lowered from head tower cable to spot marked by white arrow in center foreground. Arrow at left center points to power house site and flume excavations.

Three Central Valley Project Milestones

By EDWARD HYATT, State Engineer

JULY, 1940, will go down in the history of the construction of the Central Valley Project as an epochal month. Three major milestones in the construction progress were passed. They were:

Pouring of the first concrete at Shasta Dam at 10.02 a.m. on July 8th.

Throwing the switch which started the first test pumping on the Contra Costa Canal at 10.08 a.m. on July 8th.

Pouring of the first concrete at Friant Dam at 2.00 p.m., on July 29th.

These three highly significant events served again to bring to the attention of the people of California

the speed with which this great project is being pushed toward completion.

BRIEF SHASTA CEREMONY

Pouring of the first concrete at Shasta Dam was marked by a brief ceremony witnessed by State and Federal officials and several hundred spectators. At one minute before 10.00 a.m. a horn sounded and a little electric concrete train made the first of the hundreds of thousands of trips it will make around its circular track at the base of the 460 foot head tower on the west abutment of the dam. Quickly it dumped its load of eight cubic yards of concrete into a steel bucket which soared skyward and out across the Sacramento River Canyon on its history making trip along the steel strands of the cable system crossing over the dam site.

As gently as a bird coming to rest, the 22-ton load of steel and concrete settled into what is known as Block C of Row 38 in the base of the dam. In the control tower half a mile away, an operator pushed a lever opening the gate at the bottom of the bucket.

The great square bucket, relieved of its load of concrete, leaped high in the air as the stretched cables sprung back. The first concrete at Shasta Dam had been poured.

SPECTATORS GIVE CHEER

Ralph Lowry, construction engineer for the Bureau of Reclamation in charge of the Kennett Division of the Central Valley Project; William A. Johnson, President of the Pacific Constructors, Inc.; Frank T. Crowe, General Superintendent in Charge of Construction, and the writer stood by



U. S. Reclamation Bureau photo.

First bucket of concrete poured at Shasta Dam July 8 was greeted with cheers.

as a dozen muckers spread the grey concrete. High above, the spectators lining the edge of the dam site sent up a cheer. Crowe tossed three new dimes into the wet concrete for luck.

Two days later the contracting company announced that it had completed pouring on the first section of Block C—a block 50 feet square. As the first section was completed workmen began building forms for the pouring of concrete in a second section, and this work will be extended the full length of Row 38, a distance of 400 feet.

The blocks in Row 38 are alongside the diversion channel dug out along the bed of the Sacramento River, into which the river will be diverted sometime in August.

Pouring of the first concrete at Shasta Dam went off so smoothly and with such apparent lack of effort, spectators scarcely realized the stupendous amount of preparation necessary for this epochal event. Behind that first bucket of concrete lay the construction of a great cement manufacturing plant in Santa Clara County, which will furnish the 5,800,000 barrels of low-heat Portland cement to be used in the dam. Ten miles away, at Redding, a plant for processing the 10,000,000 tons of sand and gravel that will be used has been built and from that plant to the dam site the longest conveyor belt system

in the world is in operation, carrying these aggregates over rivers and mountains at the rate of 1,000 tons per hour.

The cableway system which is being used in placing the concrete, is a

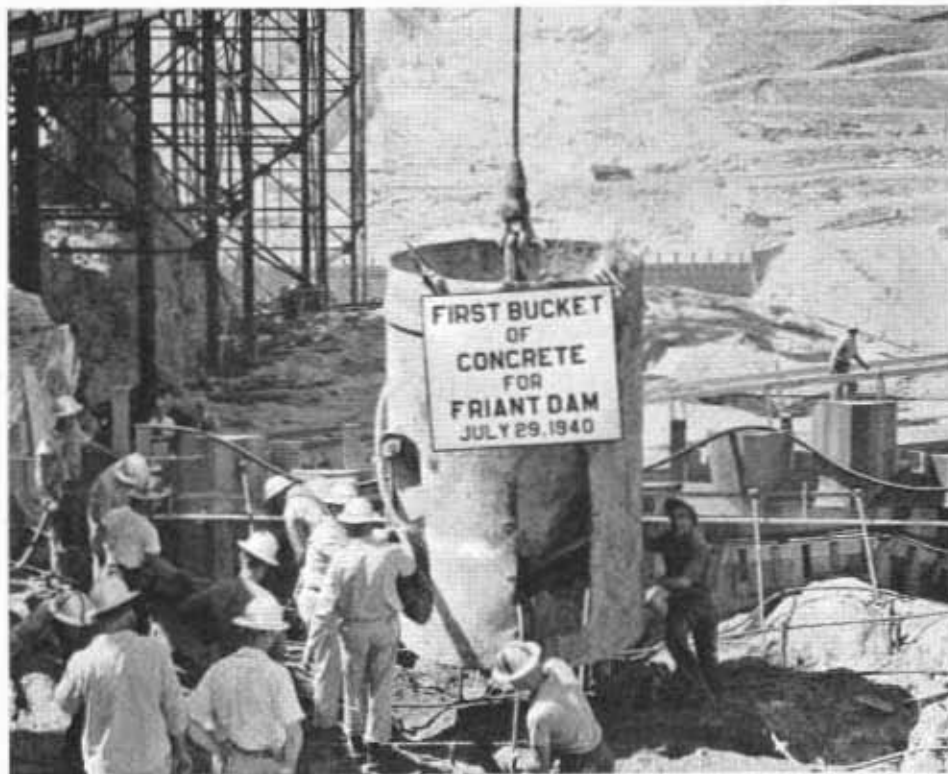
major engineering feat itself. The control tower rises 720 feet above the river. From it, cableways to seven movable tail towers will reach every portion of the dam. With the concrete mixing plant located at the bottom of the control tower, the system cost \$3,000,000.

INTRICATE MIXING SYSTEM

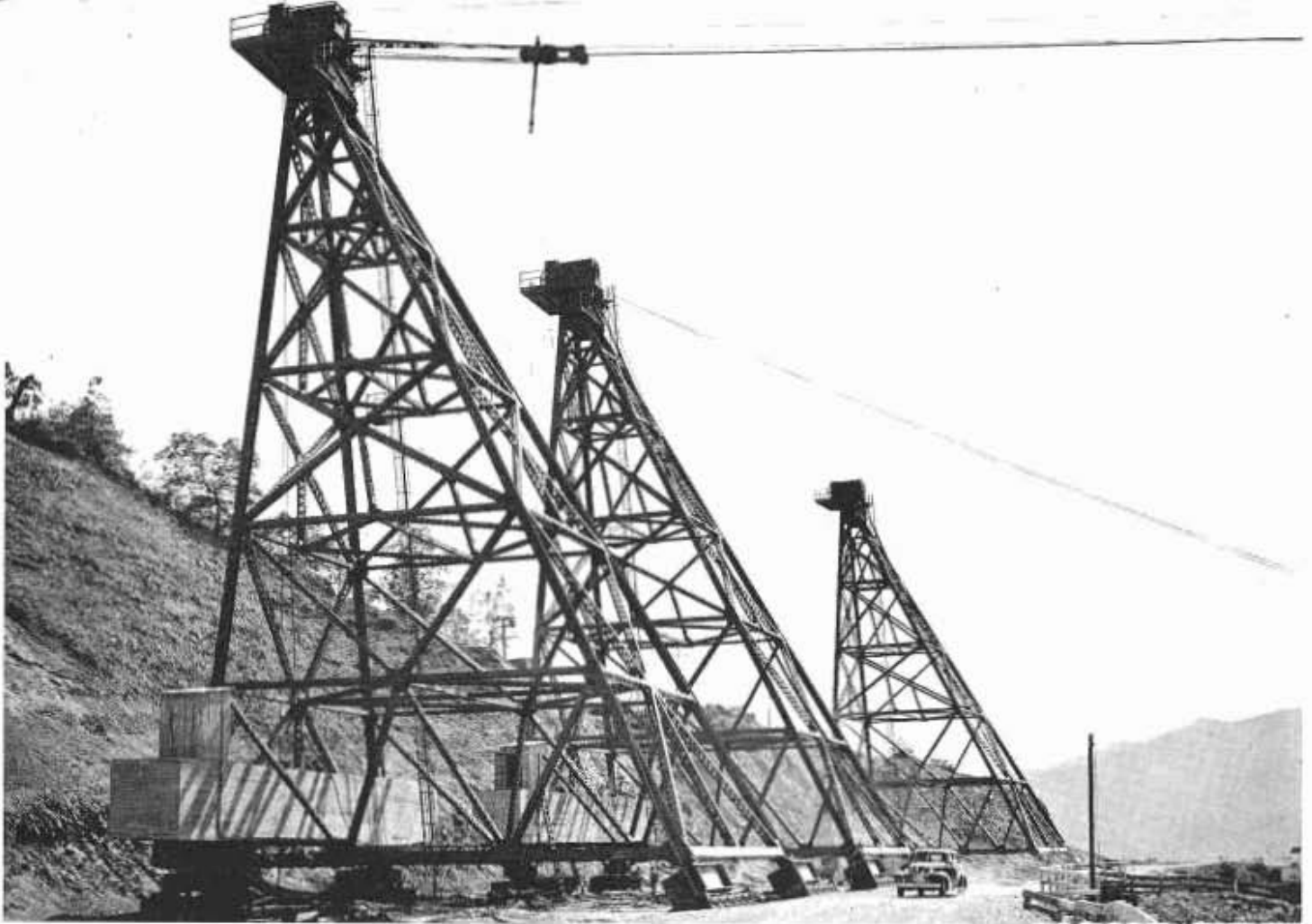
Giant stock bins, in which the aggregates are stored at Coram; a mile-long conveyor belt system to transfer them to the mixing plant; ten cement storage silos and a large pipe line from the silos to the mixing plant through which cement is forced by air pressure are part of the intricate system behind the pouring of concrete at Shasta Dam.

In the next four years enough concrete will be poured at Shasta Dam to build a modern two-lane highway from the dam site to Mexico City. The dam will be 560 feet high, 3,500 feet long and 580 feet wide at the base. It will rank as the second largest concrete dam in the world.

No ceremony marked the beginning of test pumping on the Contra Costa Canal, though by coincidence this important milestone in the construction of the canal occurred while muckers at Shasta Dam were still spreading the first bucket of concrete poured there.



First bucket at Friant occasioned a ceremonial celebration.



U. S. Reclamation Bureau Photo

"Twelve-toed Pates" are tail-towers supporting half-mile cables from the head tower at Shasta Dam. They move on 12 wheels at each lower corner of the tower on track rails.

Walker R. Young, supervising engineer in charge of field activities for United States Bureau of Reclamation, threw a switch that started a motor in Pumping Plant No. 1 near Oakley and the first water gushed into the concrete-lined canal from a tidewater section of the canal which extends to the pumping plant from Rock Slough.

Sometime in August the first twenty miles of the Contra Costa Canal will be placed in operation, delivering water to the City of Pittsburg and the Columbia Steel Company.

Except for the headworks, the first 20 miles of the canal, from the Rock Slough intake near Knightsen to a point three miles west of Pittsburg, are completed and this will be the first feature of the Central Valley Project actually placed in operation. Portions of the remaining 26 miles of canal extending from Pittsburg to Martinez are still under construction.

The regular water supply for the Contra Costa Canal will come from Shasta Reservoir and for that reason it can not be placed in normal operation until the dam is completed in

1944. Present operation is on an interim basis only. Pittsburg's municipal water system, including a treating plant recently completed, is connected to the canal by a 24-inch pipe line. The city is planning a civic celebration in connection with the first delivery of water sometime in August.

At Friant Dam on the San Joaquin River 20 miles northeast of Fresno, the first pouring of concrete was made the occasion for a celebration staged by the Fresno County Chamber of Commerce and the Central Valley Project Association.

A crowd of several hundred spectators, on observation point overlooking the dam site, were given a minute description of the initial pouring operation over a public address system. At Friant the placement of concrete is being done by a system quite different from cableways used at Shasta Dam. A trestle system, which will become a part of the dam structure is being used. Along this trestle will run huge hammerhead cranes with 300-foot arms and a whirley crane with a 125-foot boom.

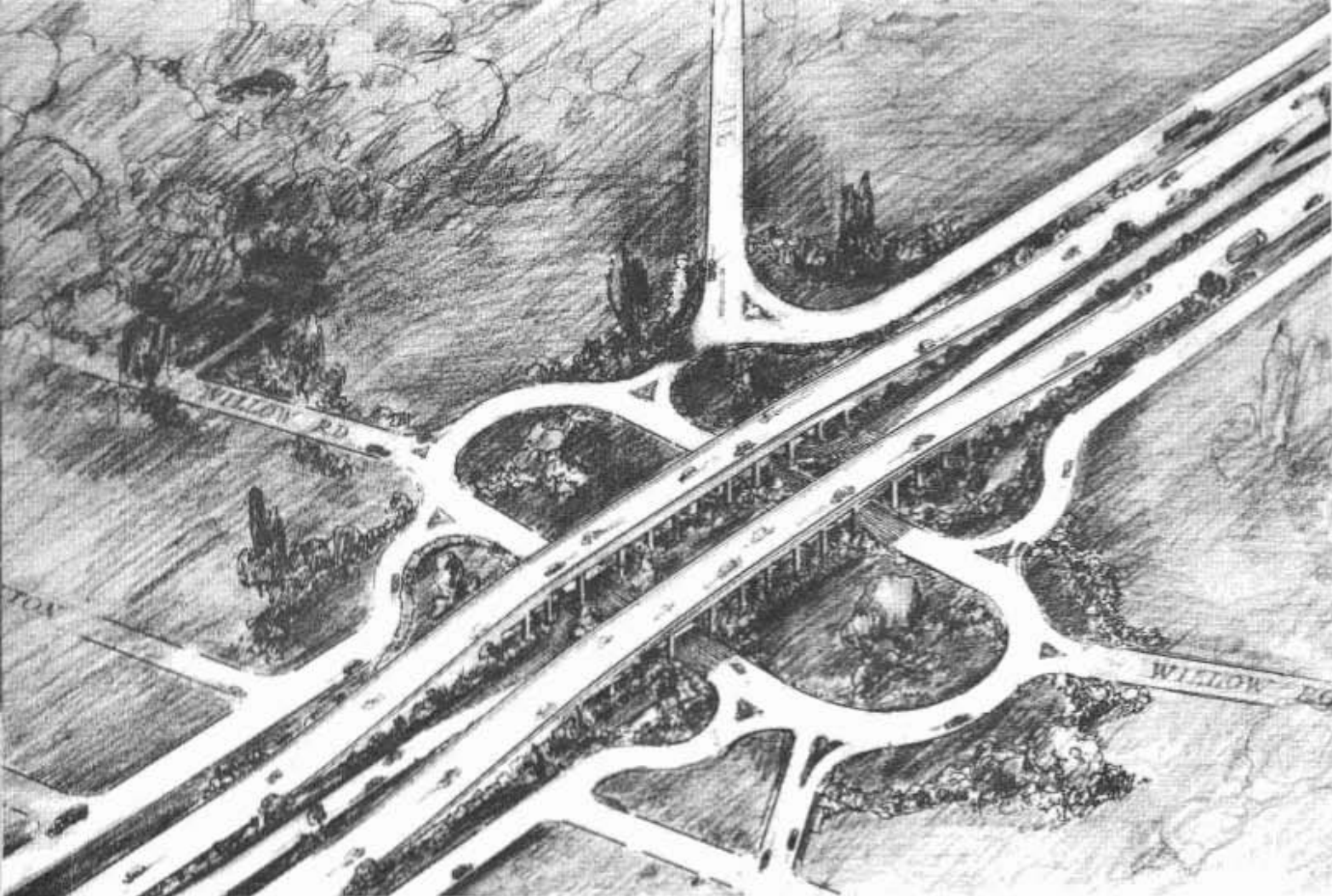
Concrete poured on the first day's operations, however, was placed from a temporary whirley crane on top of the south abutment. Automatically measured and weighed materials from four plants were churned together in the mixing plant near the trestle system and brought by an electric engine to a point beneath the temporary crane.

A heavy hook attachment at the end of long cables running from the end of the crane arm, dropped down to the electric train, picked up the first bucket of concrete and swung down to the bedrock in what engineers call block 17. Here waiting workmen tripped a trigger and the first four of the 1,000,000 cubic yards of concrete that will go into the dam sloshed out.

Block 17, in which the first concrete was poured is on the south, or Fresno County abutment of the dam. Pouring will continue in this abutment for approximately six weeks. Day and night work is scheduled.

Griffith Company and Bent Company, the construction firm, broke ground for Friant Dam on November

(Continued on page 29)



Engineers drawing of plan for carrying Bayshore through traffic on two separated overpasses at Willow Road intersection in Palo Alto with outside lanes for local traffic and safe access lanes to freeway.

Bayshore Freeway Plans Shown

By LAWRENCE BARRETT, Chairman Highway Commission

DUE TO the phenomenal growth of the San Francisco peninsula area, it is imperative that the State undertake as soon as possible the conversion, by stage construction, of the present Bayshore Highway between San Francisco and Palo Alto into a freeway, with six lanes divided by a median strip for high speed traffic and the construction of twenty-five overheads, underpasses, and major structures, which will eliminate all intersections on this route.

Director of Public Works Frank W. Clark presented a report covering every detail of the proposed project to the California Highway Commission

in session in San Mateo on July 26th.

The report was prepared by State Highway Engineer C. H. Purcell and Colonel Jno. H. Skeggs, District Engineer. Director Clark made the following statement relative to the State's plan of converting the Bayshore Highway into a freeway:

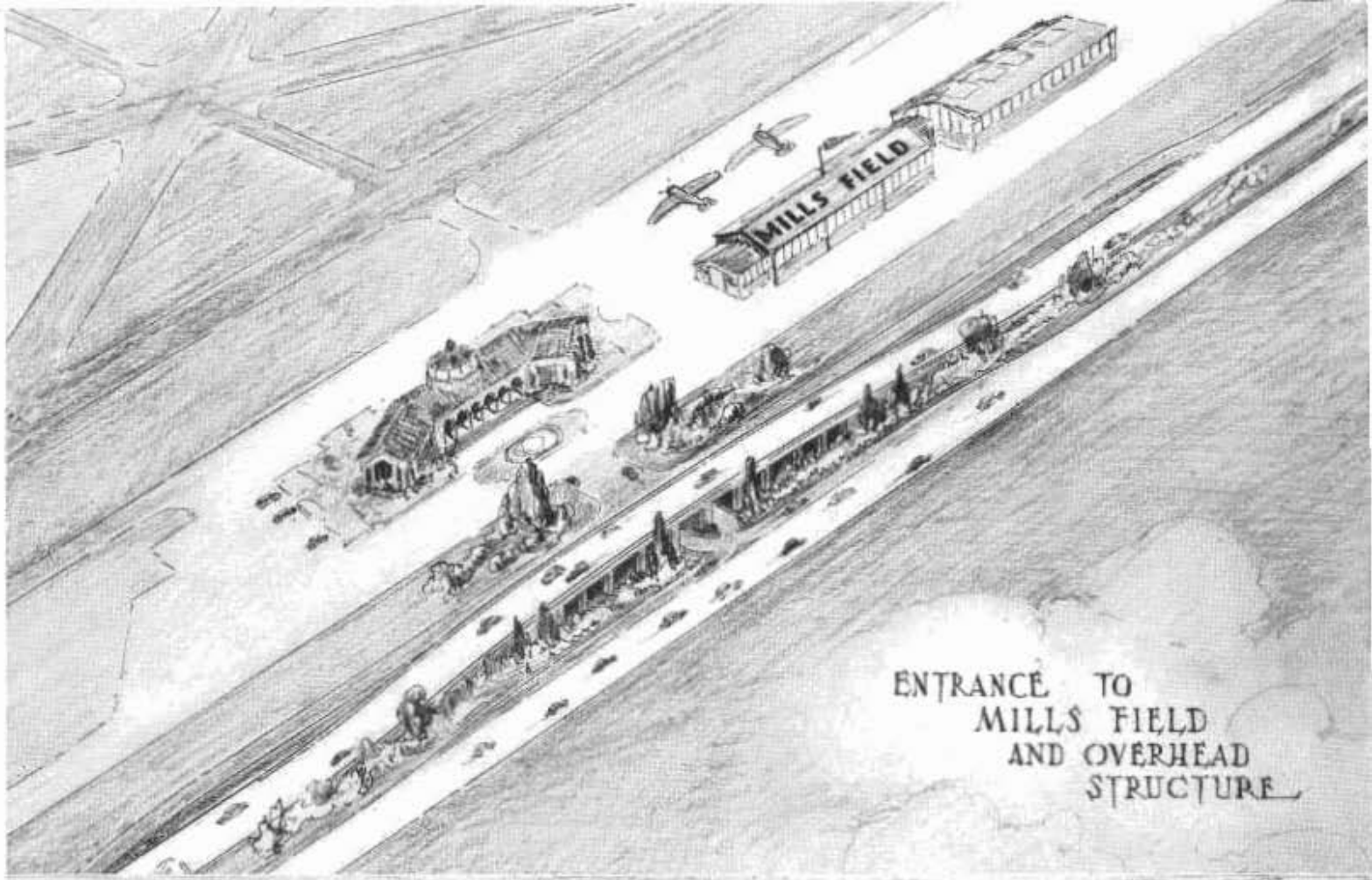
"In view of the increasing traffic congestion problems in our metropolitan areas, Governor Olson and the California Highway Commission are of the opinion that the logical solution of these problems in our largest cities is the construction of high-speed freeways such as the Arroyo Seco project now nearing completion between Los Angeles and Pasadena, and

this proposed freeway between San Francisco and Palo Alto.

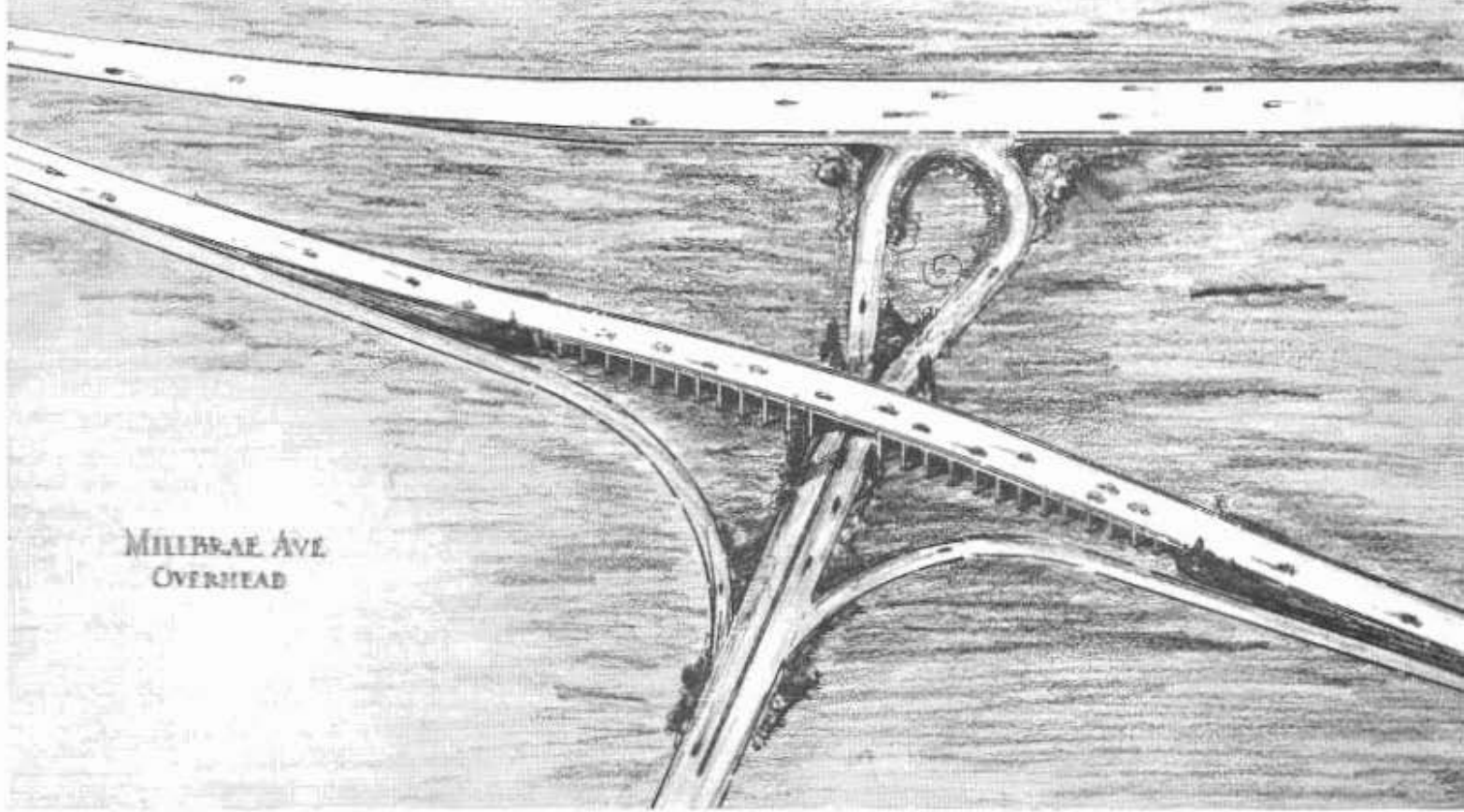
LONG RANGE PROGRAM

"Such undertakings involve the expenditure of large sums of highway funds, and necessarily must be built in sections under a long-range program. The present State administration is committed to a policy of assisting cities to solve their traffic congestion problems, and Governor Olson is greatly interested in having the Bayshore Freeway started as soon as moneys required may be provided for in the next biennial highway budget.

"The Arroyo Seco is the first free-



ENTRANCE TO
MILLS FIELD
AND OVERHEAD
STRUCTURE



MILLBRAE AVE.
OVERHEAD

Upper drawing shows a proposed plan for entrance to Mills Field with one overpass structure in the separated freeway lanes. Below, Millbrae Avenue intersection showing existing highway separated by 40-foot division strip from new overhead with approach roads to both lanes.

way undertaken by the Highway Commission, and the Bayshore Freeway will be the first project of its kind in Northern California.

"In establishing the freeway principle on the Bayshore Highway the State will be able to conserve the full original investment in this route which is susceptible of expansion with a minimum of conflict with residential and property improvements."

State Highway Engineer Purcell's report pointed out that traffic from the San Francisco-Oakland Bay Bridge, from the Golden Gate Bridge, and the East Bay District, in addition to traffic from San Francisco, now pours onto the Bayshore Highway, which is inadequate to handle the ever-increasing traffic. In less than ten years Mr. Purcell believes that both the El Camino Real and the Bayshore Highway will be carrying capacity traffic.

TENTATIVE PLANS SUBMITTED

In his report to the Commission Director Clark submitted tentative plans and drawings for the contemplated freeway, extending from the vicinity of Third Street in San Francisco to the Embarcadero Road-Oregon Avenue intersection in East Palo Alto, a distance of some 27 miles. The first unit of the project will be from the South San Francisco Underpass to and including Broadway in Burlingame, at an approximate cost of \$2,300,000.

The Bayshore Highway, from the San Francisco City and County line through San Mateo County, was added to the State Highway System by legislative enactment in 1923 and construction of the first unit of the existing highway between South San Francisco and Burlingame, a distance of 5½ miles, was started in September, 1924, and since that date one unit has been completed during each biennial period, until up to the present time the last section is ready for use by the motoring public.

"Over this sixteen-year period of construction," Director Clark said, "the daily traffic on this route has increased from nothing to a present volume of some 30,000 motor vehicles of all types. As a consequence, that portion of this highway between San Francisco and Palo Alto should be progressively expanded and modernized, not only to adequately handle present-day traffic, but to care for the traffic increase which will soon overtax the present improvement.

"The Bayshore Highway has de-



Director Clark hands proposed Bayshore Freeway report to Chairman Barrett.

veloped into one of the most important main trunk highways of our State for commercial vehicles and through traffic destined for the southerly sections of the State. Its proximity to the San Francisco Airport, at Mills Field, and Moffet Field at Sunnyvale, emphasizes its importance for national defense. It has assumed greatest importance, however, in serving to accommodate an ever-increasing volume of fast, or express commuter-type of traffic, between the focal business area of San Francisco and the residential urban areas on the peninsula."

Director Clark submitted to the Commission a report from State Highway Engineer Purcell, which revealed, that compared with the State-wide average of 1.4 accidents per million vehicle miles, the rate of the Bayshore Highway was 2.9, or slightly more than twice the general average. The report said that conversion of the Bayshore Highway into a freeway should eliminate or greatly reduce head-on, intersection, pedestrian, and "U"-turn accidents.

The Bayshore Highway throughout San Mateo County, compared with other four-lane highways in the State, ranks as one of the highest in accident rate per million vehicle miles traveled. During 1939 there were

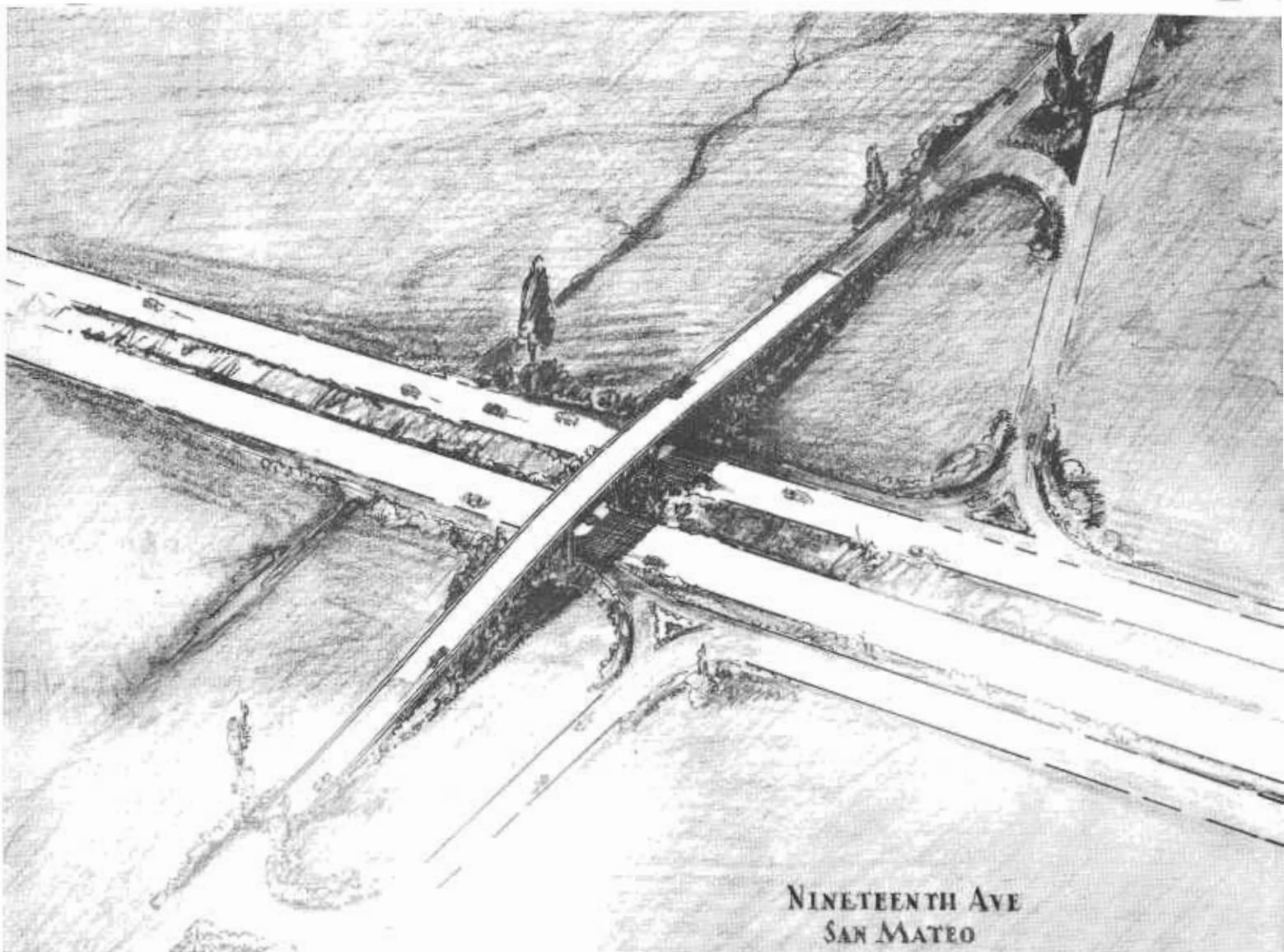
276 accidents on this section, involving 19 fatalities and 235 injuries. Using a conservative figure of \$5,000 per fatality, \$300 per injury, and \$50 per accident for property damage, it is apparent that there was an economic loss of \$179,300 during 1939 due to accidents on this stretch of highway.

ONLY FEASIBLE FREEWAY

The Peninsula Area in general, and San Mateo County in particular, must be considered as a part of greater San Francisco. Due to the topography, the number of main arterials serving this area is limited and the Bayshore Highway offers the only route lending its expansion into a freeway.

The freeway portion, or interlanes, of the proposed new highway have been designed 12-11-12 feet in width, a total of 35 feet on either side of the central division strip—thus providing a six-lane freeway. Acceleration and deceleration lanes, in addition to the 35-foot width, of the 11-foot width, and sufficient length to properly decelerate or accelerate to design speeds, have been provided.

The magnitude of this project in its entirety is such that it will require all funds which can be made available by the State, various incorporated cities and towns, and the



Proposed overpass at Nineteenth Avenue, San Mateo, crosses widely separated freeway lanes with curved approaches providing safe access to highway.

counties, in addition to such federal aid as may be obtained.

"In addition to financing the initial construction on portions in San Mateo County" said Mr. Clark, "some assistance from all public bodies interested may be necessary to produce the Bayshore Freeway as an accomplished project. It is hoped this result can be obtained by 1950 or sooner."

101 PER CENT INCREASE

In his report Highway Engineer Purcell said that the combined traffic on the Bayshore Highway and El Camino Real, serving the potential population area of the Peninsula in the period 1928 to 1939, has increased 44 per cent on Sundays and 101 per cent on Mondays.

The proposed freeway, 27 miles in length, starts with a grade separation at Third Street in San Francisco, proceeding with a new and direct freeway location to Sierra Point,

thence expanding on the east side through San Francisco, thence by revisions on both sides to south of Broadway, Burlingame, from which point on to the Embarcadero Intersection south of Palo Alto, widening on the east side of the existing alignment throughout, is recommended by Mr. Purcell.

Ultimately it is planned to plant trees and shrubs along the entire length of the dividing strip.

Moving pictures showing the broadly divided freeways or parkways of the metropolitan area of New York and on Long Island were exhibited to the Commission, showing the great advances in development of such arterials in the East.

The Commission heard delegations from the City and County of San Francisco; San Mateo; California State Automobile Association; San Francisco Chamber of Commerce and San Francisco Supervisors, all en-

dorsing the proposed freeway expansion of the Bayshore Highway.

In behalf of the Highway Commission I can give assurance that under the present administration there will be set up in the coming budget, sufficient funds to start this program on the Bayshore Highway that will result in a highway of which we will all be proud. In the construction of this improvement consideration will be given to a freeway.

Realizing the importance of this highway we will set up a sum for the construction of a portion of the project looking forward to the full completion of it in the future.

While the cost of the improvement in its entirety will be tremendous, the saving of life and property and the relief of dangerous traffic conditions will fully justify any expenditure required to make the Bayshore Highway a modern, safe route. As a

(Continued on page 23)

Engineering Details And Route Of Proposed Bayshore Freeway

By C. H. PURCELL, State Highway Engineer

IN sixteen years since the opening of the first section of the Bayshore Highway in 1924, traffic has increased from nothing to 30,000 vehicles per day, while traffic on El Camino Real, the original and only other peninsula highway, has remained nearly constant.

The Bayshore is an important trunk for through state and commercial traffic, and a key-route from the standpoint of national defense, but is most important in serving fast commuter-type traffic from the suburban peninsula area, which is a part of greater San Francisco. This commuter and week-day local traffic is most closely correlated to vehicle registrations of San Mateo County alone. Sunday traffic is affected more by the combined vehicle registrations of San Francisco, San Mateo and Santa Clara counties.

The combined traffic on State Highway Route 2 (El Camino Real) and 68 (Bayshore highway) serving the potential populated area of the peninsula in the period 1928-1939 has increased 44 per cent on Sundays and 100 per cent on Mondays. Forecasts of 15-hour daily traffic on the Bayshore Highway at the South San Francisco under-pass for 1950 is 43,000 for Sunday and 34,000 for Monday, with present facilities having a maximum capacity of 32,000 vehicles. For 1965 the traffic forecast is 50,000 and 41,000 respectively for Sundays and Mondays.

With expanded Bayshore facilities, with induced traffic, 16-hour daily Sunday volume is forecast at 46,000 for 1950 and 60,000 for 1965. Monday traffic forecast is 38,000 by 1950 and 55,000 by 1965. Mass transportation by bus, on the proposed freeway prior to 1965 should level off peak hour travel increasing generally accepted highway traffic 20 to 25 per cent week-day travel. Sunday travel during evening peak-hour by 1965 should flow uniformly on the freeway, but at modified speeds.

Capitalized reducible accidents on the Bayshore Highway in San Mateo County would justify an investment of one and one-half million dollars from that standpoint alone. The Bayshore is the logical and only route which can be expanded to freeway design due to topography and property improvements. All of the present capital investment can be conserved for public use.

A start should be made now toward expanding the Bayshore Highway to a six-lane freeway design. The first unit should be between the South San Francisco under-pass and Peninsula Avenue, near the cities of Burlingame and San Mateo.

The proposed route, 27 miles in length, starts with a grade separation at 3d Street in San Francisco, proceeding with a new and freeway location at Sierra Point, thence expanding on the east side through South San Francisco, thence by revisions on both sides to south of Broadway, Burlingame, from which point on to the Embarcadero intersection south of Palo Alto, widening on the east side of the existing alignment throughout is recommended.

Full cooperation of all incorporated cities, the county, the State and Federal government, will be required to start and prosecute this major San Francisco metropolitan highway project to successful conclusion in time to realize and insure the full economic benefits which it can bestow upon the community and the State.

The recommendations of the Division of Highways are as follows:

1. The reconstruction of the Bayshore to consist of a six-lane highway of the freeway type.

2. The highway to be declared a freeway from Third Street in San Francisco to Oregon-Embarcadero Road in Santa Clara County.

3. The 6.6 mile section from immediately south of South San Francisco Underpass, to and including Peninsula Avenue, Burlingame, to be started and proceed by stages as the first unit. Surveys and design to proceed so right-of-way negotiations may start and this project may be advertised for construction as soon as funds are made available.

4. An allotment of funds for acquisition of right-of-way on the preceding section, and acquiring key parcels for protection where required between San Francisco and San Mateo.

5. Surveys and design to be started in San Francisco, toward acquisition of rights-of-way, by agreement, with $\frac{1}{4}$ Gas Tax funds for State Highways in San Francisco.

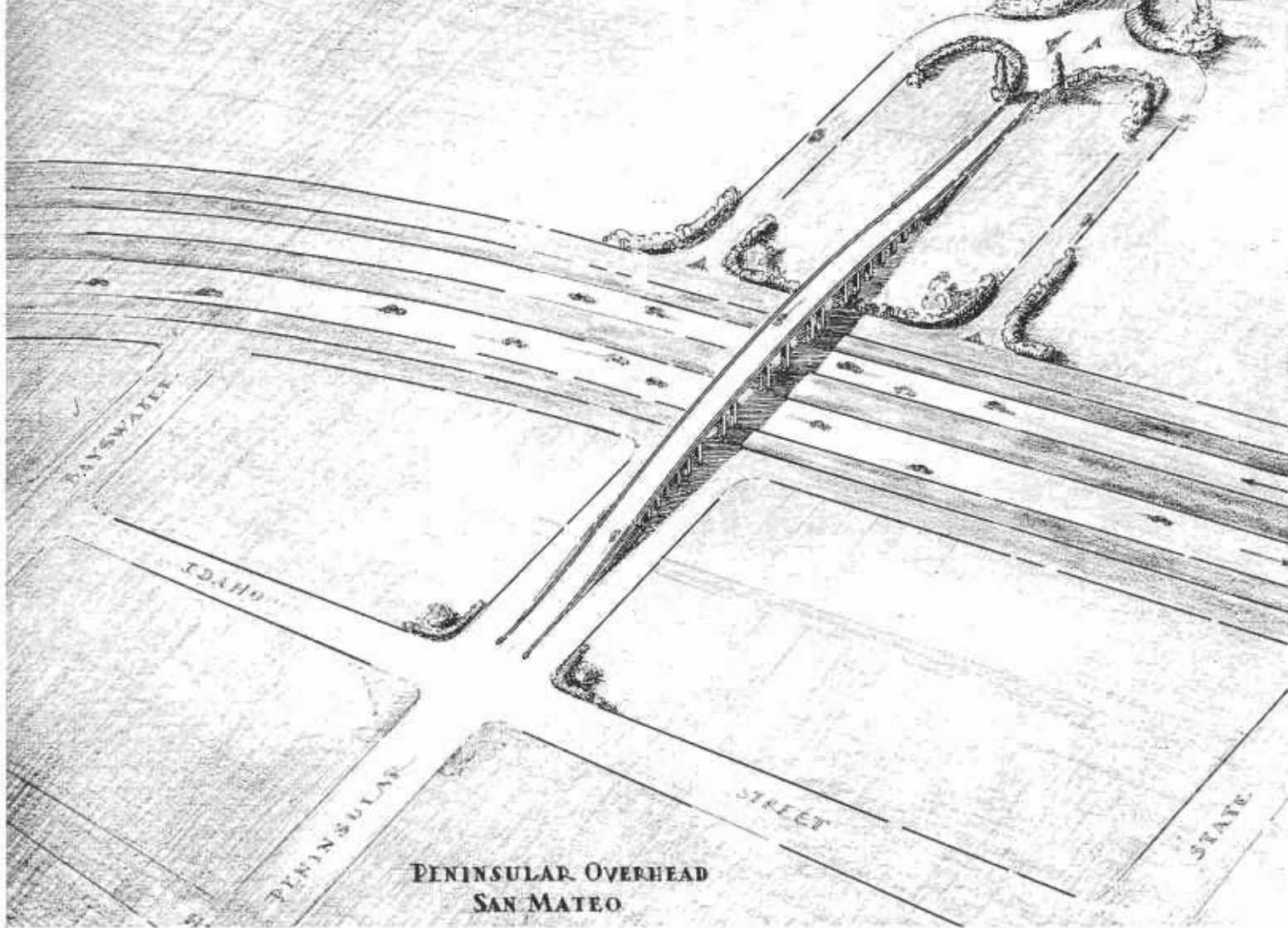
6. Request cooperation of cities and county in protection of existing set-backs, establishment of additional set-backs where required, and financial assistance in acquiring key parcels if necessary to avoid building and other improvements, where required on the entire project.

The route of the proposed freeway is as follows:

a. Third Street in San Francisco to Sierra Point.

About one-third of both the week-end and week-day travel on the Bayshore Highway south of Third Street in San Francisco enters or leaves at Third Street. The ratio of interfering traffic to through traffic movement is 30 per cent, the highest of any individual intersection on the entire project. Traffic signals, combined with street car traffic crossing the Bayshore at an acute angle, make this a point of serious delay to the main Bayshore travel.

A relocation of this route, leaving the existing road for the use of local travel, one direct relocation south-erly from Third Street and across the shallow bay waters to Sierra Point, appears to be the most fea-



**PENINSULAR OVERHEAD
SAN MATEO**

Proposed intersection plan for Peninsula Avenue, San Mateo. Separated freeway lanes, overpass structure, with service and access lanes for local traffic.

ible and economical solution. The present Bayshore grade line in the vicinity of Third Street is rolling, with a peak at Third Street, making it feasible to construct an under-pass as a part of this project, which would actually start at Salinas Street for proper connection, and to make provision for complete traffic separation and access facilities to Third Street.

6-MILE SECTION

This improved alignment would have a maximum 4 per cent grade, and would represent a saving in distance of .37 mile, equivalent to more than \$150,000 saving in vehicle operating costs per year, which, capitalized at 7 per cent, would justify a capital investment of some \$2,200,000 from this standpoint alone.

Access to the freeway is planned for Blenken Street, and at the southerly end of the section south of Sierra Point. Two bridges have been planned for the Bay section, and an-

other over the main line of the Southern Pacific at Sierra Point.

Length of this section is 3.8 miles.

b. Sierra Point through South San Francisco.

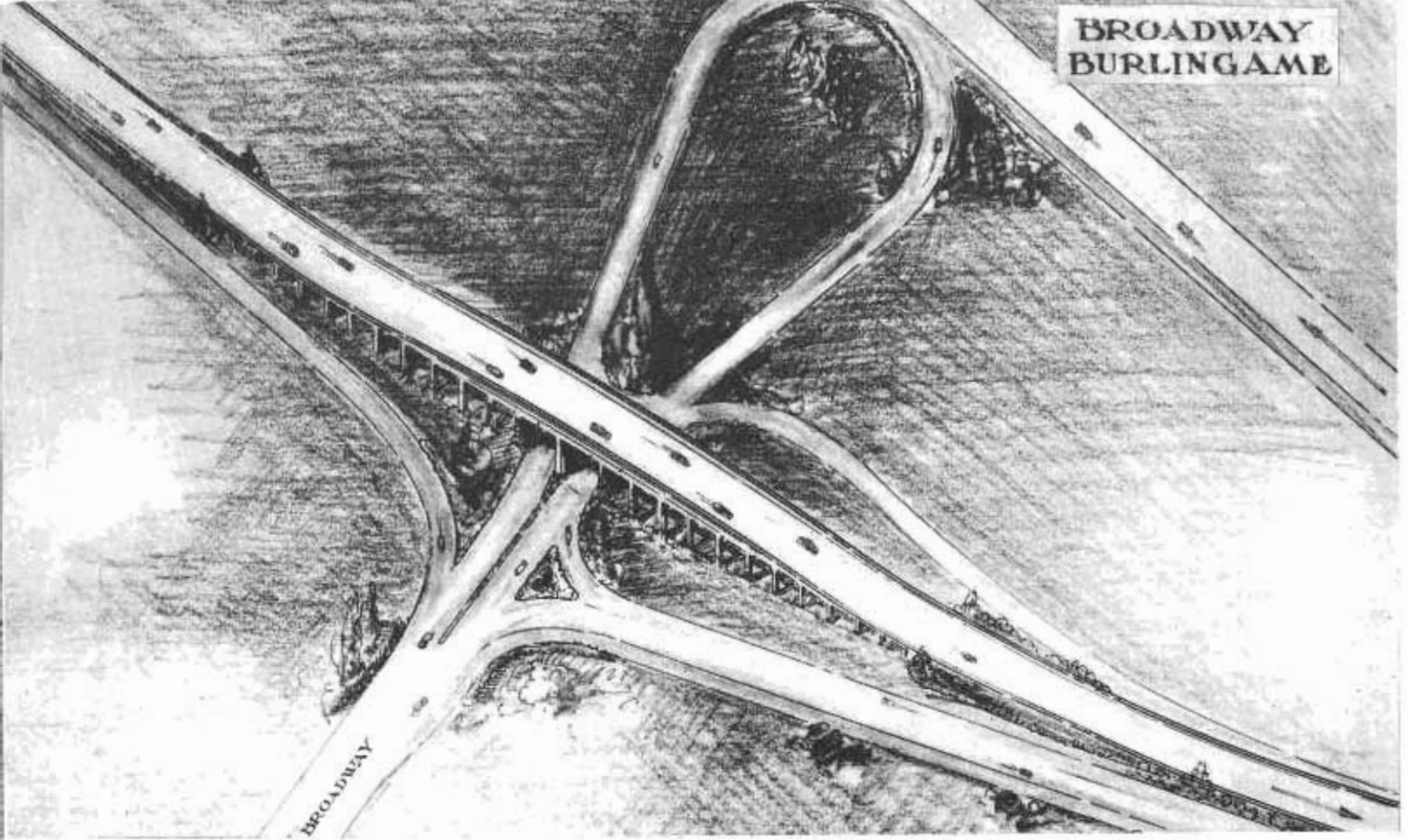
The present highway of 40-foot paved width in a 125-ft. width of right-of-way, has been widened to curbs 100 feet wide through the city portion. This widened portion has, however, been surfaced only with a light armor coat, in contrast to the 40 feet of main heavy concrete pavement. Traffic is becoming so heavy that during peak hours it is commonly observed traveling one, and sometimes two lanes on each side of the concrete pavement, for this section.

Grand Avenue, with traffic signals, and a 21 per cent conflict of interfering traffic to through traffic movement, most of which is cross-traffic, is another point of appreciable delay during peak hours of

traffic, in particular, but to all traffic, in general.

The present underpass under the Southern Pacific Railroad has a 1,000-ft. radius curve, in contrast to the approximate 3,000-ft. minimum radius planned for the freeway design. It has a superelevation of only one-tenth of present standard for high-speed traffic, and an existing vertical clearance of 1.1 feet under present desirable minimum. It therefore presents a barrier for consideration in widening the existing pavement on the present alignment, in view of the grade separation which must be provided for Grand Avenue. Grand Avenue serves the large industrial point jutting eastward from South San Francisco, and is a through street which can not be ignored.

Our studies indicate that the greatest economic return and value can be obtained by widening the present highway on the easterly side, over-



One-way freeway lanes are widely separated in this sketch for the Broadway intersection at Burlingame. Cars entering or leaving the freeway would use the big loop curves providing safe connections with either lane.

passing Grand Avenue and the Southern Pacific mainline tracks with one structure east of the present underpass, reserving the latter for local entrance and exit to and from the town of South San Francisco.

As with the section preceding, a narrow, or 6-ft. minimum width of division strip between the inner freeway lanes, has been planned for this section. The existing highway pavement would continue as the outer lane serving local traffic for this section.

Access to and from the freeway is planned at the northerly city limits, at Grand Avenue and vicinity, and south of the present South City underpass, with appropriate access and separation structures.

This section is 1.8 miles in length.

c. South San Francisco Underpass to Peninsula Avenue in Burlingame.

Due to the character of the terrain this section traverses, the location of Mills Field and immediate plans for its development and others in Burlingame and San Mateo, to conserve the value of the investment in the present highway, there appears to be only one proper and logical solution for the reconstruc-

tion of this section of highway.

After due consideration of all factors involved, it is recommended this section be developed by stages to an ultimate "Freeway" design, and become the initial unit of construction.

The freeway is planned to consist of the use of the present roadway for one-way traffic, a new three-lane roadway to be constructed and separated from the present pavement by means of a 40-ft. minimum width of division strip. The division strip, with the initial construction of the new roadway, will provide immediate relief at the intersections made with San Bruno Avenue, entrance to Mills Field, Millbrae Road, Broadway, Burlingame, and Peninsula Avenue, where ultimate grade separations are planned.

This section of highway has a very high accident rate, and of these accidents almost 60 per cent are of the type which will be eliminated by the construction of dual roadways with protection at intersections. The first stage, including the channelization of these intersections, will facilitate flow of traffic and provide safety features which are lacking on

the highway at the present time, although maximum freeway principle can not be realized either from traffic flow or safety until the grade separations are built.

The alignment of the new roadway is planned to parallel the westerly side of the present pavement to near Millbrae Road, thence diverging and continuing on direct course to the present connections with Broadway, Burlingame. Due to imminent development and increased future values of property on the westerly side of the Bayshore south of Broadway, Burlingame, and to provide for a very attractive and efficient entrance to Broadway, a transition is made at this point and the new roadway will be provided for by widening on the easterly side from this point to Embarcadero Avenue in Palo Alto.

Due to the existing development between Broadway, Burlingame, and Peninsula Avenue, outer lanes are planned on the westerly side of the present roadway to provide for local traffic movements between these two points.

The improvement of this section, of 6.6 miles in length, will promote

and accelerate the development of the whole Peninsula area to a greater immediate extent than could be expected from the improvement of any other section as the first unit.

Cost of right of way depends upon negotiations for large holdings by the City and County of San Francisco.

An allotment of \$600,000 is recommended to acquire rights of way to this section and to acquire key parcels for protection at other locations where required between San Francisco and San Mateo.

d. Peninsula Avenue, Burlingame, to Main Street, Redwood City.

The present highway of this section traverses low delta land and salt marsh to Redwood City. The existing alignment is satisfactory, and ex-

Ultimate grade separation structures are proposed at Third Street—San Mateo, Nineteenth Avenue—San Mateo, Ralston Avenue—Belmont, Holly Avenue—San Carlos, and Jefferson Street—Redwood City.

Present traffic conflict using these connecting roads and related trends indicated that the first separation structures should be provided for at Third St. in San Mateo and at the entrance to Redwood City, with other separations to follow as the development of the various areas requires.

Pending increased traffic volumes on these intersecting roads, provision can be readily made to channelize the dividing strip at these points and in so doing, reduce the potential accident hazard to a minimum.

The construction of outer lanes will

be necessary from Peninsula Avenue to approximately Tenth Street in San Mateo, to serve local traffic in the adjacent residential and business areas.

This section is 8.7 miles in length.

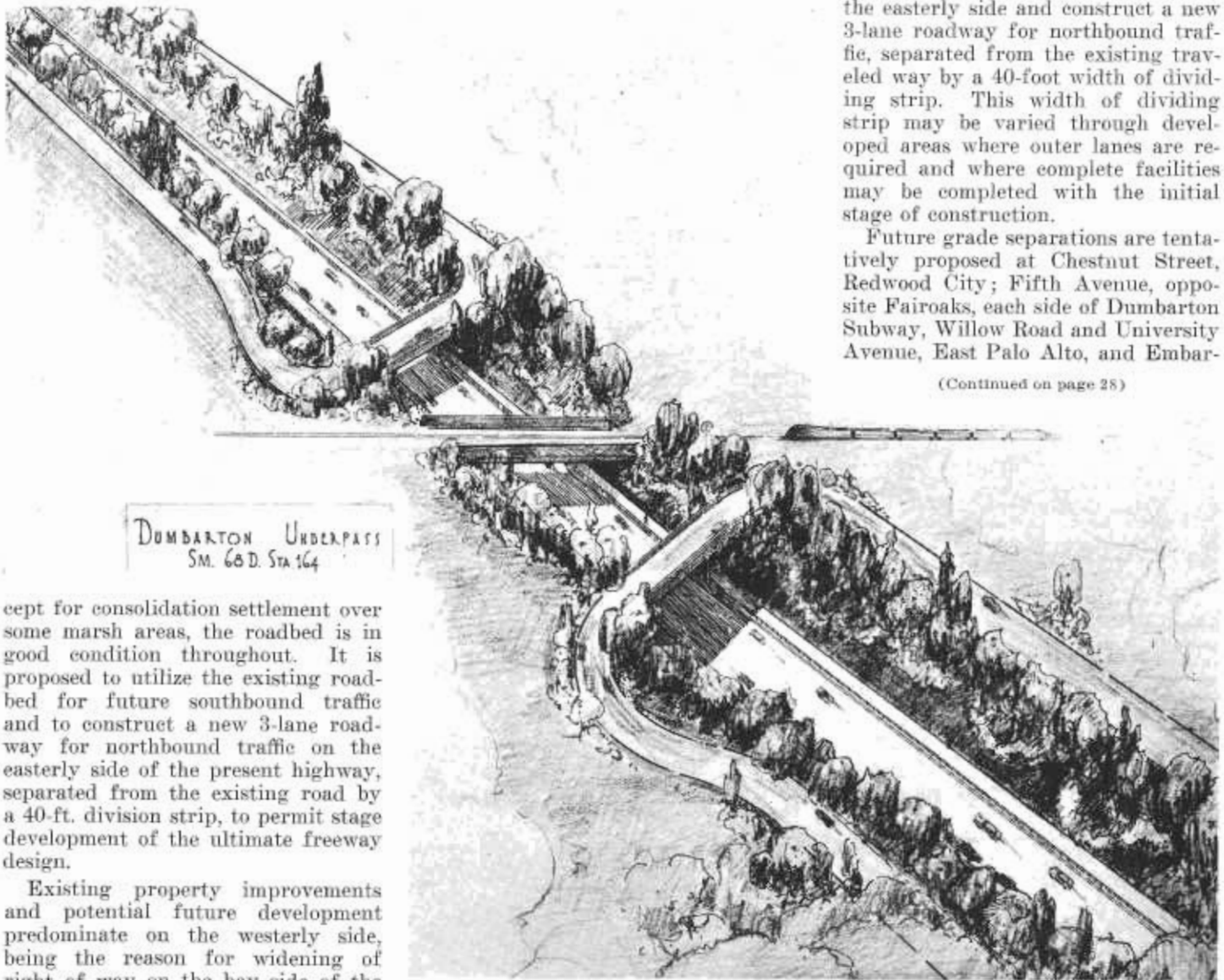
e. Main Street, Redwood City, to Embarcadero Road south of Palo Alto.

This section of existing highway, 6.2 miles in length, traverses agricultural lands and existing or potential urban developments. The alignment, grade and roadway pavement is satisfactory and is readily adaptable to the same type of improvement as proposed for the preceding section.

In general, it is proposed to use the existing roadway for southbound traffic and to widen the right of way on the easterly side and construct a new 3-lane roadway for northbound traffic, separated from the existing traveled way by a 40-foot width of dividing strip. This width of dividing strip may be varied through developed areas where outer lanes are required and where complete facilities may be completed with the initial stage of construction.

Future grade separations are tentatively proposed at Chestnut Street, Redwood City; Fifth Avenue, opposite Fair Oaks, each side of Dumbarton Subway, Willow Road and University Avenue, East Palo Alto, and Embar-

(Continued on page 28)



Grade separations tentatively proposed at Dumbarton Subway.

cept for consolidation settlement over some marsh areas, the roadbed is in good condition throughout. It is proposed to utilize the existing roadbed for future southbound traffic and to construct a new 3-lane roadway for northbound traffic on the easterly side of the present highway, separated from the existing road by a 40-ft. division strip, to permit stage development of the ultimate freeway design.

Existing property improvements and potential future development predominate on the westerly side, being the reason for widening of right of way on the bay side of the existing highway.



Photo Courtesy Los Angeles Herald-Express

State, county and city officials inspecting 3.7 miles completed section of Arroyo Seco Parkway.
Third from right is Public Works Director Clark.

Arroyo Seco Parkway Unit Open

By S. V. CORTELYOU, District Engineer

CONSTRUCTION barricades were removed at six o'clock Saturday morning, July 20th, and a 3.7 mile section of the new Arroyo Seco Parkway, between Orange Grove Avenue in South Pasadena and Avenue 40 in the City of Los Angeles, was opened to traffic.

This section of modern freeway has not been entirely finished, inasmuch as the planting of shrubs in the central dividing strip and on each side of the freeway has not been completed. However, it was desired to give the public the benefit at the earliest possible time of this new safety highway, especially as it will remove the through traffic from the long business area in Highland Park and permit it to develop

naturally without the handicap of a large volume of nonpurchasing through traffic which interfered with their local customers.

This 3.7 mile section and the 0.8 mile portion between Glenarm Street in Pasadena and Fair Oaks Avenue, opened to traffic last year, make a distance of 4.5 miles of the Arroyo Seco Parkway now giving service to the motorists. The only two "gaps" remaining to be completed, are from Avenue 40 to Avenue 22 in Los Angeles (one mile) and from Meridian Street to Fair Oaks Avenue in South Pasadena, a distance of 0.4 mile.

Work on the former section is progressing rapidly under three separate contracts, and will be completed about November 1st. The

portion between Meridian Avenue and Fair Oaks Avenue in South Pasadena will be let to contract within a short time and it is anticipated that the entire 6-mile project from Glenarm Street in Pasadena to Avenue 22 in Los Angeles will be completed early next spring.

Much favorable comment is heard from those using the new freeway in that it is so much safer, more convenient and requires so much less time than the old route via Figueroa Street.

The reasons for these improved traffic conditions are built into the highway itself—three wide traffic lanes on each side of a raised central dividing strip with high standards of alignment and no streets or railroads crossing at grade.



Arroyo Seco Parkway sections between Pasadena and Los Angeles recently opened showing 35-foot divided lanes, bridges and service roads.

Traffic after entering the Parkway can proceed at the maximum

State speed limit for an open road and does not need to stop until after

leaving the Parkway. All curves are suitably "banked" or superelevated.

vated for safety at legal speeds.

At appropriate and convenient locations, inlets and outlets are provided by means of one-way roads or ramps with widened pavement at these points for blending with or withdrawing from the faster moving traffic on the main freeway.

Turning movements across traffic are entirely eliminated by a raised curb central dividing strip without openings or cross overs. One can travel this highway with the assurance that a car will not suddenly emerge from a side street or cross over the center line and approach "head on." Thus traffic on the three lanes of pavement in each direction moves with a freedom from interference not experienced on any but the most modern of highways.

ROAD CAPACITY INCREASED

As a result of this safety and freedom of movement and elimination of all stops, there is a material increase in the carrying capacity of the highway. On the average highway in a densely populated area similar to this one, intersection delays and interference from turning movements tend to "pile up" traffic and release it in waves rather than in a steady flow, thereby reducing to a large degree the traffic carrying capacity of the highway. These unfavorable conditions have been entirely eliminated in the Arroyo Seco Parkway in accordance with the most modern trend in highway design.

On the portion of the highway just opened to traffic, intersecting streets cross the Parkway on overhead bridges at Avenue 43, Avenue 52, Hermon Avenue, Avenue 60, Marmion Way, Pasadena Avenue, Arroyo Drive, Grand Avenue and Orange Grove Avenue.

Traffic in either direction can enter at Avenue 43, Avenue 52, Avenue 57, Hermon Avenue, Avenue 60 and Marmion Way. Traffic traveling toward Los Angeles can also enter at Salonica Avenue.

Traffic in either direction can leave the Parkway at Avenue 43, Avenue 52, Avenue 57, Hermon Avenue, Avenue 60 and Marmion Way, and traffic traveling toward Pasadena can also leave at Hough Street.

Planning and construction of the Arroyo Seco Parkway has required the closest cooperation among the various governmental and corporate agencies involved. The project lies



Director Clark congratulating Resident Engineer Hatfield.

within three cities, namely Los Angeles, South Pasadena and Pasadena, and the engineering departments and other officials of these three cities have worked in close harmony with the State Division of Highways.

City Engineer Harvey W. Hincks of Pasadena and his assistants made early plans for the Parkway in Pasadena and South Pasadena. Special mention should be made of the very effective efforts of City Engineer Lloyd Aldrich of Los Angeles in securing for the people of Los Angeles City, after numerous trips to Washington, D. C., the allotment of large amounts of Federal Relief Funds for important engineering projects in Los Angeles City.

One of the most important of these was their financing of the paved channel for the Arroyo Seco flood waters from South Pasadena to the Los Angeles River. Without this control of the flood waters, it would not have been possible to build and maintain the Arroyo Seco Parkway in its present location.

Also, much credit is due Mr. Aldrich and his Deputies, Merrill Butler, L. E. Arnold, C. J. Shults, L. W. Armstrong and R. W. Stewart, for preparation of plans for the Parkway with its large number of bridge structures, in cooperation with the State engineers.

RESULT OF COOPERATION

The Park Commission of Los Angeles City has cooperated, not only in furnishing to the State the right of way for the Parkway from the north city limits to Avenue 35, but in assisting in the general landscaping program.

The U. S. Public Roads Administration, the Works Progress Administration and the Public Works Administration have had important parts to play in the construction of the Parkway and of storm drains and lining the Arroyo Seco Channel to properly care for flood waters and protect the Parkway from damage.

The Santa Fe and Union Pacific Railroads were interested in that they each crossed the Parkway in two places. These railroads cooperated with the State in arranging for the necessary changes in their facilities on their private rights of way to fit in with the Parkway, in such a manner as to involve a minimum cost to the State.

DOUBLE RAILROAD BRIDGE

On the Parkway east of Orange Grove Avenue in South Pasadena, there are now under construction the Meridian Street Bridge, Fremont Avenue Bridge, Fair Oaks Ave-



Arroyo Seco Parkway at Avenue 52 is crossed by 2 bridges, one with ramps and other over paved stream channel.

nue Bridge, and a double track railroad bridge at Freemont Avenue to carry the Santa Fe and Union Pacific Railroads over the depressed Parkway. At the proper stage of construction of these bridges, the final highway contract will be let for roadway grading and paving between Meridian Street and Fair Oaks Avenue, which will complete the entire Arroyo Seco Parkway from Glenarm Street in South Pasadena to Avenue 22 at the Los Angeles River Viaduct in Los Angeles.

The entire project is being fenced with a high ornamental fence to prevent pedestrians or animals from having access to the Parkway. Since children and elderly persons will use this long stretch of City Park, it was absolutely necessary to make it impossible for them to stray onto the Parkway with its large volume of fast moving traffic. The fences will be covered with a leafy screen of appropriate shrubbery.

EXTENSIVE PLANTING PROGRAM

In cooperation with the City Park Departments of Los Angeles, Pasadena and South Pasadena, the full length of the Parkway is being land-

scaped under State supervision. The work includes planting the slopes and the strip between the central dividing curbs as well. This new highway will be truly a "Parkway," beautiful as well as serving traffic to the fullest extent.

The new section over which thousands of Southern California people have driven during the last few days gives an idea of the motoring comfort which will be enjoyed in the future by the vastly greater number of people who daily or frequently travel between Los Angeles and Pasadena, and the territory contiguous to the Arroyo Seco Route.

All construction work on the Parkway with its many bridge structures has been under the supervision of the State Division of Highways. The State also furnished the sponsor's fund for the W.P.A. channel work from Avenue 52 to the Los Angeles River.

SOURCES OF FUNDS

The total cost of the Arroyo Seco Parkway from Avenue 22 in Los Angeles to Glenarm Street in Pasadena will be approximately \$5,000,000 including the portion of the storm drain and channel work essential to

the Parkway. This was financed by the various governmental units as follows:

State 1¢ Gas Tax Fund.....	\$2,614,547.72
1¢ State Highway Gas Tax for Pasadena.....	335,981.98
1¢ State Highway Gas Tax for South Pasadena.....	64,778.36
1¢ Streets of Major Importance Gas Tax for South Pasadena	12,271.04
1¢ State Highway Gas Tax for Los Angeles	40,000.00
South Pasadena City Funds.....	644.16
Los Angeles City Funds.....	113,584.14
P.W.A. Funds.....	472,315.63
W.P.A. Funds.....	1,394,364.73
Total	\$5,043,487.46

In addition to the above, the cost of the Arroyo Seco Channel work as a Federal Relief Labor project under City Engineer Aldrich, including Federal costs, was about \$7,000,000, making a grand total for the combined projects of \$12,000,000.

One engineer to another: Grab the end of that wire.

"All right."

"Feel anything?"

"No."

"Well, then, don't touch the one next to it—it's got over 5000 volts."

Meyers Grade Relocation Opened Eliminating Dangerous Switchbacks

THE MORE tortuous curves and steep grades of the Echo Summit route through the Sierra Nevada region of El Dorado County will be only memories for the motorists using this route with the completion of surfacing work on a section of the Meyers grade relocation of the Placerville-Lake Tahoe highway and the opening of the new road to traffic which occurred on July 17.

The new routing greatly improves the safety of the road by eliminating switchbacks with sharp curvatures and steep grades of 11 per cent and descends on a grade not exceeding 5.6 per cent to the present road below the switchbacks.

The grading of this portion of US 50, extending from a point two miles east of Phillips to three miles west of Meyers, was completed in June, 1939, by Louis Biasotti and Son and John Rocca, under the supervision of the Public Roads Administration at an approximate cost of \$300,000. The new section of road was constructed on entirely new alignment, as a National Forest Highway project financed from Forest Highway funds. The location was established by surveys of the State Division of High-

ways with final plans completed by the Public Works Administration.

In the August, 1938, issue of "California Highways and Public Works" an article was published describing the construction operations then under way on this project. This article also brought out the fact that the irregular rock bluffs near the summit necessitated heavy blasting and the use of solid benches or retaining walls for the support of the roadway in various locations. At one point it was necessary to construct a reinforced concrete bridge 113 feet long because of lack of any support for an embankment.

Although selected material was placed on a portion of the road under the grading contract, no provision was made for surfacing and the project was therefore barricaded until surfacing, which was to be built by the State, could be constructed.

In the fall of 1939 a contract was awarded to Lee J. Immel, calling for the placing of imported surfacing material where the existing material was not suitable and for the application of a road-mix surface treatment 0.25 of a foot thick. The imported surfacing material consists of disinte-

grated granite secured from a pit near the project.

The contractor had placed most of the imported surfacing material and was just starting to mix when inclement weather set in and he was forced to suspend operations for the winter. Work was resumed in June of this year.

Instead of mixing the surfacing in the conventional manner, with blades, the contractor elected to use a bituminous mixing machine. This machine picks up the aggregate from a single windrow along one side of the road, adds the bituminous binder, mixes the two materials and discharges the mixed surfacing in a single windrow behind the machine. The material is then spread and rolled in the usual manner. By using such a machine the contractor was able to maintain closer control over the oil-aggregate ratio than is possible with the conventional road-mixing methods.

The cost of the surfacing contract will be about \$14,000. Mr. R. I. Nicholson has been the resident engineer for the State.

The revised highway departs from the existing road two miles east of Phillips Station, trending southeast-



Black line shows newly opened sector at Echo Summit of Meyers Grade relocation on U. S. 50.

erly on easy grade through timbered land to a small pass in the ridge east of the existing highway summit, at a site where the old Hawley Grade wagon road passed. That road was built in 1858 to provide a shorter route to the gold country and was used till 1861.

From the Hawley Grade crossing the new construction descends to a point on the present Meyers Grade below the switchbacks. It eliminates the present switchbacks, poor curvature, and the steep grades on the superseded stretch. Eventually the relocation will be extended to modernize the entire length of Meyers Grade to the lake valley.

ALONG STEEP BLUFFS

West of the summit no difficult construction was involved in obtaining excellent roadway standards. From the summit to the easterly end of the contract, one mile, the work passes through irregular rock bluffs that top the steep slopes high above the valley floor. On this mile the design and construction of a roadway for a 24-foot crown width of surface presented a difficult problem. Solid benching, retaining walls and concrete bridging were the practical means of providing roadway. At only several places would fills hold and in these places but to limited extent.

The desire to keep construction scars to the minimum on this recreational route influenced design and affected construction methods. Cabins and lodges along the brink of the crest above the highway location increased difficulties. Careful attention is being given to landscaping.

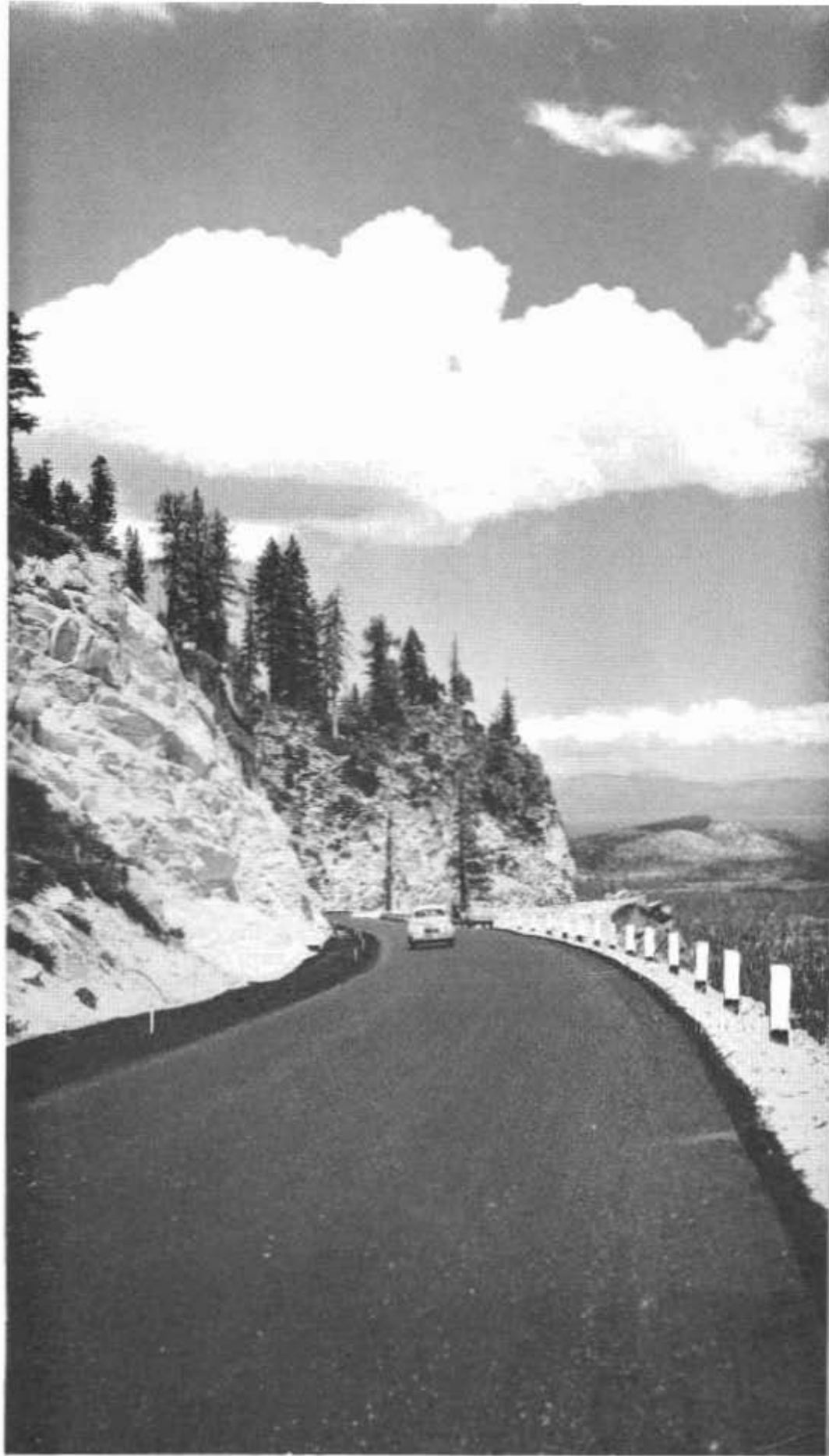
As construction operations proceeded, the excavation lines in the high cutting of the fractured rock formation east of the summit have in general held unusually close to neat cross-section, avoiding excessive over-break and resultant waste scars.

MASONRY ROADWAY WALLS

Careful engineering and construction work are evidenced. Cement rubble masonry walls maintain support for much of the roadway in critical stretches, with design of these features well in keeping with the character of the country traversed.

The new construction is a spectacular section of the Tahoe Highway. Coming from the west the motorist passes from an avenue of virgin timber to a vista overlooking the pano-

(Continued on page 28)



View of Echo Summit relocation looking toward Lake Tahoe in background.

Walter Chambers Takes Office As Highway Commission Secretary

WALTER CHAMBERS, former Administrator of the State Relief Administration, is the new Secretary of the California Highway Commission, succeeding Byron N. Scott who resigned the position on June 28, 1940.

Mr. Chambers was born in Los Angeles in 1898, and is red-headed, brown eyed, and weighs 172 pounds. He is 5 feet 6 inches tall and was a star basketball player. His father was Edward Chambers and his mother Marion Johnson. They came from Illinois as bride and groom.

Edward Chambers was the first agent of the Santa Fe Railroad at San Diego and later was first agent at Los Angeles. He went up the ladder to the high post of vice president of the Santa Fe. He was one of the big men in railroading in the United States and spent many years in Washington, D. C., where he was a member of the War Industries Board during the world war.

MAJORED IN LAW

Walter Chambers spent some years with his father in Washington, and attended the Catholic University of America in Washington, D. C., where he majored in law, philosophy and economics.

America's entry into the war in 1917 brought an interruption to his studies. He enlisted in the ranks and soon was promoted and placed in charge of all railroad traffic (war) in the Cleveland, Ohio, industrial district and in all of northern Ohio and Pennsylvania.

Service in France came next, Chambers being assigned to the railroad transportation section under Colonel Hal Rey and General Harbord. After the armistice he was assigned to duty with the American Peace Commission in Paris, France, and later joined the staff of the American Relief Administration which disbursed aid from the Baltic Sea to the Balkans.

WAS CORPORATION PRESIDENT

His work in Europe finished, Chambers returned to America, completed his college courses and engaged in personal business working for several



WALTER CHAMBERS

large corporations. After his father's death he became vice president of the Edward Chambers Corporation, with headquarters in Los Angeles.

For several years he was coast representative for one of the largest printing companies in the United States handling large contracts for national magazines, catalogues for chain stores, city directories, etc.

Since coming back to California 13 years ago, he has taken an intensive interest in welfare work in many fields.

He became interested in the migratory problem and was a member of the Citizens Committee of the Federal Transient Commission, he also served on the Board of the Travelers Aid Society and was chairman of the Family Division of the Council of Social Agencies, concerned with the financing of 68 welfare agencies of Los Angeles.

He was chairman of other welfare committees and service groups in Los

Angeles, including a section of the Public Welfare Institute of Government of the University of Southern California and membership on the board of Catholic Youth's Organization.

In July, 1939, when Governor Culbert L. Olson and Dr. H. Dewey Anderson agreed upon a man to become Director of Personnel in the State Relief Administration, that man was Walter Chambers, and he was appointed with the approval of Governor Olson.

On August 14, 1939, upon the resignation of Dr. Anderson as State Relief Administrator, Governor Olson appointed Chambers to that post, which he held until appointed Secretary of the Highway Commission with the approval of Governor Olson.

Three Central Valley Project Milestones

(Continued from page 5)

5, 1939. When completed in 1943 it will be the fourth largest dam of its type in the world. It will be 3,500 feet long across the crest and 320 feet high. Behind it a 15-mile long lake will be formed covering 4,500 acres and storing 520,000 acre-feet of water. This water will be distributed through two canals with a total length of 200 miles.

Preceding the afternoon ceremonies an informal luncheon was held in the Griffith & Bent headquarters at the dam site. Among those attending the luncheon were: Walker R. Young, supervising engineer for the Bureau of Reclamation; Roy B. Williams, construction engineer in charge of the Friant Division; M. H. Slocum, superintendent for Griffith & Bent; Judge A. R. Honald, legal representative for the Bureau of Reclamation; Clarence Breuner and Roland Curran, president and secretary of the Central Valley Project Association; James R. Fauver, chairman of the Tulare County Water Commission.

Director Clark Tells Achievements Of Department of Public Works

The following article is a radio address made by Director of Public Works Frank W. Clark on Sunday evening July 21st, when he substituted for Governor Culbert L. Olson at the Governor's request. In his address Director Clark discusses the policy of the Department of Public Works under Governor Olson's administration and some of the large projects already accomplished, under way or planned for the future.

By FRANK W. CLARK, Director of Public Works

WHEN Governor Olson requested me to represent him on his regular Sunday evening radio broadcast, I told him that I greatly appreciated the compliment and the honor, and also that I would welcome the opportunity to talk to the people of California about the policies, achievements and program of the Department of Public Works under his administration.

I first want to say that in my opinion any State or Federal administration should be, and in the final analysis is, judged by that which it actually does, and also by that which it sincerely endeavors to do for the benefit of its people as a whole.

Your present State administration is proud of its actual accomplishments to date and equally proud of the record it has made in its determination to provide legislation that will bring to the average man, woman, and child of this State the full benefits of a true working democracy.

PUBLIC REAPING BENEFIT

The accomplishments referred to have been brought about in spite of the opposition, and almost constant refusal of the majority of the State legislature to support or adopt soundly progressive and seriously needed legislation. However, tremendous benefits are now accruing and are being transmitted to the citizens and taxpayers of California through far reaching improvements in the operating efficiency of those State agencies controlled and directed by departmental heads selected by this administration.

As Director of Public Works of

the State of California, I take pleasure in reporting particularly to those of you who are California residents, a few pertinent facts regarding the conduct of this department, which receives and expends approximately \$50,000,000 of your money each year.

The Department of Public Works, the largest agency of the State Government, employing over six thousand people, is made up of five divisions; namely, Division of Highways, Division of Water Resources, Division of Architecture, San Francisco-Oakland Bay Bridge Division, and the Division of Contracts and Rights of Way.

Upon the Division of Highways devolve the maintenance and improvement of 14,000 miles of roads and some 4,000 bridges in the State Highway System, and the construction of all new highway and bridge projects. In the carrying out of these functions the Division of Highways will spend approximately \$42,000,000 this year.

DIVISION OF WATER RESOURCES

The Division of Water Resources is in charge of all work looking to the conservation of the State's water supplies both privately and publicly controlled and has supervision over 605 dams behind which is impounded the waters so valuable to the great interior valleys and the towns and the cities of California.

Because of my previous close relationship in private business with irrigation and drainage matters, and having had occasion to familiarize myself with the condition existing in the State of California pertaining to water laws in general, one of the

earliest official steps which I took was to definitely concern myself with the problems relating to the conservation and proper utilization of our most precious natural resource—the waters originating in our watersheds and comprising the streams of the State of California. Never, in the entire 91-year history of this State has there existed a clearly defined and progressive water conservation procedure based on the theory that the people of California are the owners of the surplus water in the streams.

In the absence of such a program it was common practice for water to be allowed to actually run to waste by owners with technical prior ownership rights while other users were not even permitted sufficient water for their own domestic use.

OWNED BY THE PEOPLE

Having in mind the principle that those public waters are owned by the people at large, I directed an investigation designed to develop a definite recommendation for legislation which would give to the State the power to insure the fullest and most advantageous use possible of all of the waters of California.

I can now report that through the efforts of this administration the "Police Power Amendment" to the California Water Commission Act was enacted and became law when Governor Olson signed it.

By reason of this amendment for the first time in the history of California the people of the State through the Department of Public Works have the necessary legal power and therefore now are able to properly protect and fully preserve

their rights in the water within our State.

The Police Power Amendment reads as follows:

"This act is hereby declared to be in furtherance of the policy contained in the Constitution of the State of California and in all respects for the welfare and benefit of the people of the State, for the improvement of their prosperity and their living conditions."

PROTECTS THE PUBLIC

This new amendment to the Water Commission Act allows the Department to reject any application for the use of water when in its judgment the proposed appropriation is contrary to the public interest. This means that the Department of Public Works may now safely guard the water rights of this State for the future, being assured of its ability to recover certain water rights by recapture procedure which will result in making such water again available to the State to be used for greatest public benefit.

As you know, one of the world's most monumental undertakings for the conservation of water is the Central Valley Project which ultimately will restore to fertility many thousands of acres of arid lands in the San Joaquin Valley. The price of this water to the farmers of the Sacramento and the San Joaquin Valleys will be largely determined by the sale of power generated at Shasta Dam.

In this connection it is gratifying to be able to report that at the request of Governor Olson and myself as Chairman of Water Project Authority, Harold L. Ickes, Secretary of the Interior, has now approved a conference between members of the authority and representatives of the United States Bureau of Reclamation, to be held next month for the purpose of clarifying the responsibilities of the Federal Government and the State relative to the distribution of Shasta Dam power.

I take the liberty of quoting from a letter from Secretary Ickes on this subject. Secretary Ickes said, quote:

"I am sure that the conference will prove helpful both to the Bureau of Reclamation and the Water Project Authority and I am hoping that a permanent plan may result by which the power to be generated by the Central Valley Project can be mar-

keted to and distributed through public agencies." End quote.

We anticipate that this conference will further to a great extent the program of public distribution and sale of Shasta Dam power—a program for which Governor Olson has fought vigorously since his induction into the office of Chief Executive of California.

BRIDGE TOLLS REDUCED

The Department of Public Works constructed a seventy-three million dollar over-water span across San Francisco Bay, and through its San Francisco-Oakland Bay Bridge Division maintains and operates this renowned structure. In this connection I may say that since Governor Olson's election the California Toll Bridge Authority, of which he is Chairman, has made four successive bridge toll reductions, the toll for passenger cars now being twenty-five cents, just one-half of what they were when this administration assumed office. Almost immediately this administration opened negotiations with the Reconstruction Finance Corporation of the Federal Government, during which we finally were able to make certain refinancing contract adjustments and gained concessions that actually amounted to reducing the financial carrying charges on the San Francisco-Oakland Bay Bridge by almost one million dollars per year. This huge annual savings has, of course, had much to do with the cutting in half of the tolls on this, the world's largest bridge.

Certainly this is an outstanding example of what can be accomplished for the people in the public utility field under government ownership. We hope to further expand such benefits.

Because of the determination of this administration to increase the operating efficiency of every department to the highest possible degree a detailed examination and complete survey has been made of each one of the above divisions and a current report system is in effect. The duties of every employee are analyzed, the use of every car investigated, and the expenditure of every dollar scrutinized.

Much is being accomplished under this program. Generally speaking I am happy to say that we are receiving very satisfactory cooperation

from the civil service employees themselves.

IMPORTANT LABOR CLAUSE

In all divisions we are insisting that construction work done by contract method be entered into only after such steps have been taken as to assure full and open competitive bidding in every sense of the word, and at the same time strictly enforcing all contract stipulations and specifications, including the important labor clause which provides that not less than established prevailing wages must be paid all workers under every contract.

TRAFFIC CONGESTION IN CITIES

Because all Californians are known to be highway minded, I would like to add to what I have already said relative to the functions of the Division of Highways. The transition of a large rural population to a nation of city dwellers, of transportation from the horse and buggy to automobiles, has resulted in traffic congestion within our larger municipalities which has become a major national problem which demands an immediate solution. It has been found that the mere widening of city arteries is of little or no avail, because the intersection remains to paralyze traffic movements.

All signs now point to the construction of urban motor ways or freeways as the solution of city traffic problems. The motor way is a multi-lane street with opposing traffic separated by a dividing strip with no intersecting streets and to which access is limited to a few points. Freeways already constructed in such centers as New York and Chicago give promise that relief is in sight.

This State will from now on concern itself more and more with traffic problems within incorporated cities. In my opinion this is as much the responsibility of the State as the cities themselves. In doing this, the State does not contemplate neglecting rural areas. I have recently ordered a statewide survey of traffic congestion conditions and when our program in this respect is worked out it will be of equal benefit to rural communities throughout California and will not be confined to the congested areas within large cities.

MOTORWAYS NECESSARY

Chaotic conditions arising from the growing demoralization of transportation within urban centers is not only increasing the hazards to life and property but it is also causing great inefficiency and economic losses by retarding the growth and development of our cities. In the interest of public safety, of efficiency, of economy and of progress, adequate motorway facilities within and through urban areas must be immediately anticipated. To accomplish this the State and cities must cooperate in the construction of such public thoroughfares.

In California the Department of Public Works through its Division of Highways will do its share in meeting the State's urban traffic needs. Between Los Angeles and Pasadena construction of arroyo Seco Parkway is now nearing completion. Only yesterday, a three and seven-tenths mile section of this freeway—from Avenue 40 in Los Angeles to Orange Grove Avenue in Pasadena—was opened to traffic. This six mile project with its 28 bridges and grade separations, in the building of which the State had the cooperation of the cities of Los Angeles, Pasadena, and the Federal Government, will cost about twelve million dollars.

In another part of the city the first section of the Cahuenga Freeway has just been opened to public traffic. This also is a cooperative project with the State, City, and Federal Government participating.

BAYSHORE FREEWAY PLANS

In the north we now have under way a survey for the changing of 27 miles of the Bay Shore Highway between San Francisco and Palo Alto into a modern motor freeway. The plan for this arterial is to provide two 35-foot freeways with 21 grade separations and no surface inter-sections.

I am greatly concerned over the increasing traffic congestion in the western sections of Los Angeles. This week I ordered a comparative survey of traffic on the west side with especial attention to be paid to Wilshire Boulevard, Olympic Boulevard and Santa Monica Boulevard, and traffic flowing from the San Fernando Valley and Hollywood areas. The State of California will lend all possible assistance to the

Bay Bridge Traffic for July Reaches All-time High of 1,533,929 Vehicles

JULY traffic on the San Francisco-Oakland Bay Bridge continued the acceleration displayed in May and June and reached an all-time high for a one-month period with 1,533,929 vehicles.

The increase over July of 1939 was 440,427 vehicles, or 40.3 per cent. This increased travel, however, was not accompanied by an increase in revenue which dropped \$46,634. This reflects the present average toll of 27.4 cents compared with 42.7 cents one year ago. The average toll in July of last year was 56 per cent greater than it is today.

The record traffic for the month was accompanied by some unusually

heavy traffic on weekends, showing a Sunday average of 57,769 with a high of 59,828 on July 21.

A year ago traffic to Treasure Island totaled 242,191 cars compared with 234,527 during July of this year. The slight reduction is attributed to the popularity of bus service to the exposition rather than to a decrease in patronage. However, this decreased travel to Treasure Island does indicate an even greater increase of normal traffic using the bridge than the 40.3 per cent cited above.

July traffic on the San Francisco-Oakland Bay Bridge and comparative figures are:

	July 1940	July 1939	June 1940	Total Since Opening
Passenger autos and auto trailers	1,413,564	1,011,424	1,258,403	34,731,883
Motorcycles and tricars	4,588	4,376	4,681	155,743
Buses	26,547	17,327	25,528	582,702
Trucks and truck trailers	68,421	44,850	57,174	1,685,143
Others	20,809	15,525	19,155	590,741
Total vehicles	1,533,929	1,093,502	1,364,941	37,746,212

City of Los Angeles in solving the problem of this critical traffic situation. The State is hopeful that its immediate and future highway planning in Los Angeles, San Francisco, Oakland, and our other larger cities, will be so developed as to materially assist them in handling the ever increasing flow of traffic into their metropolitan areas.

During this brief talk I have tried to bring to your personal attention only a few of the many important and definite departmental steps, which are being taken by your present State government under the able leadership of Governor Olson, and which I sincerely trust will be accepted by you as citizens and taxpayers of this State as an indication of our desire and determination to efficiently and faithfully serve you.

It happened at the spring training camp of a major league baseball club.

Gatekeeper (to the manager)—The umpire for today's game is at the gate with two friends. Shall I pass them in?

Manager (gasping)—An umpire with two friends? Sure!

Bayshore Freeway Plan Urged

(Continued from page 2)

resident of San Mateo County, with my business interests in San Francisco, I have had occasion, over a period of years to travel the Bayshore Highway at least twice a day, and I know the hazards to motorists that exist there today.

I think the launching of this project will be hailed as one of the outstanding achievements of the present state administration.

Oildale Bridge Prospects

Director of Public Works Frank W. Clark has notified Senator James Hollister, Gavista, and Supervisor Ralph Lavin of Bakersfield that the Division of Highways anticipates being in a position to start construction of the new Oildale Bridge across Kern River, and the realignment of the highway through Oildale sometime during the latter part of November.

The Bridge Department of the Division of Highways, which is preparing plans and specifications for the proposed Oildale Bridge, expects this project will be ready for advertising of bids about October 1.

Importance of Traffic Accident Reports Shown

By J. W. VICKREY, Safety Engineer

REAL PROGRESS in reducing the toll of traffic accidents depends in no small degree on traffic accident reports. The California vehicle code requires that an accident report be made for every motor vehicle accident resulting in injury or death of any person. It is essential, further, in order to effect any substantial reduction in economic loss and physical suffering occasioned by this blight on motor transportation, that the facts contained in the accident reports be available and in readily usable form.

All too frequently a communication is received, calling attention to a certain allegedly hazardous spot and more particularly pointing out that Mr. A or Mrs. B, or an employee, was injured in a recent accident at that spot—and always “**Why doesn't somebody do something?**” A check shows that not only was that particular accident not reported but there are no reports on file of accidents occurring at that particular place.

Information contained in all accident reports on file forms the base upon which any effective program looking toward correction must be founded. The report forms have been painstakingly worked out so that the information necessary will be made available.

Reliable records show that the traffic accident toll, calculated in terms of miles traveled, is being reduced. There is every reason to believe that this toll can be reduced at a more rapid rate. The first step in bringing about this desirable reduction is complete, accurate accident reports, not only the reports required by law but also those in which only property damage occurs; for, after all, whether a collision results in a fatality or only a smashed car, is a matter of chance, the odds of which can not be calculated.

Hotel Page: “Telegram for Mr. Niespodziavani, telegram for Mr. Niespodziavani!”

Mr. Niespodziavani: “What initial, please?”

Department of Public Works Will Exhibit at State Fair

“**A**LL roads lead to Rome.” So went the old saying, but the modern version is that all highways lead to the California State Fair, which opens at Sacramento August 30 and runs for 11 days, closing September 9.

Converging on Sacramento are U. S. 40, 50, 99, 99E, 99W; State Sign Routes 16 and 24, which will be crowded with automobiles during the fair dates, while all other roads, railroads, bus lines and air lines will bring their human cargoes.

California's highways, by far, carry the heaviest load of fair visitors, for Californians depend on the State's excellent road program for transportation.

PUBLIC WORKS EXHIBIT

The varied activities of the Department of Public Works will be depicted in an exhibit prepared by the department and the California State Employees Association.

Frank W. Clark, director of Public Works, announced that in addition to the regular activities of the Division of Highways, the Division of Water Resources and the Division of Architecture, part of the exhibit will be devoted to the Central Valley Project.

Colored moving pictures, showing the rapid progress which is being made in the construction of this \$228,000,000 conservation project will be a feature of the exhibit. Such recent events as the first pouring of concrete at Shasta Dam and at Friant Dam, and the beginning of pumping operations on the Contra Costa Canal will be shown.

HIGHWAY MODELS SHOWN

In addition scale models of bridges and overpasses recently constructed by the Division of Highways, colored photographs of the new high speed Freeways and equipment used by the Division in its testing laboratories will be shown.

The exhibit will be with the group of Federal and State exhibits in the grandstand building.

At the State Fair, visitors will see more than America's largest agri-

cultural show. All of California's 228 economic crops will be displayed by the 29 counties participating. The machinery exhibit is the best in the west, while the horse show, with five new classes added and an old favorite revived, is the premier of such events on the Pacific coast.

For relaxation, the State Fair offers the tops in entertainment. Three of the nation's biggest “name” bands, Kay Kyser, Horace Heidt and Orrin Tucker, head the exceptional bill. Kyser will open the fair, playing the first three days, and Heidt and Tucker will play four days each. Each orchestra will offer a night show in front of the grandstand and play for dancing later in Governor's Hall.

FOURTEEN NEW BUILDINGS

The new junior division is a good-sized fair in itself. The 14 new buildings, erected on a recently acquired 60-acre tract, are for the exclusive use of the Future Farmers of America and the 4-H Club boys and girls.

The \$2,000,000 live stock parade is a highlight of the fair, and the many special events will provide a continuous round of things to see.

The outstanding speed program will delight the horse fans. Entered in the running races are track stars from such stables as C. S. Howard, A. G. Tarn and the Rancho San Luis Rey, while in the harness events will be fast steppers from the S. H. Cowell and Mrs. Elmo Montgomery stables as well as other popular favorites.

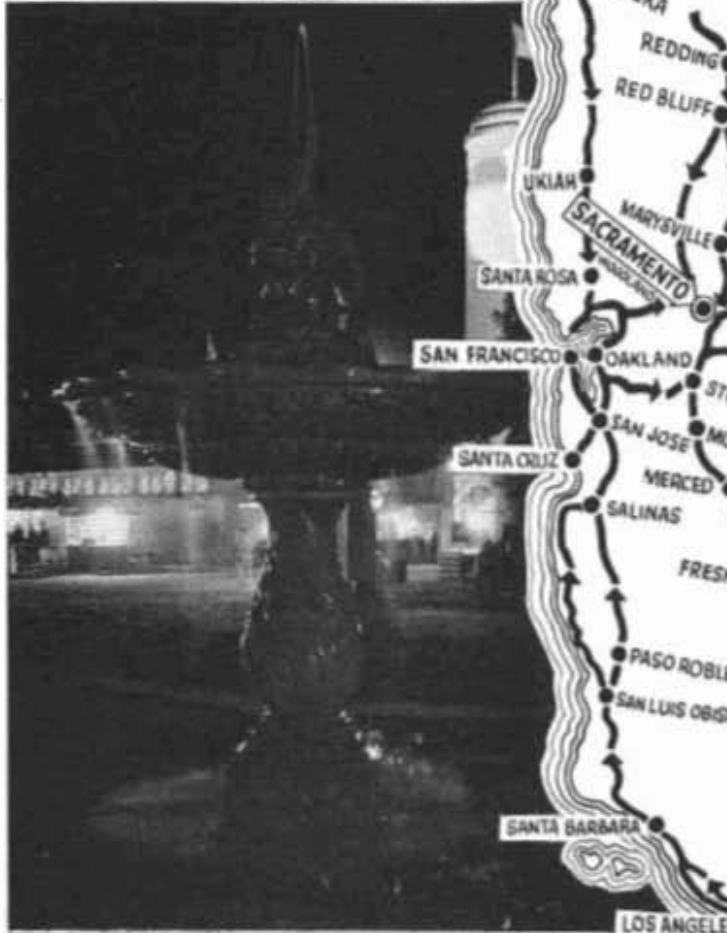
Another improvement at the fair grounds is in the parking facilities. Space has been added to the north parking area for approximately 500 more cars, while the Fifth Avenue parking area has been improved by planting one-half in Bermuda sod, thus eliminating much of the dust of former years.

“Is the Secretary of Agriculture in?”

“I'll see, madam. What do you wish to see him about?”

“Well, I have a geranium that isn't doing as well as it should.”—Hudson Star.

All Roads Lead to CALIFORNIA State Fair





**READING FOR EMPLOYEES
PIONEER TITLE INSURANCE AND
TRUST COMPANY**

San Bernardino, Calif.

Editor,
California Highways
and Public Works,
Sacramento, California.

Dear Sir:

We appreciate very much receiving your magazine. Copies will always be with reading matter in our lobby and in our employees' lounge and I assure you the undersigned will check each issue personally. I find it very interesting.

Very truly yours,

C. K. COOPER,
First Vice President

UNIVERSITY OF CALIFORNIA

Department of
Physical Education for Men
Berkeley, Calif.

Editor,
California Highways
and Public Works,
Sacramento, California.

Dear Sir:

Recently while in Calistoga, I had the pleasure of reading several copies of your excellent magazine at the Public Library.

They are so instructional and interesting that I would like very much to have you place my name on your mailing list.

Yours truly,

Heber Newson
Asst. Sup. of P.E. for Men

FROM FELLOW CRAFTSMAN

**ALLIED SACRAMENTO VALLEY
NEWSPAPERS**

Colusa, California

J. W. Howe, Editor
California Highways
and Public Works,

Dear Mr. Howe:

Thanks for loaning us cuts on District 70 levee break, which were printed in the Sun-Herald. I am returning same at once. Copy of paper containing the feature is also being mailed.

May I congratulate you upon the general excellence of California Highways and Public Works. In past years I sel-

dom paid any attention to the magazine. Now it's on my "must read" list.

Thanks again,

Cordially yours,

(Signed) Wilmer G. Brill
The Colusa Sun-Herald

PUBLIC LIBRARY REQUEST

NEWHALL BRANCH LIBRARY

Newhall, Calif.

California Highways
and Public Works,
Sacramento, California.

Gentlemen:

The local branch of the Los Angeles County Public Library would appreciate very much receiving "California Highways and Public Works" for our branch. Would you be so kind as to forward it to us in the future.

Mailing address is:

Newhall Branch
L. A. County Public Library,
Newhall, Calif.

Thanking you in anticipation, I am

Respectfully yours,

Mary F. Brunner

EDITOR IS CONGRATULATED

DIVISION OF REAL ESTATE

Los Angeles, California

Editor,
California Highways
and Public Works,
Sacramento, California.

Dear Sir:

I greatly appreciate the magazine mailed to me for the month of May 1940. I have been receiving them from time to time. They are very interesting, instructive, and thoroughly enjoyed by me.

I congratulate you upon the publication of this splendid magazine.

Sincerely yours,

CLARENCE URBAN
REAL ESTATE COMMISSION
OF CALIFORNIA

CHAIRMAN BARRETT FLIES

Chairman Lawrence Barrett, of the California Highway Commission, made an aerial trip on the Clipper to Honolulu July 30th where his family had been sojourning for a month. They returned together August 7th on the steamship.

TRAVELS TO GET IT

**SULLY MILLER CONTRACTING
COMPANY**

Long Beach, California

Editor,
California Highways
and Public Works,
Sacramento, California.

Dear Sir:

Our Long Beach office received the "California Highways and Public Works" each month and I find it so interesting that I must make an extra trip to Long Beach each month to read it.

Is it possible for the Orange office, RD No. 1, Box 627, Orange, to be placed on your mailing list? I would appreciate it very much if you find it possible to accommodate us.

Yours truly,

Sully-Miller Contracting Co.

By _____
W. F. Halley

FOUNTAIN OF INFORMATION

Bakersfield, California

California Highways
and Public Works,
P. O. Box 1499,
Sacramento, California.

Gentlemen:

I have read several of your magazines with great interest and enjoyment. The articles and photographs contained in your publications afford the readers thereof an opportunity to become better acquainted with the State of California; and, being a "native," I am more than interested in the progress and development of our State. "California Highways and Public Works" is truly a fountain of information as to the progress and development being carried on in this State, and for that reason I should greatly appreciate receiving your magazine. May I have a place on your mailing list.

Very truly yours,

Ruby M. Reynolds
2131 Baker Street,
Bakersfield, Calif.

Two heavyweight boxers chasing each other round the ring kept treading on the toes of the small referee. At last he lost patience and shouted:

"If you guys don't stop treading on my corns there's going to be a fight!"

Highway Bids and Awards for the Month of July, 1940

BUTTE, PLACER, YOLO, COLUSA, SUTTER, GLENN AND YUBA COUNTIES—At various locations, about 38.5 miles in length, seal coat to be applied. District III, various routes. Claude C. Wood, Lodi, \$17,282; Brown & Doko, Pismo Beach, \$17,890; A. S. Vinnell Co., Alhambra, \$19,910. Contract awarded to Granite Construction Company, Watsonville, \$15,944.20.

COLUSA COUNTY—Between 2½ miles east of Williams and Colusa, about 5.6 miles in length, to be graded and surfaced with plant-mix surfacing on gravel base, and a reinforced concrete bridge is to be widened. District III, Route 15, a, clu. M. J. B. Construction Co., Stockton, \$104,235; Hemstreet & Bell, Marysville, \$108,624; Basich Brothers, Torrance, \$114,095; Heafey-Moore Co. & Fredrickson & Watson Construction Co., Oakland, \$123,359; Jones & King, Hayward, \$125,574; Marshall S. Hanrahan, Redwood City, \$132,455. Contract awarded to Valley Construction Co., San Jose, \$88,168.75.

FRESNO-MADERA COUNTIES—Two reinforced concrete bridges, one across San Joaquin River and the other across San Joaquin River Overflow to be constructed. District VI, Route 125, Section C. A. Earl W. Heple, San Jose, \$142,745; E. E. Smith, Berkeley, \$142,940; C. W. Caletti & Company, San Rafael, \$146,380; R. R. Bishop and R. B. Wood, Long Beach, \$148,724; Trehwhitt-Shields & Fisher, Fresno, \$153,542; Engineers, Limited, Sacramento, \$161,631; J. S. Metzger & Son, Los Angeles, \$162,516; Heafey-Moore Co. & Fredrickson & Watson Construction Co., Oakland, \$162,620; Carlo Bongiovanni, Hollywood, \$178,888. Contract awarded to Campbell Construction Co., Sacramento, \$134,935.60.

FRESNO-MADERA COUNTIES—Between 0.5 mile south and 1.6 miles north of San Joaquin River, about 2 miles in length to be graded. District VI, Route 125, Sections C. A. Fredrickson Bros., Emeryville, \$55,259; Louis Biasotti & Son, Stockton, \$55,298; M. J. B. Construction Co., Stockton, \$57,171; A. Teichert & Son, Inc., Sacramento, \$57,623; Valley Construction Co., San Jose, \$60,790; Heafey-Moore Co. & Fredrickson & Watson Const. Co., Oakland, \$60,945; Hemstreet & Bell, Marysville, \$60,964; Piombo Bros. & Co., San Francisco, \$63,606; Fredrickson & Watson, Sacramento, \$64,718; A. S. Vinnell Co., Alhambra, \$66,466; Rexroth & Rexroth, Bakersfield, \$66,802; N. M. Ball Sons, Berkeley, \$77,965; Griffith Company, Los Angeles, \$82,482. Contract awarded to Earl W. Heple, San Jose, \$47,047.

GLENN-BUTTE COUNTIES—Between Butte City and Cherokee Canal, about 12.4 miles in length, road-mix surface treatment to be applied. District III, Route 45, Sections C. A. Fredrickson & Westbrook, Sacramento, \$20,789; J. A. Casson Co., Hayward, \$20,825; Frank Embleton, Albany, \$21,280; L. C. Karstedt, Watsonville, \$22,652; A. S. Vinnell Co., Alhambra, \$23,099; Claud C. Wood, Lodi, \$26,200. Contract awarded to Oilfields Trucking Company, Bakersfield, \$18,000.80.

IMPERIAL COUNTY—Between Mountain Springs and 3.6 miles easterly about 3.6 miles in length to be graded and road-mix surface treatment applied thereto. District XI, Route 12, Section A. A. S. Vinnell Co. & J. S. Metzger & Son, Alhambra, \$388,501; Maceo Construction Co., Clearwater, \$420,524; Oswald Bros., Los Angeles, \$422,646; United Concrete Pipe Corp., Los Angeles, \$442,810; Griffith Co., Los Angeles, \$488,589; Daley Corp., San Diego, \$494,839;

V. R. Dennis Const. Co., San Diego, \$534,020; J. E. Haddock, Ltd., Pasadena, \$579,941. Contract awarded to Denni Investment Corp., Wilmington, \$367,864.90.

KERN COUNTY—Between Route 143 east of Sivert, about 7.1 miles in length to be graded and surfaced with crusher run base and plant-mixed surfacing. District VI, Route 58, Section C. Maceo Construction Company, Clearwater, \$112,981; Piazza & Huntley, San Jose, \$120,887; Marshall S. Hanrahan, Redwood City, \$125,245; Louis Biasotti & Son, Stockton, \$127,761; A. Teichert & Son, Inc., Sacramento, \$132,280. Contract awarded to Basich Brothers, Torrance, \$111,706.50.

LAKE COUNTY—Between 3 miles and 5.3 miles northeast of Putah Creek about 2.3 miles in length to be graded and an Armor Coat applied. District I, Route 49, Section B. Fredrickson and Westbrook, Sacramento, \$96,496; Piombo Bros. & Co., San Francisco, \$99,722; Louis Biasotti & Son & L. D. Tonn, Stockton, \$99,777; Hemstreet & Bell, Marysville, \$108,798; N. M. Ball Sons, Berkeley, \$111,489; Heafey-Moore Co., Fredrickson & Watson Construction Co., Oakland, \$120,138; A. Teichert & Son, Inc., Sacramento, \$120,619; Fredrickson Bros., Emeryville, \$122,040. Contract awarded to J. L. Conner and Sons, Point Arena, \$91,469.20.

LOS ANGELES COUNTY—Between Brents Junction and Liberty Grade about 1 mile in length to be graded and plant-mix surfacing to be placed over existing pavement and new roadbed. District VII, Route 2, Section C. Basich Bros., Torrance, \$28,050; Griffith Co., Los Angeles, \$28,575; Claude Fisher Co., Ltd., Los Angeles, \$29,692; Oswald Bros., Los Angeles, \$33,801; F. Gunner Gramatky, Pasadena, \$37,946. Contract awarded to J. E. Haddock, Ltd., Pasadena, \$26,850.25.

LOS ANGELES AND ORANGE COUNTIES—11.7 Miles road-mix surface treatment between Siphon Road and Garvey Blvd., between Brea Can. Road and west end of Section and between Olinda and Orange-San Bernardino County line. District VII, Routes 168, 172, 177, Sections B, C, A. A. S. Vinnell Co., Alhambra, \$14,008; C. R. Butterfield-Kennedy Co., San Pedro, \$16,497. Contract awarded to Dimmitt & Taylor, Los Angeles, \$10,844.

MARIN COUNTY—Between San Rafael and Richardson Bay Bridge about 5.5 miles in length to be graded and surfaced with plant-mix surfacing on crusher run base. District IV, Route 1, Section C. A. Teichert & Son, Inc., Sacramento, \$258,643; Heafey-Moore Co., & Fredrickson & Watson Const. Co., Oakland, \$272,260; Fredrickson and Westbrook, Sacramento, \$273,184; Chas. L. Harney, San Rafael, \$284,135. Contract awarded to A. G. Raisch, San Francisco, \$251,503.50.

MENDOCINO COUNTY—Between Heagneys and 0.5 mile north of Lanes about 1.4 mile in length to be graded and surfaced with plant-mix surfacing. District I, Route 1, Section J. Claude C. Wood, Lodi, \$95,833. Contract awarded to N. M. Ball & Sons, Berkeley, \$92,742.60.

MODOC COUNTY—Between 4.6 miles south of Cedarville and Cedarville, about 4.6 miles in length to be graded and surfaced with road-mix surfacing. District II, feeder. Fredrickson & Westbrook, Sacramento, \$36,558; Poulos & McEwen, Fort Bidwell, \$36,797; Harms Bros., Sacramento, \$38,791. Contract awarded to Lee J. Immel, Berkeley, \$35,468.20.

MODOC AND SISKIYOU COUNTIES—Between Stronghold and Oregon State line, about 6.8 miles in length, portions to be surfaced with imported borrow, and the entire project to be surfaced with plant-mixed surfacing and seal coat applied. District II, feeder. J. A. Casson Co., Hayward, \$60,775; Fredrickson & Westbrook, Sacramento, \$71,198. Contract awarded to Harms Bros. and N. M. Ball Sons, Berkeley, \$57,394.

MONTEREY COUNTY—At various locations between the southerly boundary and Big Sur River, about 47 miles in length; beam type metal guard railing and timber guide posts to be furnished and installed. District V, Route 56, Sections A, B, C, D, E. Oberg Bros., Los Angeles, \$79,926; N. M. Ball Sons & E. E. Smith, Berkeley, \$79,989; George Pollock Co., Sacramento, \$81,279; Claude C. Wood & L. D. Tonn, Lodi, \$83,960; A. Teichert & Sons, Inc., Sacramento, \$83,985; Fredrickson & Westbrook, Sacramento, \$84,368; Trehwhitt-Shields & Fisher, Fresno, \$86,628; Granite Construction Company, Watsonville, \$87,626; M. J. B. Construction Co., Stockton, \$87,905; Werner & Webb, Los Angeles, \$111,751; Sander Pearson, Santa Monica, \$107,820; E. T. Lesure, Oakland, \$111,882. Contract awarded to Union Paving Co., San Francisco, \$76,514.83.

NAPA COUNTY—Between 7 miles and 24 miles north of Napa, 6 masonry arches to be extended. District IV, Route 49, Sections B, C. C. C. Gildersleeve, Berkeley, \$15,801. Contract awarded to Harold Smith, St. Helena, \$14,924.60.

PLACER, EL DORADO, SACRAMENTO, NEVADA AND SIERRA COUNTIES—At various locations, about 37.5 miles in length, seal coat to be applied. District III, various routes and sections. Pacific Truck Service, Inc., San Jose, \$24,584; A. Teichert & Son, Inc., Sacramento, \$25,294; Sheldon Oil Co., Suisun, \$31,192. Contract awarded to Granite Construction Company, Watsonville, \$23,478.

RIVERSIDE COUNTY—Stockpile pit-run gravel base, surfacing, and binder or filler in windrows on shoulders between Palo Verde and Junction Route 64. District XI, Route 146, Sections A and B. H. L. Miller, Hemet, \$7,665; A. C. Bussey, Riverside, \$7,200. Contract awarded to R. E. Hazard & Sons, San Diego, \$5,642.50.

SAN BERNARDINO-RIVERSIDE COUNTIES—At various locations in District VIII, about 56.8 miles in length, seal coat to be applied. District VIII at various locations. Matich Bros., Elsinore, \$23,992; E. L. Yeager, Riverside, \$24,712; Brown & Doko, Pismo Beach, \$24,940; A. L. Gabrielson, Arlington, \$27,910; Basich Bros., Torrance, \$29,611; Dimmitt & Taylor, Los Angeles, \$41,060. Contract awarded to R. E. Hazard & Sons, San Diego, \$23,682.50.

SANTA CLARA COUNTY—On El Camino Real under University Avenue at Palo Alto, a reinforced concrete underpass on spread footings to be constructed. District IV, Route 2, Section A. Dan Caputo, San Jose, \$50,273; Engineers Limited, San Francisco, \$55,929; S. J. Amoroso Const. Co., San Francisco, \$56,538; Paul J. Tyler, Oroville, \$56,986; Union Paving Co., San Francisco, \$62,760. Contract awarded to Earl W. Heple, San Jose, \$46,367.50.

SHASTA COUNTY—Between Central Valley and Shasta Summit, about 5.0 miles in length to be surfaced with plant-mixed surfacing and crusher run base. District II, Routes 3 and 209, Sections B, A. Fredrick-

sen & Westbrook, Sacramento, \$48,953; A. Teichert & Son, Inc., Sacramento, \$54,425; N. M. Ball Sons, Berkeley, \$55,110; Marshall S. Hanrahan, Redwood City, \$63,960. Contract awarded to Jones & King, Hayward, \$47,976.

SHASTA COUNTY—Between Redding Underpass and Hill Street in Redding, about 1.1 miles in length to be graded and surfaced with Portland cement concrete pavement and with plant-mix surfacing on crusher run base. District II, Route 3, Sections A, Rdg. N. M. Ball Sons, Berkeley, \$119,116; Hemstreet and Bell, Marysville, \$122,750; Marshall S. Hanrahan, Redwood City, \$127,426; Jones and King, Hayward, \$129,217; A. Teichert and Son, Inc., Sacramento, \$131,036. Contract awarded to Fredericksen and Westbrook, Sacramento, \$104,643.75.

SHASTA COUNTY—Sacramento River Bridge north of Redding to be repaired by constructing reinforced concrete abutment on steel piles and (1) structural steel and concrete span 28' long. District II, Route 3, Section B. A. Frederick Anderson, Oakland, \$12,875; Fred J. Maurer & Son, Eureka, \$18,688. Contract awarded to E. E. Smith, Berkeley, \$11,783.

SOLANO COUNTY—Bridge across Sacramento River at Rio Vista, to be repaired. District X, Route 53, Section C. M. A. Jenkins, Sacramento, \$13,883; Thomas Const. Co., Burlingame, \$13,573; F. Kaus, Stockton, \$14,173. Contract awarded to Lee J. Immel, Berkeley, \$11,576.36.

SOLANO-YOLO COUNTIES—At points between 0.5 and 3.5 miles south of Davis, 6 R. C. Bridges to be constructed. District X, Route 6, Section A. E. Campbell Construction Co., Sacramento, \$127,087; Engineer's Limited, Sacramento, \$128,529; Fred Maurer & Son, Eureka, \$129,621; Heafey-Moore Co. & Fredericksen & Watson Construction Co., Oakland, \$129,967; M. J. B. Construction Co. and F. Kaus, Stockton, \$130,790; Harry J. Oser, San Francisco, \$133,003; Holdener Construction Company, Sacramento, \$136,442; E. E. Smith, Berkeley, \$140,846; C. W. Caletti & Company, San Rafael, \$141,601; J. S. Metzger & Son, Los Angeles, \$149,592. Contract awarded to E. T. Lesure, Oakland, \$117,396.90.

SONOMA COUNTY—Two miles west of Guerneville, two reinforced concrete slab sidehill viaducts on steel piles, having lengths of 112' and 252' to be constructed. District IV, Route 104, Section A. Harold Smith, St. Helena, \$25,953; Trewitt-Shields and Fisher, Fresno, \$26,273; C. W. Caletti and Company, San Rafael, \$30,025. Contract awarded to Carlton C. Gildersleeve, Berkeley, \$24,378.

SONOMA AND NAPA COUNTIES—Near Wyatt's Corner, and between Yenni Ranch and 0.5 mile east of Napa County line, about 2.7 miles in length, about 1.1 miles to be graded and entire project to be surfaced with plant-mix surfacing and seal coat applied. District IV, Routes 8, 104, various sections. Harold Smith, St. Helena, \$72,060; N. M. Ball Sons, Berkeley, \$75,147; Chas. L. Harney, San Francisco, \$87,805; A. Teichert & Son, Inc., Sacramento, \$89,357; J. L. Conner & Sons, Point Arena, \$89,894; A. G. Ralsch, San Francisco, \$97,128. Contract awarded to E. A. Forde, San Anselmo, \$68,757.83.

TRINITY COUNTY—Across Trinity River near Douglas City, repairing 2 125' steel deck truss spans. District II, Route 20, Section A. Trewitt-Shields & Fisher, Fresno, \$20,650; E. E. Smith, Eureka, \$24,330; A. Frederick Anderson, Oakland, \$27,891; A. Soda & Son, Oakland, \$30,725; Mercer Frazer Company, Eureka, \$33,224. Contract awarded to Fred J. Maurer & Son, Eureka, \$19,900.

VENTURA COUNTY—Between Los Angeles County line and Timber School, about 3.0 miles in length to be graded and plant-

Route of Proposed Bayshore Freeway

(Continued from page 13)

eadero Road south of Palo Alto. The construction of complete grade separation facilities at these various locations will depend upon the location and extent of improvements in this area.

The proposed future separation at Chestnut Street in Redwood City will eliminate the only open railroad crossing remaining on this route, and will also provide crossing facilities for traffic to the industrial area east of the highway.

The area traversed by this section is potential future residential, industrial and urban areas, and although at present undeveloped (except through East Palo Alto), is rapidly being subdivided into residential areas.

At the present time it would appear that the first separations should be considered at junction with Willow Road and University Avenue in Palo Alto, to be followed by structures at Chestnut Street in Redwood City and Embareadero Road south of Palo Alto. As in previous cases the first stage of divided highway construction without grade separation will greatly increase the safety factor for travel on this highway.

The area through East Palo Alto presents a particularly difficult problem due to the many business establishments now existing on either side of the present road, and will require considerable study for final design.

CARS USE MOST GAS IN AUGUST

A recent report indicates that in 1939, as in 1938, the greatest consumption of gasoline was in August. In that month motorists and others bought an average of 70,514,000 gallons of gasoline a day. Better cars, better roads, and better gasoline apparently have leveled out the use of automobiles and the gasoline demand curve appreciably, however, for even in the lowest month, January, the average daily consumption totaled 49,959,000 gallons. Greatest monthly increase in consumption last year was in June, which recorded a 10.3 per cent gain over June, 1938.

mix surface and Portland cement concrete pavement to be placed. District VII, Route 2, Section A. Basich Bros., Torrance, \$119,321; J. E. Haddock, Ltd., Pasadena, \$124,447; Maceo Construction Co., Clearwater, \$125,739; Oswald Bros., Los Angeles, \$126,547; Dimmitt & Taylor, Los Angeles, \$133,004; Sander Pearson, Santa Monica, \$136,340. Contract awarded to Griffith Co., Los Angeles, \$116,193.60.

Keaton Speaker at Opening of Oregon Highway

DEPUTY Director of Public Works, Morgan Keaton, was the official representative of Governor Culbert L. Olson and one of the speakers at the opening of the Willamette Highway in Oregon on July 30th, when the new highway was dedicated with ceremonies at the east entrance to the new highway tunnel at Salt Creek Falls.

The Willamette Highway, which is Oregon Highway 58, begins at a junction with the Pacific Highway about 7 miles south of Eugene and runs in a southeasterly direction to connect with Highway 97, 10 miles south of Crescent. The route then follows Highway 97 to Klamath Falls into California and connects again with Pacific Highway at Weed.

It is claimed that the mileage will be shortened at least 16 miles and the driving time four hours, between Portland and San Francisco.

Meyers Grade Relocation Opened

(Continued from page 19)

rama of the Lake Tahoe basin. The transition is made over a sweeping summit curve, widened and safeguarded.

The descent that follows is on a roadway where width, curvature, grade and sense of security are in marked contrast to the former road. The new road will facilitate maintenance, especially in providing reasonably safe conditions when snow removal is required to keep the route open. Similar road standards will apply when the entire grade can be reconstructed to Meyers.

The Public Road Administration officials in charge of the project are: Dr. L. I. Hewes, chief of Western Region; C. H. Sweetser, District Engineer; Levant Brown, Senior Highway Engineer, in charge of Forest and Park roads construction; E. C. Brown, Senior Highway Engineer, as Supervising Engineer, and M. M. Flint, Resident Engineer.

State of California

CULBERT L. OLSON, Governor

Department of Public Works

Headquarters: Public Works Building, Twelfth and N Streets, Sacramento

FRANK W. CLARK, Director of Public Works

FRANZ R. SACHSE, Assistant Director

MORGAN KEATON, Deputy Director

CALIFORNIA HIGHWAY COMMISSION

LAWRENCE BARRETT, Chairman, San Francisco
LEONER W. NIELSEN, Fresno
AMERIGO BOZZANI, Los Angeles
BERT L. VAUGHN, Jacumba
L. G. HITCHCOCK, Santa Rosa
WALTER CHAMBERS, Secretary

DIVISION OF HIGHWAYS

C. H. PURCELL, State Highway Engineer
G. T. MCCOY, Assistant State Highway Engineer
J. G. STANDLEY, Principal Assistant Engineer
R. H. WILSON, Office Engineer
T. E. STANTON, Materials and Research Engineer
FRED J. GRUMM, Engineer of Surveys and Plans
R. M. GILLIS, Construction Engineer
T. H. DENNIS, Maintenance Engineer
F. W. PANHORST, Bridge Engineer
L. V. CAMPBELL, Engineer of City and Cooperative Projects
R. H. STALNAKER, Equipment Engineer
J. W. VICKREY, Safety Engineer
E. R. HIGGINS, Comptroller

DISTRICT ENGINEERS

E. R. GREEN, District I, Eureka
F. W. HASELWOOD, District II, Redding
CHARLES H. WHITMORE, District III, Marysville
JNO. H. SKEGGS, District IV, San Francisco
L. H. GIBSON, District V, San Luis Obispo
E. T. SCOTT, District VI, Fresno
S. V. CORTELYOU, District VII, Los Angeles
E. Q. SULLIVAN, District VIII, San Bernardino
S. W. LOWDEN (Acting), District IX, Bishop
R. E. PIERCE, District X, Stockton
E. E. WALLACE, District XI, San Diego

SAN FRANCISCO-OAKLAND BAY BRIDGE

RALPH A. TUDOR, Principal Bridge Engineer, Maintenance and Operation

DIVISION OF WATER RESOURCES

EDWARD HYATT, State Engineer, Chief of Division
GEORGE T. GUNSTON, Administrative Assistant
HAROLD CONKLING, Deputy in Charge Water Rights
A. D. EDMONSTON, Deputy in Charge Water Resources Investigation
R. L. JONES, Deputy in Charge Flood Control and Reclamation
GEORGE W. HAWLEY, Deputy in Charge Dams
SPENCER BURROUGHS, Attorney
GORDON ZANDER, Adjudication, Water Distribution

DIVISION OF ARCHITECTURE

ANSON BOYD, State Architect
W. K. DANIELS, Assistant State Architect
P. T. POAGE, Assistant State Architect

HEADQUARTERS




H. W. DeHAVEN, Supervising Architectural Draftsman
C. H. KROMER, Principal Structural Engineer
CARLETON PIERSON, Supervising Specification Writer
J. W. DUTTON, Principal Engineer, General Construction
W. H. ROCKINGHAM, Principal Mechanical and Electrical Engineer
C. E. BERG, Supervising Estimator of Building Construction

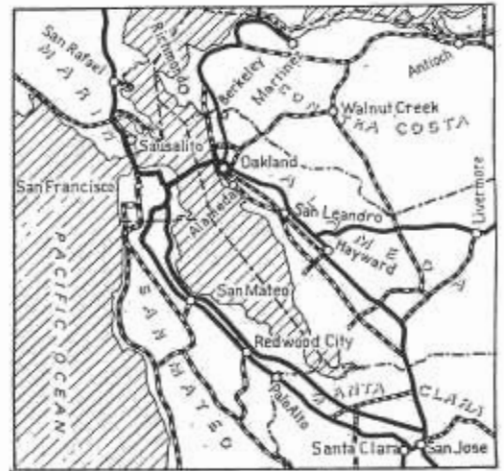
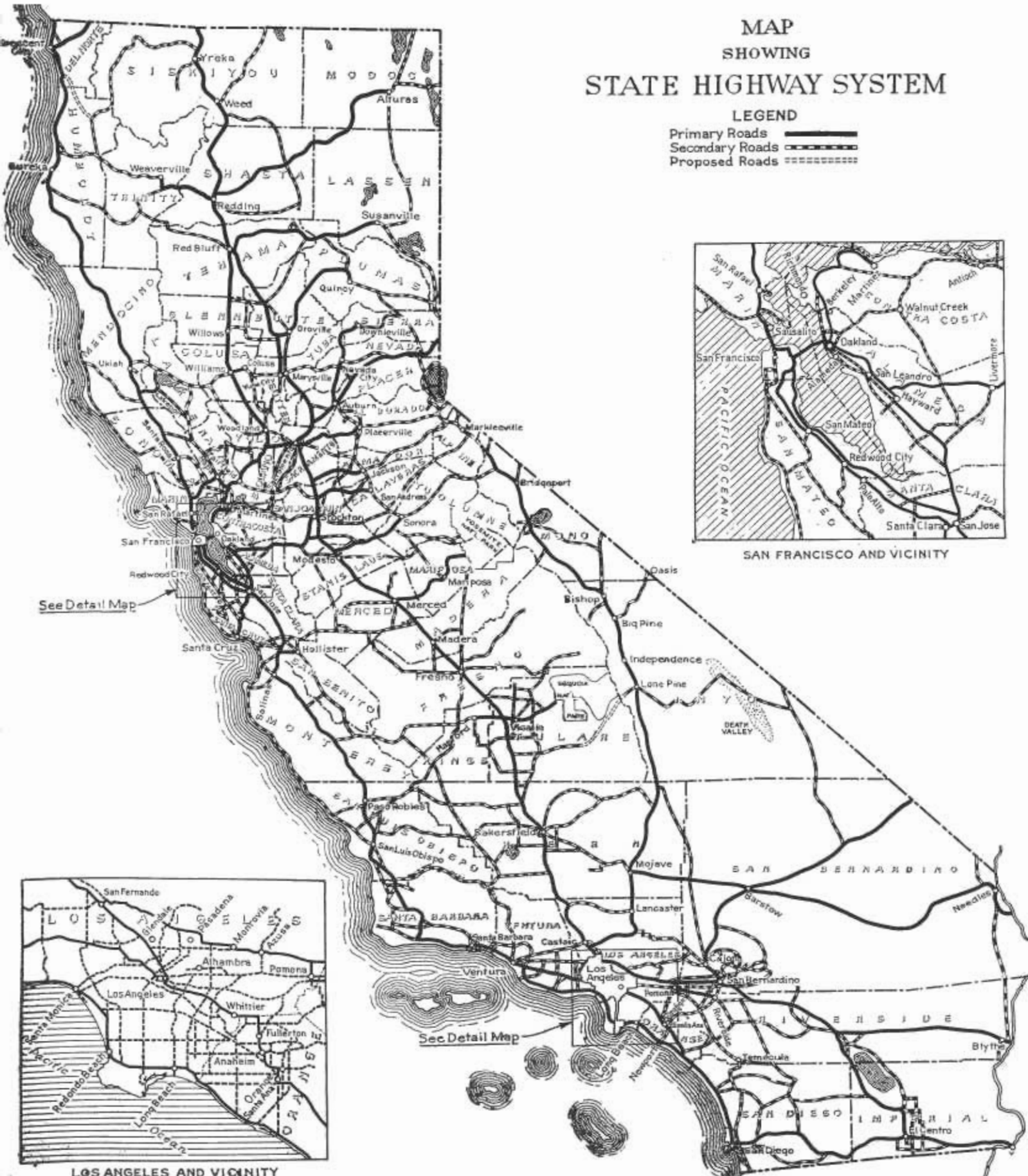
DIVISION OF CONTRACTS AND RIGHTS OF WAY

C. C. CARLETON, Chief
PHIL F. GARVEY, Assistant Chief
FRANK B. DURKEE, Attorney
C. R. MONTGOMERY, Attorney
ROBERT E. REED, Attorney



MAP SHOWING STATE HIGHWAY SYSTEM

LEGEND
 Primary Roads 
 Secondary Roads 
 Proposed Roads 



SAN FRANCISCO AND VICINITY



LOS ANGELES AND VICINITY

See Detail Map

See Detail Map