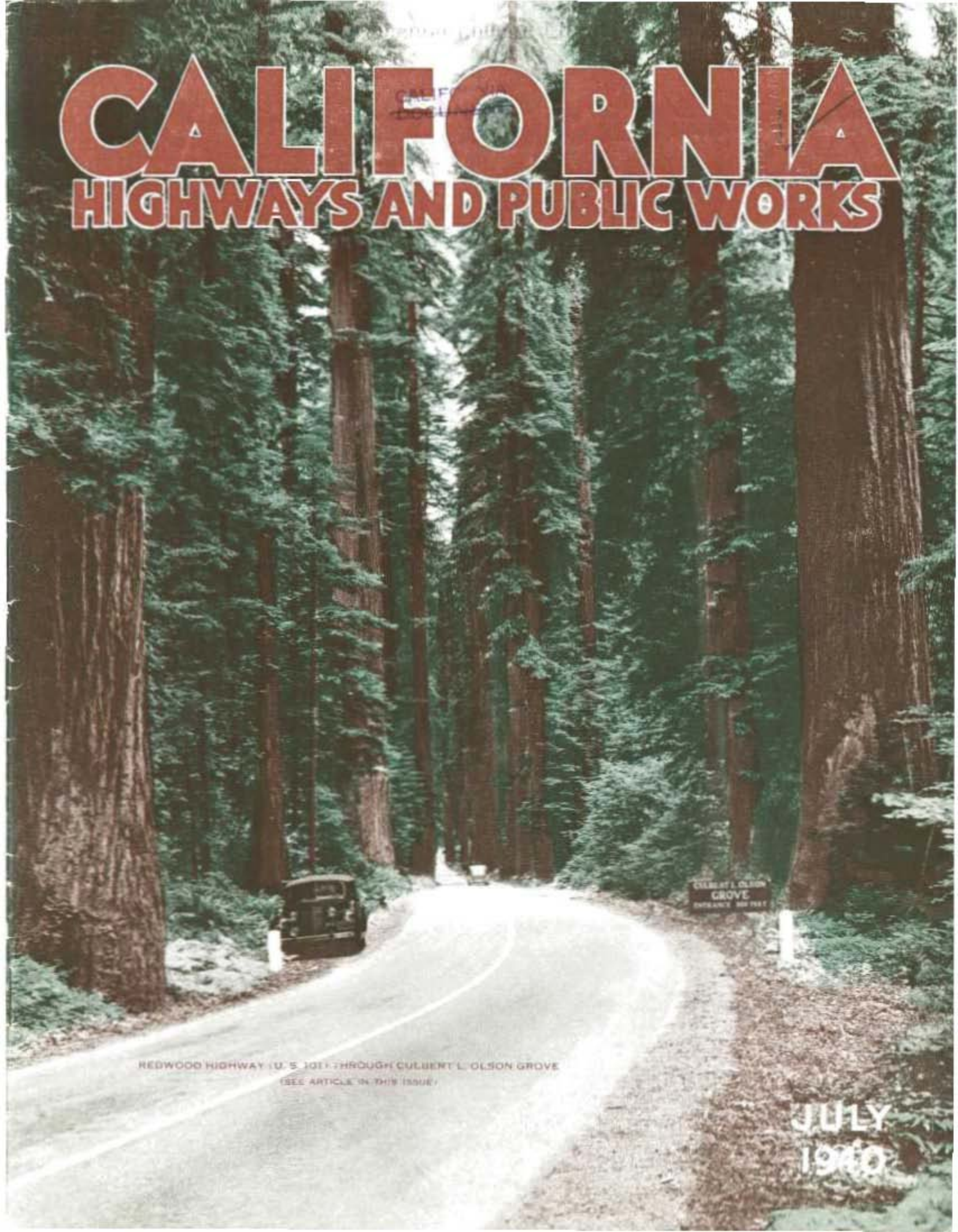
CALIFORNIA
HIGHWAYS AND PUBLIC WORKS



REDWOOD HIGHWAY (U. S. 101) THROUGH CULBERT L. OLSON GROVE
(SEE ARTICLE IN THIS ISSUE)

JULY
1940

CALIFORNIA HIGHWAYS AND PUBLIC WORKS

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

FRANK W. CLARK, Director C. H. PURCELL, State Highway Engineer J. W. HOWE, Editor K. C. ADAMS, Associate Editor

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$24,978,841 Gasoline Tax Funds Allocated to Cities and Counties for Year Ended June 30, 1940

APPORTIONMENT of gasoline tax revenues available for counties, cities, and the State Division of Highways during the fiscal year ending June 30, 1940, have been completed in accordance with the provisions of section 13 of the Motor Vehicle Fuel License Tax Act. The total apportioned to counties and cities during the year amounted to $24,978,841.82.

Total collections during the year amounted to $54,663,653.53 which, after refunds of $4,515,915.57 and expenses of the State Controller and Board of Equalization amounting to $190,054.31, left $49,957,683.65 available for apportionment.

Of the above amount available for apportionment the counties received one-third, or $16,652,561.22. The apportionment to counties is determined in the following manner:

1. Each county first receives a minimum of $7,500.

2. The remainder is apportioned to the counties in the proportion that the registration of vehicles in each of such counties bears to the total vehicles registered in the State.

After apportionment to the counties the remaining two thirds, in this case $33,305,122.43, is paid into the State highway fund to be expended as the act says, "in accordance with law for the payment of all necessary charges incurred in carrying out the provisions of the Streets and Highways Code, and of any other law relating to the acquisition of real property for and the construction, maintenance or improvement of highways."

Section 194 of the Streets and Highways Code requires that the net revenue from one quarter cent per gallon of tax or one eighth of the amount paid into the State highway fund be expended for the construction, improvement or maintenance of city streets of major importance other than State highways. The apportionment to the various cities of the State is made on the basis of population as determined by the last Federal census.

Section 203 of the Streets and Highways Code requires the expenditure of another one-quarter cent of net revenue on State highway routes within cities. This apportionment to the several cities is also made on a population basis.

These apportionments are based on the old 1930 Federal census. Official 1940 census figures are not expected to be available for use prior to the January, 1941, apportionment.

With a fixed amount of gasoline tax and "in lieu" tax funds available for apportionment among the 285 incorporated cities in the State, the increase over the 1930 census will result in a smaller per capita apportionment. It is quite probable that some cities, even though they have an increase in population, will receive less apportionment than formerly if their percentage increase is less than the average increase in population of all the cities in the State.

Municipal population in California, according to the 1930 census, was 4,304,590. For 1940, it is estimated that it will probably exceed 4,500,000.

The gasoline tax revenues described above are for the three-cent tax levied by the State and does not, of course, include the one-cent tax levied by the Federal government up to July 1, 1940.

In the following tabulations are shown:

1. Apportionments to the counties amounting to $16,652,561.22 made during the fiscal year from the 3-cent gasoline tax collected by the State.

2. Apportionments to the cities of one-quarter cent funds for city streets and State highways within cities for the fiscal year amounting to $8,326,280.60, making in all,

3. A grand total of $24,978,841.82 of gasoline tax funds apportioned to cities and counties during the past fiscal year.

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Increase of Federal Gasoline Tax Rate

Under laws passed by Congress providing for national defense, Federal gasoline taxes have been increased by one-half a cent and the additional tax became effective July 1.

Prior to that date, the Federal tax on gasoline was one cent per gallon and it has thereby been increased to one and one-half cents per gallon.

The Federal tax on oil was four cents per gallon, or one cent per quart prior to July 1, 1940, and four and one-half cents per gallon or one and one-eighth cents per quart thereafter.

The State tax on gasoline remains at three cents per gallon, and the increase of the Federal tax will not affect the State income from this source unless the additional one-half cent Federal tax results in a decrease in gasoline consumption by the motoring public or an increase in the sale price of gasoline by the producers.

View of Cahuenga Freeway looking southeasterly, showing underpass beneath Pacific Electric tracks at intersection of Highland and Cahuenga avenues.

Cahuenga Freeway Unit Opened

By S. V. CORTELYOU, District Engineer

SIGNALIZING an important step in the program which contemplates the eventual elimination of a "bottleneck" condition which has existed in historic Cahuenga Pass in Los Angeles County for three decades, the first section of the Cahuenga Pass Freeway, State Highway Route No. 2, was officially opened to public traffic on June 15, 1940.

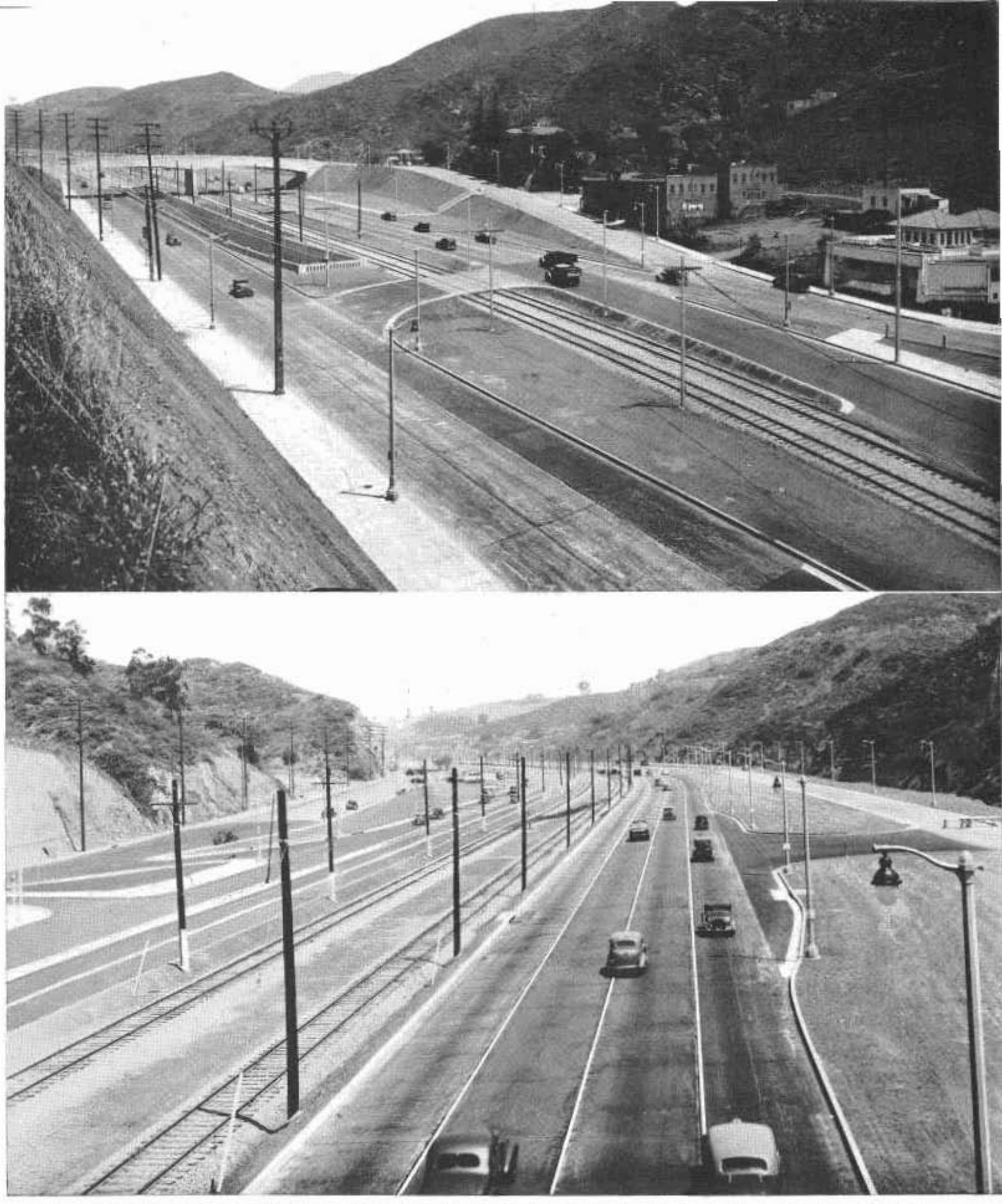
This project was a cooperative one participated in by the Federal government, the State and the city of Los Angeles. Therefore, it was highly appropriate that on behalf of the State and the Federal government, sponsors of practically all of the funds expended on this new highway, Governor Culbert L. Olson and Regional Director K. A. Godwin of the Public Works Administration, should join with Mayor Fletcher Bowron of Los Angeles and other public officials and civic leaders in dedicatory ceremonies attendant upon the formal opening of Cahuenga Pass Freeway.

Celebration of the opening of the new link in the State Highway System was arranged for by the Hollywood Chamber of Commerce, as was the luncheon at the Hollywood Bowl which followed. At the luncheon, Highway Commissioner Amerigo Bozzani of Los Angeles expressed the regrets of Director of Public Works Frank W. Clark over his inability to be present, due to official business which required his presence in the north.

With the dedication of Cahuenga Pass Highway there was made available for the public the first unit of one of the most beneficial highway projects ever undertaken in the Los Angeles metropolitan area.

Since Los Angeles was a small pueblo, Cahuenga Pass has been a main artery of traffic. Being the only pass through the Hollywood hills, which separate the San Fernando Valley and the coastal plain, it was only natural that the first trails and wagon roads running northwesterly from Los Angeles should traverse this pass.

When automobiles began to come into general use, travel over this route increased rapidly. With the astonishingly rapid growth of Holly-



Views of Cahuenga Freeway with 8 traffic lanes divided by Pacific Electric tracks. At top—looking north from Cahuenga-Highland intersection showing Pilgrimage Play bridge in background and subway underpass to Cahuenga Avenue. At bottom—looking north from Pilgrimage Bridge. Note entrances to service roads on right and left with intersectional islands.

Group at dedication ceremony of Cahuenga Pass Freeway. Left to right: Tom Keene, honorary mayor of Sherman Oaks; Governor Culbert L. Olson; John B. Kingsley, President of Hollywood Chamber of Commerce; Mayor Bowron of Los Angeles; Gene Autrey, honorary mayor of North Hollywood; Mayor F. C. Tilson of Burbank and Richard Arlen, honorary mayor of Sunland. The man whose head appears between Mr. Kingsley and Mayor Bowron is State Highway Commissioner Amerigo Bozzani.

wood and western Los Angeles the volume of traffic increased to the point where Cahuenga Pass became one of the most troublesome "bottlenecks" in Southern California.

The original two-lane pavement laid through the pass was very soon found to be inadequate and was widened and otherwise improved in successive stages until a four-lane pavement with a parking strip on each side was provided. But in the meantime traffic increased more rapidly than highway facilities and almost daily during the peak hours traffic was seriously delayed and traffic accidents became more frequent. Streets and interurban railways intersecting at grade with consequent large turning movements created an additional traffic problem which was extremely difficult to solve.

In the meantime, the "Freeway" idea was taking definite form as a means of converting our main metropolitan highways into thoroughfares free from traffic interference and delays. This suggested itself as the solution of the Cahuenga Pass traffic problem.

Tentative plans were proposed by City Engineer Lloyd Aldrich of Los Angeles for a freeway to extend from the intersection of Cahuenga and Highland Avenue in Hollywood northerly through the pass for approximately three miles to Vineland Avenue and Ventura Boulevard as a part of the Hollywood Parkway Project from downtown Los Angeles to San Fernando Valley through Cahuenga Pass.

State Highway engineers cooperated with the city in the plans for the work and recommended to Director of Public Works Clark and the California Highway Commission that the State finance the sponsor share of a Public Works Administration project to carry out the construction of this freeway.

EIGHT 12-FOOT LANES

The San Fernando Valley line of the Pacific Electric Railway was located through Cahuenga Pass many years ago and plans for the Freeway provided for relocating the railroad and using it as a central dividing strip between opposing lines of vehicular traffic.

The main Cahuenga Boulevard traffic will be carried on eight twelve-foot traffic lanes—four being for inbound and four lanes for outbound traffic. These are of heavy concrete construction designed to carry the largest legal truck loads. Thirty-foot service roads will handle local traffic on the outside of the main "freeway" lanes with channelized connections to the "Freeway" at convenient locations.

A comprehensive dividing plan has been worked out for the intersection of Cahuenga Boulevard and Highland Avenue. Incoming traffic wishing to continue along Highland keeps in the right-hand two lanes. The two left-hand lanes curve to the left and pass under the Pacific Electric tracks into Cahuenga Boulevard in Hollywood. Similarly, outbound traffic on Highland Avenue has the choice of turning right on Cahuenga or continuing through the pass without traffic interference.

BRIDGE TO SERVICE ROADS

The Pilgrimage Play Bridge crosses the railroad and "freeway" to connect service roads on each side of the freeway. A short distance to the north of the Pilgrimage Play Bridge, the Mulholland Highway Bridge crosses over the freeway and railroad.

Actual construction was started

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Automobile Toll Cut to 25 Cents on San Francisco-Oakland Bay Bridge

THE goal of a 25 cent passenger automobile toll on the San Francisco-Oakland Bay Bridge, which was set by Governor Culbert L. Olson and Director of Public Works Frank W. Clark, was attained on June 24, when the California Toll Bridge Authority, meeting in Sacramento, adopted a new schedule of bridge charges, effective July 1, which constituted the fourth reduction in tolls within twelve months.

In a written report to the Governor Director Clark said that increased Bay Bridge traffic developed as a result of the abandonment of service by the Southern Pacific Golden Gate ferries on May 16 fully warranted this additional toll reduction.

REVENUES SUFFICIENT TO MEET PAYMENTS

The report stated that with the vehicular toll reduced to a 25 cent base on July 1, the calculated bridge revenue for the twelve-month period July 1, 1940, to June 30, 1941, would be sufficient to more than care for required disbursements such as interest payments, minimum reserve fund payments and other costs. Estimated revenues for the year beginning July 1 are as follows:

Revenue from vehicular traffic	$3,351,605
Revenue from bridge railway passengers	497,005
Revenue from rents, accrued interest, etc.	86,699
Total calculated revenue	$3,935,309

During the same period, Director Clark's report said, earnings required in accordance with the Bond Resolution would amount to $3,804,290, leaving an indicated excess of calculated earnings over requirements of $131,019.

The new 25 cent toll applies to automobiles, ambulances, hearses, taxis, light delivery automobiles and trailers drawn by automobiles. The charge for tri-cars is reduced from 25 cents to 20 cents, and proportionate reductions have been ordered for trucks and truck-trailers, vehicles requiring special permits per ton gross weight and for vehicles not otherwise specified.

COMMUTATION RATES ALSO REDUCED

Commutation books for passenger automobiles containing from 50 to 54 one-way trip tickets were reduced from $10.75 to $10.00 and commutation books for passenger automobiles containing 40 one-way tickets good for the calendar month were reduced from $9 to $8.

In announcing the new tolls, Director Clark said, "It has been our determination since Governor Olson assumed office to bring the vehicular toll on the Bay Bridge down to a 25 cent basis. As Chairman of the Toll Bridge Authority, the Governor has succeeded in making three toll reductions to date, the first on June 15, 1939, from 50 cents to 40 cents; the second on January 1, 1940, from 40 cents to 35 cents, and the third on May 25, 1940, from 35 cents to 30 cents."

Effective July 1, 1940

Class	Vehicle	New Rate	Old Rate
1	Automobiles, ambulances, hearses, taxis, light delivery automobiles	$0.25	$0.30
2	Trailers drawn by automobiles	.25	.30
3	Trucks and truck trailers, including any load:		
	Gross weight up to 20,000 lbs., per ton, at	.15	.175
	Additional gross weight from 20,000 lbs. to 40,000 lbs., per ton, at	.10	.15
	Additional gross weight over 40,000 lbs., per ton, at	.05	.125
	Minimum charge	.40	.50
4	Local Key System buses, per passenger carried	.025	.025
5	Other buses		
	a. (To remain in effect until rate 5b below is ordered)		
	Bus with driver	.75	.75
	Passengers in excess of driver, each	.05	.05
	b. (To be made effective on order of the Director of Public Works)		
	Bus with driver and passengers	1.00	1.00
6	Motorcycles	.15	.15
7	Tricars	.20	.25
8	Vehicles requiring special permit:		
	Per ton gross weight*	.15	.20
	Minimum charge*	1.00	1.00
9	Vehicles not otherwise specified:		
	Per ton gross weight	$0.15	$0.175
	Minimum charge	.40	.50
	The following monthly commutation rates are prescribed.		
10	Commutation—For passenger automobiles only. Book to contain from 50 to 54 one-way trip tickets (depending on length of calendar month) good for the calendar month. In addition the book will contain twenty (20) provisional tickets, each good for a one-way trip upon presentation and payment of twenty cents (20¢), provided all regular tickets have been used. Additional provisional tickets for the same calendar month will be issued upon surrender of the complete empty cover—front and back—of a $10.00 commutation book of the same month.	10.00	10.75
11	Commutation—For passenger automobiles only. Book to contain 40 one-way trip tickets, good for the calendar month. In addition the book will contain ten (10) provisional tickets, each good for a one-way trip upon presentation and payment of twenty cents (20¢), provided all regular tickets have been used. Provisional tickets in excess of the above will not be issued to purchasers of this book.	8.00	9.00

* Vehicles exceeding limits of special permit to be assessed double this toll.

Super-Highway on Viaduct to Break San Rafael Bottleneck

By F. W. PANHORST, Bridge Engineer

A CONGESTED traffic situation now prevails in the city of San Rafael. Since the opening of the Golden Gate Bridge traffic has increased in volume and its free and uninterrupted flow has been blocked.

Traffic counts taken in July, 1939, show 21,562 vehicles on Sunday and 12,538 on Monday near the south city limits. At the north city limits the counts are 19,441 and 10,298, respectively for Sunday and Monday. These counts indicate an average daily traffic of approximately 13,500 vehicles.

This represents the traffic count of vehicles passing through the city and not necessarily the cross traffic and that moving within the city itself. The pressure of this heavy traffic, which is dumped at the city boundary and forced to find its way through the narrow, tortuous section of the city, operates as a "bottleneck."

Congestion is not caused entirely by the number of vehicles using the street but by the speed with which vehicles can move along it. Widening the street through this already crowded district would probably only increase the difficulty, as it would be necessary to take care of contiguous property by parallel service roads with numerous connections and cross streets. Subsequent improvements would invite more "on and off" movement and thus create more congestion, delay and hazard.

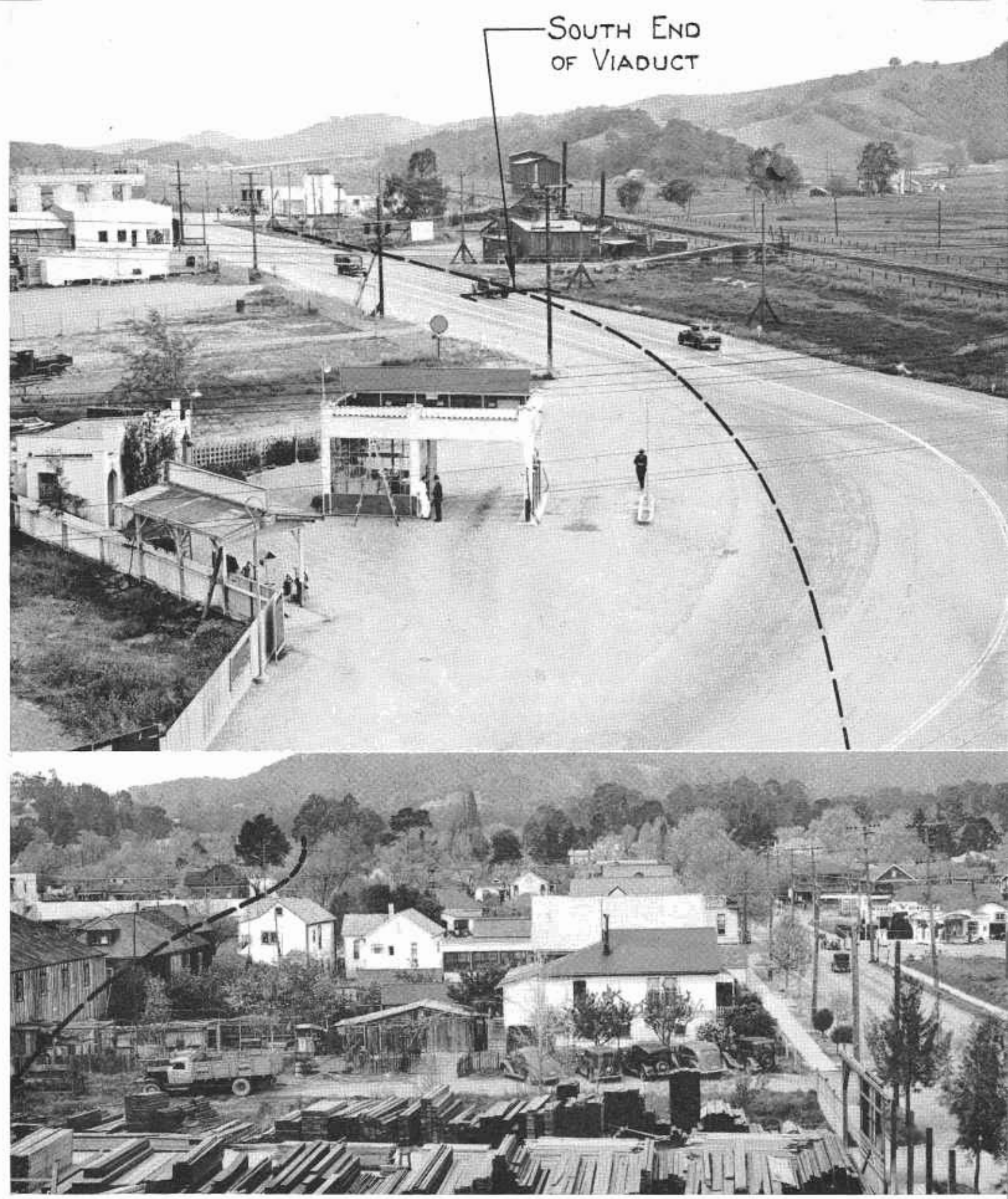
Consideration of a ground level design to alleviate the situation presented serious obstacles. The route through the southern portion of the city crosses a number of city streets at right angles over which traffic moves between the east and west parts of town. Through traffic would thus be presented with a serious delay by local cross traffic.

Traffic signals would only add to the delay and congestion. The significant point is that 75 per cent of the Redwood Highway traffic reaching San Rafael passes on through the city. It therefore must be given dominant consideration.

Economic studies indicated that the only permanent solution for breaking the "bottleneck" was to construct an elevated superhighway on a viaduct for a distance of approximately two thousand feet. The viaduct must be high enough to provide grade separations with the important cross city streets—Mission, Fifth, Fourth, Third and Second.

On June 12 bids were received for construction of the San Rafael Viaduct, which, when completed, will open up the congested situation.

The new alignment, instead of utilizing an existing street, is projected half-way between Irwin Street and the Northwestern Pacific Railroad. This results in the least possible disturbance to property values and improvements. A clear right-of-way width of one hundred feet has been provided. This is considered sufficient to cover any future widening which may take place.



Location of proposed superhighway viaduct in relation to existing buildings in San Rafael is shown by black dash lines in above pictures. Buildings are being removed under a right-of-way contract.

Construction of reinforced concrete arch culvert to carry waters of Irwin Creek under four streets beneath viaduct through San Rafael.

Under a right-of-way contract twelve homes, several small buildings, lumber storage sheds and a glove factory have been removed from the right-of-way within the limits of the viaduct.

The viaduct will have a total length of 2207 feet, six inches, and will be fifty-four feet wide, providing two twenty-five-foot roadways separated by a four-foot dividing strip with rolled curb. It will be a reinforced concrete slab and girder design, rigid frame and continuous type, with a total of sixty-seven spans varying in length from seventeen feet to fifty-seven feet six inches, and founded on timber foundation piles. While present construction will provide for four lanes of traffic, the viaduct is designed to allow for future widening.

The superstructure design will be of two types: The northerly nine spans and the southerly twenty-two spans will be of reinforced concrete slab construction, and the interior spans will be of the reinforced concrete girder type. Slab spans will provide minimum clearance for the traffic on cross streets. They will allow a relatively lower grade and obtain improved design economics, especially since the grade line at the ends of the structure is a limiting factor. Transitions from the slab spans to the girder spans are designed continuous. Expansion joints are placed from 120 feet to 150 feet apart.

The structure occupies the creek channel of Irwin Creek, which drainage basin carries the run-off from practically all the streets in the eastern portion of the city. It was therefore necessary to design the bridge with four-column bents or piers to provide a new channel for Irwin Creek along the centerline of the viaduct between the two center columns. Reinforced concrete box culverts will be constructed under Fifth Avenue, Fourth Street, Third Street and Second Street to carry the channel water.

The whole structure is to be founded on piles. Piles are to be driven vertically in the northerly eight hundred feet, while in the remaining portion the outside piles of footings will be driven on a batter. This will be done because of the unstable material of the soil near the surface, which is not conducive to sustaining lateral pressures resulting from temperature changes, earthquakes, wind and live loads.

In a rigid frame structure such as this, where the columns or piers are rigidly fixed to the deck system, the problem of foundations assumes more involved aspects than with the gravity type. In a portion of the structure, where the elevation of footings will be above permanent ground water, treated piles are to be used; whereas the remainder of the piles, which will be below the elevation of permanent ground water and therefore not subjected to alternate wet and dry conditions, will be untreated.

The southerly 1120 feet of the structure will be on a 1050-foot radius curve. This will be superelevated or banked in accordance with present standards to accommodate safely the fast-moving traffic. At the point of maximum superelevation the west gutter will be four feet higher than the east gutter. The centerline grade has been adjusted by means of a vertical curve. This will eliminate the appearance of a decided dip in the west handrail where the transition from normal crown to the superelevated section takes place.

A unique feature of the structure is that the girders will be curved concentrically with the centerline. This will offer a pleasing and uniform view from underneath. Because the piers have been placed radially to the curve, the use of curved girders will simplify deck form work and also will provide a uniform cantilever distance from the outside girder to the deck.

No free water will be allowed to drip from the roadway to the ground. All rain water which collects on the deck will be carried down the inside columns through downspouts and drainage pipes to the Irwin Creek Channel below the structure.

Electrical conduit will be installed throughout the viaduct to provide for the future placing of luminaires.

The slab spans as well as the girder spans will be constructed on regular

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Modernizing of State Highway System Would Pay Dividends

By FRED GRUMM, Engineer of Surveys and Plans

Following is an address delivered by Mr. Grumm at a recent meeting of the State-wide highway committees of the State Chamber of Commerce in San Francisco.

THE subject of modernization of our State Highway System should be approached with a certain definite understanding. We can assume as an axiom that the State highway transportation system, as now constituted, is a pay-as-you-go public enterprise. It would be wrong to say that it is a nonprofit enterprise because profit can be shown both to the man who foots the bill for the improvement and also to the State as a whole, and in general, possibly even more definitely to the lands and the resources of the State. It is a public business which must be conducted on an economic basis.

This business is not so old—its beginnings are within the adult memories of most of us and it should, therefore, be unnecessary to devote much time to the past history of the growth of the State highway transportation system.

ECONOMIC FACTORS

Its exceptional development and extension has been the direct result of an insistent and continuing public demand for an adequate highway network. This demand has not been particularly concerned with economic considerations — the factor which plays so important a part in the development of privately owned and financed transportation systems or businesses. The people insisted upon the creation of a system of roads to serve public convenience and necessity and got them.

Economic factors were not necessarily disregarded but it is well to emphasize that highway authorities were required to construct and maintain a considerable mileage of highways as a result of public demand. Present or potential traffic on many of these roads will not supply sufficient gas tax revenues to meet capital outlay charges for a long time in the future, if ever. In other words, present economic considerations have to that extent been made subservient to the general public good.

It is acknowledged to be a good practice to occasionally take an inventory of a business in order to be completely informed on its condition as well as its needs.

A comprehensive inventory of a great public enterprise, the California State highway transportation system, has been completed. This inventory may be better known as the Highway Planning Survey, which has been conducted as a cooperative undertaking by the State Highway Department and the Public Roads Administration.

While the applications to which this information can be put are infinite, the main purpose of the study was to present a complete and authoritative picture of the existing publicly owned transportation system. Before we could intelligently discuss the need for modernization, we had to know what we now possessed, what its condition was, and to what extent it was adequate.

Through this Highway Planning Survey we have investigated and studied the physical conditions, the character of road, the curvature, the grade, the surface, the width, and the bridges. We have studied the volume, type and character of traffic using these roads and their method of operation. We have investigated the type and extent of the loads conveyed by commercial vehicles and the probable future growth of this as well as other traffic. We have studied the progress we are making and its effect upon traffic, and have compared the physical conditions with the requirements imposed. We have discovered, as a result, many surprising things. These have led us to a study of the financial situation, especially when we find that so many of our highways are not adequate for the demands placed upon them and that as a result the traveling public is subjected to discomfort and hazard and uneconomic operation.

To correct these faults, to increase the comfort of travel, to increase the safety, to make it possible to operate more economically, these highways must be brought to an adequate standard—they must be modernized.

Modernization of the Highways. What do we mean by that expression?

GREATER HIGHWAY WIDTH

1—It means widening our highways, widening the surface and the shoulders.

On the present highway system, we find 6549 miles of road and 725 bridges having a travelable way less than 20 feet in width. The safety of 28 per cent of all rural traffic is exposed to this hazard daily.

In September, 1937, the Division of Highways adopted an increased width of traffic lane. It was increased from the 10 foot width used in the past to 11 feet. In addition, more attention has been given to providing ample shoulders, not only in width but also in type of surface, by providing for a proper treatment of the shoulders.

2—Modernization also means correcting the deficiencies in surface types.

There are 2704 miles of intermediate surface type roads which should be paved and 155 miles of unsurfaced roads requiring either intermediate surface type or pavement.

Demands for so many projects and limitation of funds leads to the practice of substituting a lower and

(Continued on page 24)

Old La Playa Trail Becomes Modern 4-Lane Divided Highway

By BYRON N. SCOTT, Secretary California Highway Commission

CALIFORNIA'S yesterday and her future constituted the theme of ceremonies attendant upon the dedication of the new divided highway on Rosecrans Boulevard in San Diego on June 5. It was my pleasure to represent Governor Culbert L. Olson and Director of Public Works Frank W. Clark on this occasion.

Army, Navy and Marine Corps officers and city, county and State officials, chamber of commerce executives and civic leaders of San Diego participated in the celebration.

In the early days of California Rosecrans Boulevard was known as La Playa Trail, a route over which pioneers traveled from Point Loma, where the ships from far lands anchored, to the soldier camps and missions of the Franciscan Padres on the mainland.

HISTORY REVIEWED

Speakers took for their subject the various periods in the history of California, dating back to the days of Father Junipero Serra and the Spanish administration, the years of Mexican occupation, and the epochal days when the United States took over California.

As each speaker discussed the period of history assigned to him, Spanish and Mexican flags and the Bear Flag of California and the Stars and Stripes were raised by men of the Army, Navy and Marine.

"The Spanish influence started nearly four centuries ago still lives in San Diego," said J. M. Plaza, who talked of the history-making years when the padres and soldiers of old Spain ruled California.

ROLE OF MEXICO

George Montijo, a native son, discussed the role that Mexico played in the development of San Diego and California during the time Mexico ruled the vast domain that was later to become the State of California.

Mr. Scott's Speech

"It is my pleasure and privilege to bring to you the greetings of Governor Culbert L. Olson, Director of Public Works Frank W. Clark and the California Highway Commission, and to present their compliments to the people and officials upon the completion of this highway project.

"It is another example of what we can do through our collective efforts. You people did your part, the city officials, cooperating with the State government, did their part and one of the oldest trails in the State becomes a beautiful thoroughfare.

"I know the Governor and Mr. Clark would have enjoyed an opportunity to participate in dedicating this piece of constructive work because they, as you and I, work to build—not destroy.

"These exercises have been colorful and stand as a shining example of our eagerness to associate ourselves with all peoples who, as we, desire to live in peace and harmony with our fellow men. Let that solidarity of interest and affection stand as a constant reminder to the trouble makers of the world that there is no place in the Americas for them. We love peace but will brood no interference from abroad. We wish to continue the work that we are doing in a constructive way such as this project. We don't want at any time to participate in the work of destruction such as is now going on in Europe. I know that the Governor and Mr. Clark join with me in this sentiment."

"We salute today the courage of those Americans who hoisted the Bear Flag at Sonoma on June 14, 1846, initialing final occupation of this State by the United States Government," said Carl Heilbron, manager of the San Diego Convention Bureau, whose subject had to do with the revolutionary years when General John C. Fremont and the American Army and Navy were making possible the annexation of California to the Union.

Highway Commissioner Bert Vaughn of Jacumba, Mayor P. J. Benbough of San Diego and Rear Admiral Joseph R. Defrees, commandant of the eleventh naval district, joined in cutting a ribbon officially opening the new highway.

IN SECONDARY SYSTEM

Rosecrans Boulevard is in the Secondary State Highway System, and the portion improved was from Lytton Street to Canon Street, a length of 1.92 miles. The new broad thoroughfare serves the Point Loma section as a connection to the business district, is the main highway to Fort Rosecrans, and is also the route to the Cabrillo National Monument, which is the westerly terminus of Route 12.

Just a few months ago this street consisted of a narrow, two-lane pavement, 20 feet in width, congested with traffic, with unsightly power poles down the side, and subject to flooding during storm periods. Now traffic is served by a beautiful divided highway, consisting of two 23-foot lanes of asphaltic concrete pavement, and 8-foot parking strips. The two lanes are separated by a planted dividing strip.

EXTENSIVE STORM DRAIN SYSTEM

New curbs and gutters were constructed at various locations, and the storm waters were provided for by an extensive system of storm drains.

Construction on the project was started in December of 1939 and all

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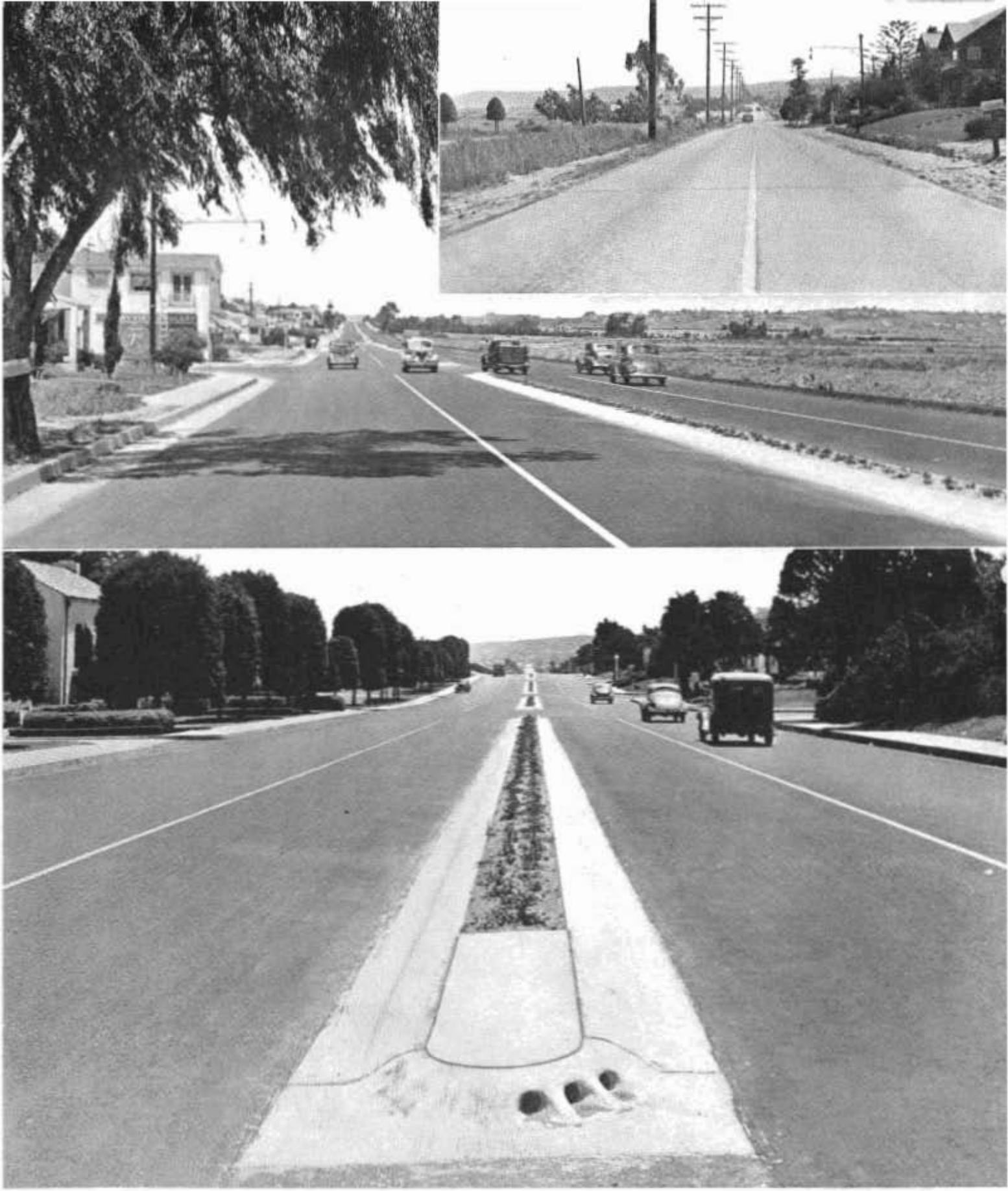


Rosecrans Boulevard in San Diego was originally the old La Playa Trail leading from Point Loma inland in the days of the Padres and the missions. In later years it was a narrow two-lane highway. Today it is a broad, 4-lane divided highway with two 23-foot traffic lanes separated by a planted and curbed dividing strip. The inset shows the old highway before improvement.

Pescadero Beach on San Mateo County Coast across which a right of way has been secured for State Highway 56.

Beaches, Lake and Island Acquired in Highway Right of Way Deal

By J. B. WOODSON, Right of Way Agent

IN THE course of studies for the location of a portion of the Coast Highway in San Mateo County between Tunitas and Lake Lucerne, consideration was given to the fact that this section of highway when completed would make readily accessible to the motorist many natural beauty spots along this stretch of coast.

The location follows the ocean quite closely but there were a number of spots where a narrow strip remained between the right of way required for the highway and the beach.

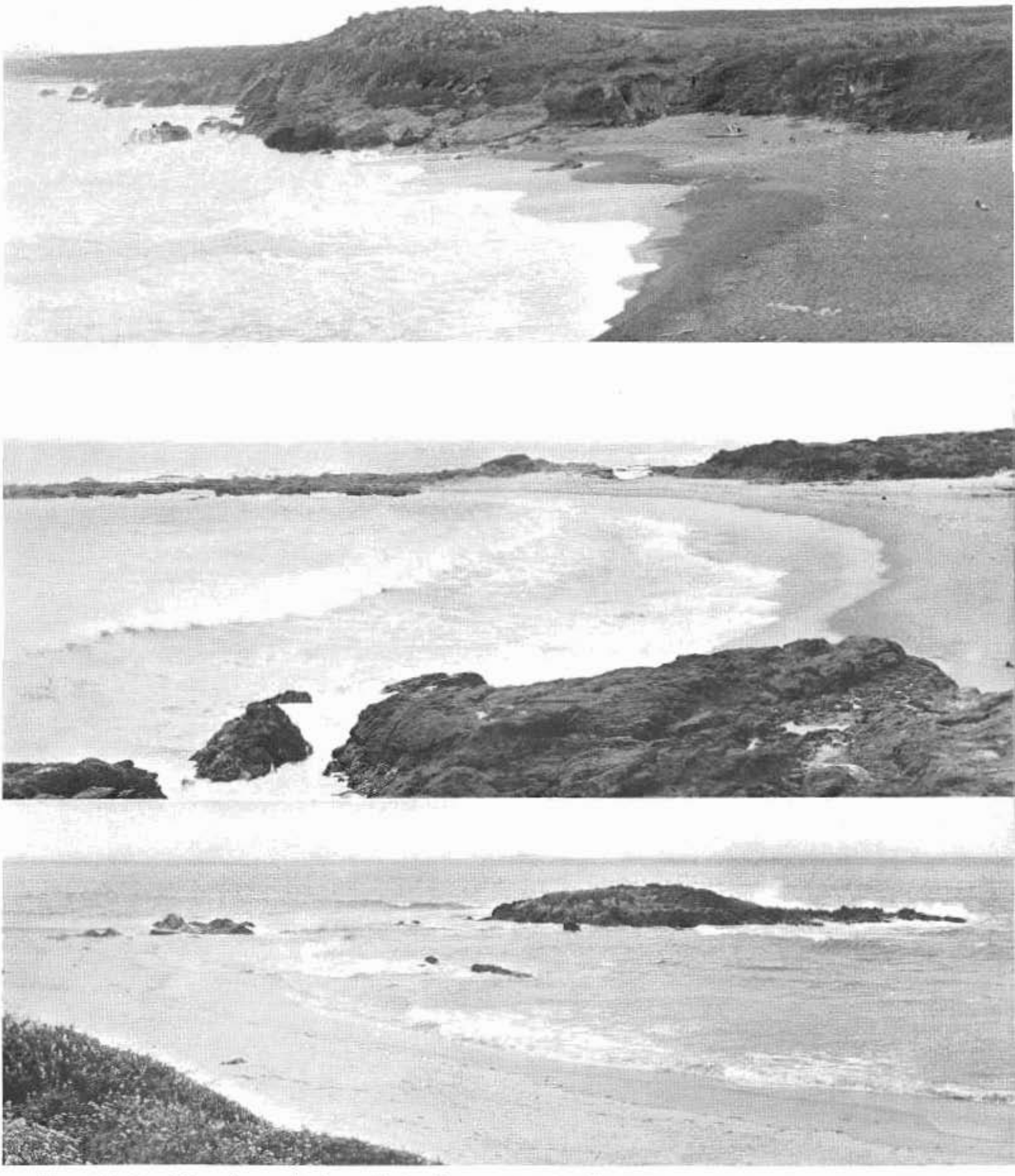
It seemed almost imperative that these unspoiled beaches and caves be preserved in their natural state for the enjoyment of the public. San Mateo County officials have a long, enviable record of acquiring recreational and scenic areas for the benefit of their citizens and visitors. They therefore gladly cooperated through the board of supervisors and the planning engineer, in securing many of these areas for the public.

RECREATIONAL VALUES PRESERVED

It was realized that in order to secure these areas at a reasonable figure purchase would have to be made in advance of the highway construction. Once this highway was open, many of these spots would be in demand as sites for hot dog stands, auto camps, sign boards, etc., and their value as real estate would be considerably enhanced while the recreational value of the region as a whole would be seriously impaired.

With these facts in mind the Division of Highways, acting in conjunction with the officials of San Mateo County, decided to purchase as much as possible of these coast lands. The State's Right of Way Department was delegated to make the negotiations. In so doing the plan was disclosed to the property owners so that they were perfectly cognizant of the proposal. By purchasing the lands necessary for the highway right of way in conjunction

(Continued on page 25)



Three of the beautiful small ocean beaches on the San Mateo coast acquired for public use through a State Highway right of way deal. At top—a portion of Pebble Beach containing varicolored pebbles, coveted for home decoration. Central picture—shows the charming, crescent beach line of Arroyo de las Frijoles (Bean Hollow). The bottom picture shows an island lot just below Pescadero Beach which through the right of way deal becomes public property together with a strip of level shoreline.

GASOLINE TAX APPORTIONMENTS TO CITIES AND

(Continued f

City	½¢ for State Highways and City Streets in Cities	1¢ for County Roads	Total
ALAMEDA CO.		$1,058,666.98	
Alameda	$67,637.16		
Albany	16,543.92		
Berkeley	158,525.40		
Emeryville	4,510.04		
Hayward	10,676.62		
Livermore	6,021.74		
Oakland	548,431.92		
Piedmont	18,018.94		
Pleasanton	2,388.22		
San Leandro	22,151.54		
Totals, Alameda Co.	$854,905.50	$1,058,666.98	$1,913,572.48
ALPINE CO.		$30,814.58	
No Cities	$0.00		
Totals, Alpine Co.	$0.00	$30,814.58	30,814.58
AMADOR CO.		$49,814.59	
Amador	$330.16		
Jackson	3,871.00		
Plymouth	662.20		
Sutter Creek	1,955.76		
Totals, Amador Co.	$6,819.12	$49,814.59	56,633.71
BUTTE CO.		$138,919.29	
Biggs	$893.90		
Chico	15,370.08		
Gridley	3,747.42		
Oroville	8,693.80		
Totals, Butte Co.	$28,705.20	$138,919.29	167,624.49
CALAVERAS CO.		$50,680.97	
Angels	$1,766.56		
Totals, Calaveras Co.	$1,766.56	$50,680.97	52,447.53
COLUSA CO.		$58,542.26	
Colusa	$4,085.32		
Williams	1,677.72		
Totals, Colusa Co.	$5,763.04	$58,542.26	64,305.30
CONTRA COSTA CO.		$241,188.16	
Antioch	$10,006.66		
Concord	2,172.00		
El Cerrito	7,471.70		
Hercules	756.82		
Martinez	15,312.12		
Pinole	1,507.84		
Pittsburg	18,553.74		
Richmond	39,826.84		
Walnut Creek	1,957.72		
Totals, Contra Costa Co.	$97,565.44	$241,188.16	338,753.60
DEL NORTE CO.		$41,111.35	
Crescent City	$3,320.74		
Totals, Del Norte Co.	$3,320.74	$41,111.35	44,432.09
EL DORADO CO.		$58,902.06	
Placerville	$4,569.90		
Totals, El Dorado Co.	$4,569.90	$58,902.06	63,471.96
FRESNO CO.		$453,583.68	
Clovis	$2,540.76		
Coalinga	5,504.34		
Firebaugh	976.92		
Fowler	2,260.82		
Fresno	105,048.12		
Kingsburg	2,552.34		
Parlier	1,088.92		
FRESNO CO.—Continued			
Reedley	$4,998.50		
Sanger	5,728.30		
San Joaquin	314.68		
Selma	5,882.76		
Totals, Fresno Co.	$136,896.46	$453,583.68	$590,480.14
GLENN CO.		$63,717.23	
Orland	$2,307.16		
Willows	3,907.68		
Totals, Glenn Co.	$6,214.84	$63,717.23	69,932.07
HUMBOLDT CO.		$130,903.21	
Arcata	$3,299.50		
Blue Lake	1,071.52		
Eureka	30,411.92		
Ferndale	1,716.38		
Fortuna	2,392.08		
Trinidad	206.58		
Totals, Humboldt Co.	$39,097.98	$130,903.21	170,001.19
IMPERIAL CO.		$170,281.23	
Brawley	$20,154.28		
Calexico	12,161.30		
Calipatria	3,000.26		
El Centro	16,283.28		
Holtville	3,394.12		
Imperial	3,751.28		
Westmorland	2,849.66		
Totals, Imperial Co.	$61,594.18	$170,281.23	231,875.41
INYO CO.		$49,118.93	
Bishop	$2,237.64		
Totals, Inyo Co.	$2,237.64	$49,118.93	51,356.57
KERN CO.		$350,714.36	
Bakersfield	$50,226.38		
Delano	5,081.52		
Maricopa	2,067.76		
Shafter	2,505.90		
Taft	6,645.36		
Tehachapi	1,420.98		
Totals, Kern Co.	$67,947.90	$350,714.36	418,662.26
KINGS CO.		$114,451.07	
Corcoran	$3,413.44		
Hanford	13,568.74		
Lemoore	2,701.02		
Totals, Kings Co.	$19,683.20	$114,451.07	134,134.27
LAKE CO.		$52,741.44	
Lakeport	$2,544.66		
Totals, Lake Co.	$2,544.66	$52,741.44	55,286.10
LASSEN CO.		$60,249.66	
Susanville	$2,621.88		
Totals, Lassen Co.	$2,621.88	$60,249.66	62,871.54
LOS ANGELES CO.		$6,114,103.59	
Alhambra	$56,900.70		
Arcadia	10,070.38		
Avalon	3,662.48		
Azusa	9,282.66		
Bell	15,221.40		
Beverly Hills	33,649.66		
Burbank	32,168.80		
Claremont	5,249.48		
Compton	24,164.26		
Covina	5,378.86		
Culver City	10,944.98		
El Monte	6,716.82		

COUNTIES FOR FISCAL YEAR ENDED JUNE 30, 1940

from page 13

City	½¢ for State Highways and City Streets in Cities	1¢ for County Roads	Total
LOS ANGELES CO.—Continued			
El Segundo	$6,763.16		
Gardena	13,599.66		
Glendale	121,122.52		
Glendora	5,330.58		
Hawthorne	12,734.68		
Hermosa Beach	9,259.48		
Huntington Park	47,477.12		
Inglewood	41,356.88		
La Verne	5,521.72		
Long Beach	275,873.42		
Los Angeles	2,395,140.92		
Lynwood	14,138.30		
Manhattan Beach	3,650.88		
Maywood	16,267.82		
Monrovia	21,025.00		
Montebello	10,614.80		
Monterey Park	12,367.86		
Palos Verdes Estates	1,368.32		
Pasadena	147,429.84		
Pomona	40,165.64		
Redondo Beach	18,045.98		
San Fernando	14,609.36		
San Gabriel	14,091.96		
San Marino	7,201.40		
Santa Monica	71,716.66		
Sierra Madre	6,853.88		
Signal Hill	5,660.72		
South Gate	37,902.90		
South Pasadena	26,508.10		
Torrance	17,055.54		
Vernon	2,450.04		
West Covina	1,924.88		
Whittier	28,662.72		
Totals, Los Angeles Co.	$3,667,303.22	$6,114,103.59	$9,781,406.81
MADERA CO.		$84,939.39	
Chowchilla	$1,635.26		
Madera	9,006.58		
Totals, Madera Co.	$10,641.84	$84,939.39	95,581.23
MARIN CO.		$123,804.94	
Belvedere	$965.34		
Corte Madera	1,982.80		
Fairfax	5,647.22		
Larkspur	2,395.96		
Mill Valley	8,039.30		
Ross	2,616.06		
San Anselmo	8,977.62		
San Rafael	15,487.82		
Sausalito	7,079.76		
Totals, Marin Co.	$53,191.88	$123,804.94	176,996.82
MARIPOSA CO.		$43,488.95	
Hornitos	$119.70		
Totals, Mariposa Co.	$119.70	$43,488.95	43,608.65
MENDOCINO CO.		$84,738.93	
Fort Bragg	$5,834.48		
Point Arena	743.30		
Ukiah	6,031.42		
Willits	2,749.28		
Totals, Mendocino Co.	$15,358.48	$84,738.93	100,097.41
MERCED CO.		$137,038.83	
Atwater	$1,770.42		
Dos Palos	1,795.54		
Gustine	1,961.54		
Livingston	1,550.32		
Los Banos	$3,620.02		
Merced	13,642.12		
Totals, Merced Co.	$24,339.96	$137,038.83	$161,378.79
MODOC CO.		$49,320.92	
Alturas	$4,513.92		
Totals, Modoc Co.	$4,513.92	$49,320.92	53,834.84
MONO CO.		$34,899.51	
No Cities	$0.00		
Totals, Mono Co.	$0.00	$34,899.51	34,899.51
MONTEREY CO.		$195,742.42	
Carmel-by-the-Sea	$4,363.34		
King	2,863.20		
Monterey	17,648.24		
Pacific Grove	10,730.64		
Salinas	20,202.52		
Soledad	1,146.82		
Totals, Monterey Co.	$56,954.76	$195,742.42	252,697.18
NAPA CO.		$91,108.01	
Calistoga	$1,930.66		
Napa	12,427.72		
St. Helena	3,054.34		
Totals, Napa Co.	$17,412.72	$91,108.01	108,520.73
NEVADA CO.		$70,732.14	
Grass Valley	$7,369.34		
Nevada City	3,284.08		
Totals, Nevada Co.	$10,653.42	$70,732.14	81,385.56
ORANGE CO.		$362,055.99	
Anaheim	$21,262.46		
Brea	4,701.20		
Fullerton	20,967.06		
Huntington Beach	7,124.18		
Laguna Beach	3,826.66		
La Habra	4,388.40		
Newport Beach	4,253.26		
Orange	15,572.78		
Placentia	3,100.66		
San Clemente	1,287.76		
Santa Ana	58,541.78		
Seal Beach	2,231.86		
Tustin	1,787.82		
Totals, Orange Co.	$149,043.88	$362,055.99	511,099.87
PLACER CO.		$97,297.99	
Auburn	$5,137.52		
Colfax	1,760.76		
Lincoln	4,042.80		
Rocklin	1,397.82		
Roseville	12,404.56		
Totals, Placer Co.	$24,743.46	$97,297.99	122,041.45
PLUMAS CO.		$52,022.44	
No Cities	$0.00		
Totals, Plumas Co.	$0.00	$52,022.44	52,022.44
RIVERSIDE CO.		$267,877.80	
Banning	$5,342.16		
Beaumont	2,571.64		
Blythe	1,969.30		
Corona	13,549.44		
Elsinore	2,606.40		
Hemet	4,315.04		
Indio	5,021.66		
Palm Springs	4,929.02		
Perris	1,473.12		

City	½¢ for State Highways and City Streets in Cities	1¢ for County Roads	Total
RIVERSIDE CO.—Continued			
Riverside	$57,333.16		
San Jacinto	2,598.68		
Totals, Riverside Co.	$101,709.62	$267,877.80	$369,587.42
SACRAMENTO CO.		$415,162.90	
Isleton	$5,610.54		
North Sacramento	5,120.14		
Sacramento	181,000.30		
Totals Sacramento Co.	$191,730.98	$415,162.90	606,893.88
SAN BENITO CO.		$60,006.36	
Hollister	$7,253.52		
San Juan	1,490.50		
Totals, San Benito Co.	$8,744.02	$60,006.36	68,750.38
SAN BERNARDINO CO.		$382,138.77	
Chino	$6,019.84		
Colton	15,489.76		
Needles	6,070.00		
Ontario	26,224.30		
Redlands	27,371.12		
Rialto	3,170.18		
San Bernardino	75,427.40		
Upland	9,099.24		
Totals, San Bernardino Co.	$168,871.84	$382,138.77	551,010.61
SAN DIEGO CO.		$622,967.53	
Chula Vista	$7,469.76		
Coronado	10,473.88		
El Cajon	2,027.22		
Escondido	6,604.82		
La Mesa	4,851.78		
National City	14,095.82		
Oceanside	6,784.36		
San Diego	292,871.04		
Totals, San Diego Co.	$345,178.68	$622,967.53	968,146.21
SAN FRANCISCO CO.		$1,045,712.07	
San Francisco	$1,224,805.44		
Totals, San Francisco Co.	$1,224,805.44	$1,045,712.07	2,270,517.51
SAN JOAQUIN CO.		$325,746.72	
Lodi	$14,340.78		
Manteca	3,116.12		
Stockton	92,600.70		
Tracy	7,392.54		
Totals, San Joaquin Co.	$117,450.14	$325,746.72	443,196.86
SAN LUIS OBISPO CO.		$114,092.70	
Arroyo Grande	$1,722.14		
Paso Robles	4,967.62		
Pismo Beach	2,313.44		
San Luis Obispo	15,978.22		
Totals, San Luis Obispo Co.	$24,981.42	$114,092.70	139,074.12
SAN MATEO CO.		$257,616.44	
Atherton	$2,556.20		
Bayshore	1,690.94		
Belmont	1,928.74		
Burlingame	25,619.98		
Daly City	16,285.20		
Hillsborough	3,679.88		
Lawndale	712.44		
Menlo Park	4,351.72		
Redwood City	17,302.68		
San Bruno	6,969.74		
San Carlos	2,185.52		
San Mateo	25,979.08		
South San Francisco	11,956.62		
Totals, San Mateo Co.	$121,218.74	$257,616.44	378,835.18

City	½¢ for State Highways and City Streets in Cities	1¢ for County Roads	Total
SANTA BARBARA CO.		$204,802.28	
Lompoc	$5,492.76		
Santa Barbara	64,895.60		
Santa Maria	13,624.74		
Totals, Santa Barbara Co.	$84,013.10	$204,802.28	$288,815.38
SANTA CLARA CO.		$448,354.81	
Alviso	$735.58		
Gilroy	6,761.22		
Los Gatos	6,116.36		
Morgan Hill	1,753.06		
Mountain View	6,386.66		
Palo Alto	26,803.48		
San Jose	120,909.64		
Santa Clara	12,167.08		
Sunnyvale	5,973.48		
Totals, Santa Clara Co.	$187,606.56	$448,354.81	635,961.37
SANTA CRUZ CO.		$143,051.92	
Santa Cruz	$27,791.98		
Watsonville	16,682.94		
Totals, Santa Cruz Co.	$44,474.92	$143,051.92	187,526.84
SHASTA CO.		$96,367.51	
Redding	$8,085.66		
Totals, Shasta Co.	$8,085.66	$96,367.51	104,453.17
SIERRA CO.		$36,579.55	
Loyalton	$1,615.98		
Totals, Sierra Co.	$1,615.98	$36,579.55	38,195.53
SISKIYOU CO.		$91,875.30	
Dorris	$1,471.16		
Dunsmuir	5,039.06		
Etna	731.76		
Fort Jones	583.06		
Montague	978.84		
Mount Shasta	2,052.28		
Tulelake	579.20		
Yreka	4,249.40		
Totals, Siskiyou Co.	$15,684.76	91,875.30	107,560.06
SOLANO CO.		$132,779.32	
Benicia	$5,624.02		
Dixon	1,930.66		
Fairfield	2,183.58		
Rio Vista	2,527.22		
Suisun City	1,747.28		
Vacaville	3,606.50		
Vallejo	29,494.86		
Totals, Solano Co.	$47,114.12	$132,779.32	179,893.44
SONOMA CO.		$207,359.61	
Cloverdale	$1,465.38		
Healdsburg	4,432.80		
Petaluma	15,918.40		
Santa Rosa	20,774.82		
Sebastopol	3,401.86		
Sonoma	1,892.06		
Totals, Sonoma Co.	$47,885.32	$207,359.61	255,244.93
STANISLAUS CO.		$219,380.00	
Ceres	$1,893.98		
Modesto	27,213.78		
Newman	2,450.04		
Oakdale	4,077.54		
Patterson	1,747.28		
Riverbank	1,550.34		
Turlock	8,255.54		
Totals, Stanislaus Co.	$47,188.50	$219,380.00	266,568.50
SUTTER CO.		$75,744.64	
Yuba City	$6,960.08		
Totals, Sutter Co.	$6,960.08	$75,744.64	82,704.72

(Continued on page 17)

Governor Olson speaking to the assemblage at the dedication of the Culbert L. Olson Grove on the Redwood Highway.

Culbert L. Olson Grove Dedicated

LOCATED on State Highway 101 the Redwood Highway, about a mile north of Garberville, a noble stand of giant Redwood trees was dedicated in honor of Governor Olson by Chairman Matthew Gleason of the State Park Commission on June 28th and named the Culbert L. Olson Grove.

The grove is a part of the Avenue of the Giants tract of 400 acres acquired by the State on June 7 at a cost of $217,000. Funds were supplied by State appropriation from oil royalties and private donations.

In his acknowledgment of the dedication of the grove in his honor Governor Olson said in part to the group of approximately 500 persons present:

"This is one of the most impressive events—one of the most outstanding occasions in my whole life. And the thoughts that occur to me when this honor is brought to me of dedicating this wonderful grove in my name are these:

"First, my concern and my hope that it meets with the approval of you who live in this great Redwood Empire and are so directly connected with its preservation and maintenance—not only the naming of these parks but the maintenance of them for the future generations of this State of ours and of the United States.

"Second, that it will also be not disapproved by our other fellow citizens throughout the State; and

"Third, and most important of all, that I may so live and conduct myself the rest of my life that no one will look at the name of this grove and have cause to disapprove its being named in my honor.

"It is indeed a great honor. It means more than a temporary honor because it preserves the name of me and my family for the future years in a very endurable way; in a more endurable way perhaps than would otherwise find it preserved.

"It is, I feel, not inappropriate that our wonderful groves in these State parks be named in honor of those who have been chosen by their fellow citizens to act as their governor during their lives; and I realize that it is my position today which enables me to have this additional honor conferred upon me.

"It will be my purpose as long as I am in office to recommend that the dedication of other groves, when the time comes for naming them, shall be in honor of past governors of our State, in whose honor groves have not yet been named.

"To express thanks to those who have inspired and brought about the dedication of this most wonderful scenic spot in my name, I could not do adequately in words. But my feel-

(Continued on page 19)

Secretary Byron N. Scott Resigns Position With Highway Commission

AFTER fifteen months as Secretary of the California Highway Commission, Byron N. Scott resigned his position on June 28, 1940. Scott delivered his resignation to Director of Public Works Frank W. Clark and Larry Barrett, Chairman of the Commission, who accepted it on behalf of Governor Culbert L. Olson.

In his letter of resignation Scott said:

"You are undoubtedly aware of the fact that I have announced my candidacy for Congress from the 18th California District.

"I find that the demands on my time will be so great that it would be impossible for me to do justice to my work as Secretary of the Commission and my campaign at the same time.

"I am therefore, by this letter, tendering to you my resignation as Secretary of the Commission, to be effective on the last day of this month.

"It has been a pleasure to work with you and the Commission. Never have I seen a more active, hard-working and dependable group of men sincerely interested in the welfare of the State and its highway needs. If at any time I can be of service to you and the Commission, I am at your service."

RESOLUTION BY HIGHWAY COMMISSION

WHEREAS, Byron N. Scott, Secretary of the California Highway Commission, has this day submitted his resignation as Secretary of said Commission in order to promote his candidacy for Congress from the 18th California District; and

WHEREAS, The California Highway Commission feels a deep debt of gratitude to Byron N. Scott for the many favors that have been extended by the Secretary to the Commission and for the good work that has been done by Byron N. Scott as Secretary of the Commission in the discharge of his duties; and

WHEREAS, Byron N. Scott, as Secretary of the California Highway Commission, has created an ever increasing respect for the State administration in his daily contacts with the people throughout the State; and

WHEREAS, The members of the California Highway Commission believe that the resignation of Byron N. Scott will create a vacancy that will be difficult to fill, though they are nevertheless aware of the fact that he may better serve his country as a representative to Congress; and

WHEREAS, It is the consensus of the members of the California Highway Commission that the feeling of gratitude and thanks that the Commission holds for Byron N. Scott should be spread upon the minutes of this meeting and that Honorable Culbert L. Olson, Governor of our State, should be informed of the gratitude of the California Highway Commission for the splendid cooperation of Byron N. Scott in the discharge of his duties as Secretary to the Commission, now, therefore, be it

Resolved, That the California Highway Commission, in regular meeting duly assembled this 26th day of June, 1940, at Los Angeles, California, does hereby extend its sincere thanks and express its gratitude to Byron N. Scott, Secretary of the California Highway Commission, for the good work he had accomplished during his tenure of office, and for the sympathetic understanding so frequently displayed by him in the solution of the problems confronting the Commission; and be it further

Resolved, That this expression of gratitude of the California Highway Commission be spread upon the minutes of this session, and that a copy thereof be forwarded to our good Governor, Culbert L. Olson, at Sacramento, California, and that a copy thereof be forwarded to Byron N. Scott and to Mrs. Byron N. Scott, the charming wife of our Secretary.

Culbert L. Olson Grove Dedicated

(Continued from page 18)

ings concerning it I assure you are felt to the depth of my heart."

Following the dedication of the grove, Father Caffery, member of the Park Commission, dedicated Kate Olson big tree in memory of Governor Olson's late departed wife. This tree is 355 feet tall and is but 9 feet shorter than the tallest redwood tree.

Engineers Organize Class for Bridge Design

A REPORT made to State Highway Engineer C. H. Purcell by Glenn L. Encke, Associate Bridge Engineer, illustrates the interest that the personnel of the Bridge Department and other employees of the State Division of Highways take in their jobs and an opportunity to improve their knowledge. Upon petition by fifty engineers of the Bridge Department, a course on "bridge design" was installed as part of the Sacramento Evening School program during the winter and spring terms of the current year.

Class work was organized on an eighteen week basis with an ultimate enrollment of 150 men divided into two sections, each section meeting in a two-hour session one night weekly.

Membership in the course was drawn from twenty different public and private organizations, with approximately 55 men enrolled from the Bridge Department, the remainder being distributed among other branches of the Division of Highways, Division of Architecture, Division of Water Resources, U. S. War Department engineers, U. S. Reclamation engineers, other Federal agencies and city and county engineers.

The course was concerned primarily with structural design methods, using present bridge practices as a means of illustration. Briefly, an effort was made to develop in the class (1) an appreciation of what is important and what is not in structural design; (2) methods of analysis that are comparable in accuracy to the material being worked with; (3) ability to visualize the shape of a deformed structure subjected to load and to recognize the nature of the stresses set up as a result of this deformation.

The class undertook a design problem in reinforced concrete for a typical 750-foot three-lane bridge with sidewalks. Thirteen different span length combinations between 30 and 100 feet, each with three or five lines of girders, were designed. The resulting 26 design problems were distributed to squads of five or six men. Their combined efforts were assembled

(Continued on page 28)

Russian Gulch Bridge on Mendocino Coast Highway Officially Dedicated

THE BRIDGE across Russian Gulch, located about nine miles south of Fort Bragg on the "Shoreline Highway" in Mendocino County, was officially dedicated June 9th when Governor Olson and party visited that section. The bridge is expected to be completed about July 10th.

This structure is 526 feet-9 inches long and consists of a reinforced concrete open spandrel arch with 240 foot span with reinforced concrete girder approach spans. The roadway width is 26 feet. In addition to the bridge construction, 2800 feet of approaches were constructed and paved to a minimum roadway width of 24 feet.

The new bridge replaces an old timber trestle which was located about 500 feet further upstream. The old structure was built by Mendocino County about thirty years ago. The old structure was designed to support a 6-horse team, but since that time increased loads have made it unsafe for present day requirements.

LOCATED ON NEW ALIGNMENT

The Shoreline Highway was incorporated into the State Highway System in 1933. The road more or less follows the natural ground contours which was the accepted practice at the time the road was built. However, since that time modern traffic requires considerable improvement in alignment and grade.

On a large section of this road studies have been made for a projected alignment which will ultimately provide a highway that will safely and adequately handle its traffic requirements. The new Russian Gulch Bridge is located on this projected alignment. Temporary approaches have been constructed to provide connections from the bridge to the existing road.

PROGRESSIVE IMPROVEMENT PROJECT

In 1936 the State expended $1600 to make repairs and improvements to the old bridge sufficient to place the structure in a satisfactory condition until such time that it could be replaced. Since many of the bridges on this route can not handle legal loads, the primary consideration has been to replace these weak bridges as soon as money becomes available. In replacing these old bridges with structures of a permanent type, careful consideration has been given so that the new structures will be located on ultimate alignment. In the future, the roadway between the bridges will be improved and the whole will provide a continuous highway of uniform design standard.

PAUL PEEK

The bridge and approaches were constructed at a cost of $109,000 by Contractor R. G. Clifford; George A. Green was Resident Engineer.

COLORFUL FLORAL FESTIVAL

Prior to the dedication ceremonies Governor Olson and his party attended an abalone luncheon at Russian Gulch, provided by the Fort Bragg Mendocino Farm Center, and at 1:30 attended the annual rhododendron festival. Governor Olson crowned Queen Dethel Quinnel, the ceremony and the royal party making a very colorful affair. After the Queen and her attendants were placed on and about the throne, President A. E. Johnston of the Mendocino Coast Chamber of Commerce introduced the Governor.

In his address Governor Olson extolled the beauties of the Mendocino coast section and dwelled on the necessity of having an adequate defense for the entire Pacific Coast, promising to do everything in his power to see that such adequate defenses were provided. He also stressed the necessity of adequate fire protection for the forests of California, calling attention to the appalling losses through fires and the necessity for more funds to combat this menace.

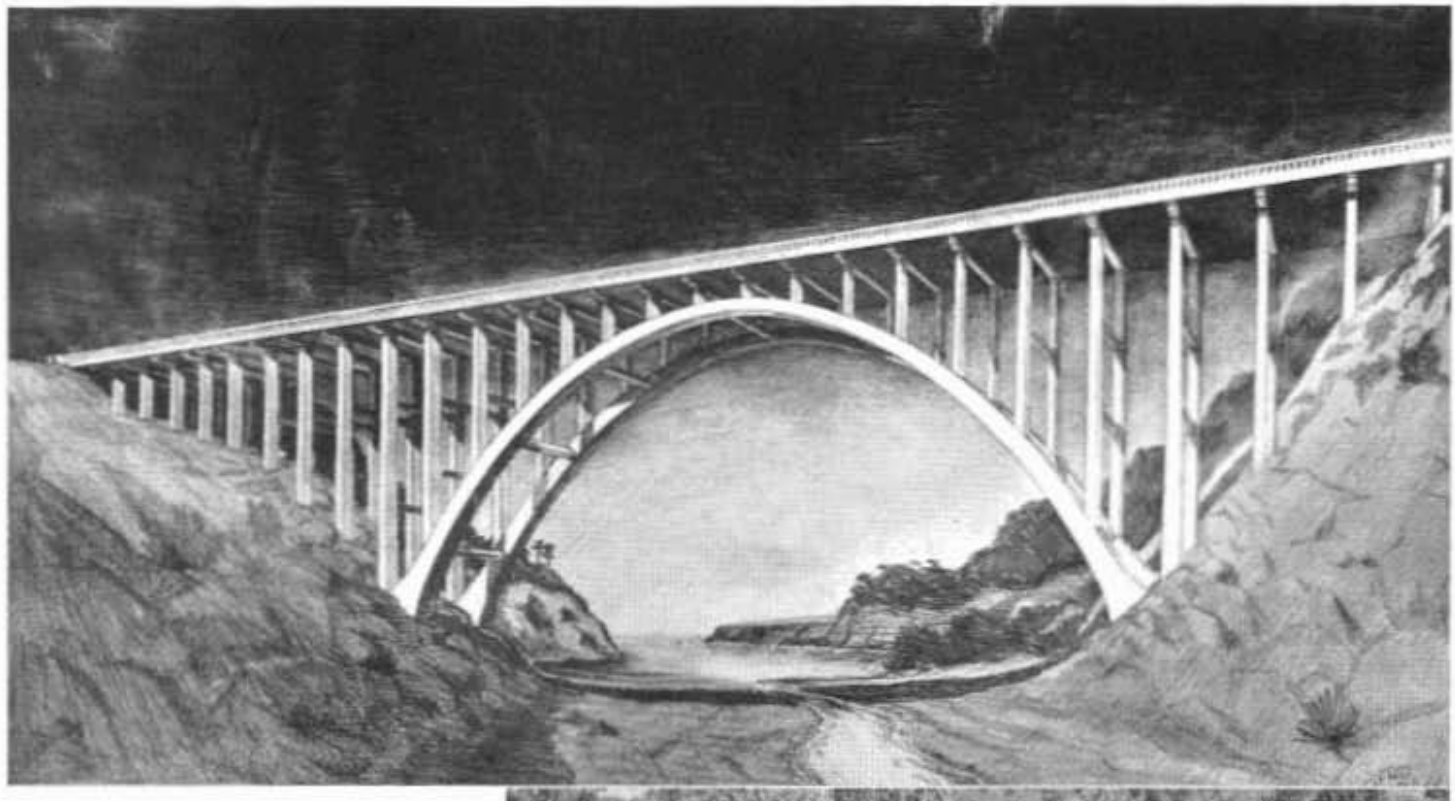
Following the Governor's address, C. V. Whited of Mendocino, introduced Secretary of State Paul Peek, who made a short speech, at the conclusion of which the Governor's party proceeded to the Russian Gulch Bridge where the Secretary of State cut the ribbon and the party proceeded across the structure on their way back to Sacramento.

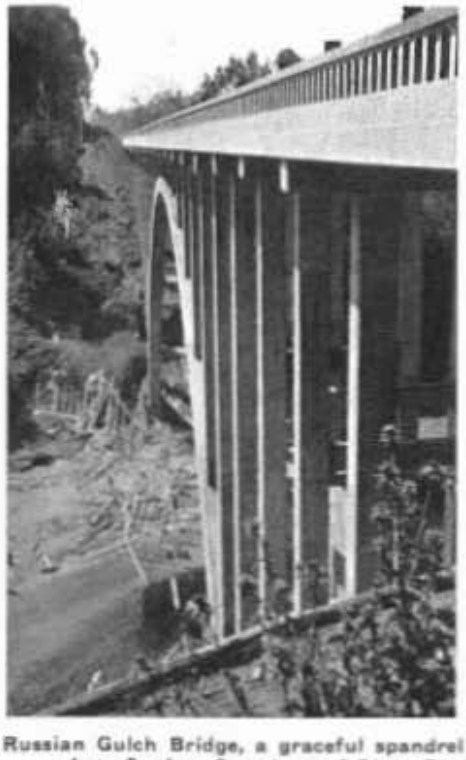
Cahuenga Freeway Unit Opened

(Continued from page 17)

The volume of traffic using Cahuenga Pass Boulevard is very large. On two Sunday traffic counts taken one year apart during July of 1938 and 1939 traffic passing the intersection of Cahuenga Boulevard and Lankershim Boulevard amounted to from 65,000 to 70,000 cars per day. This marks it as among the most heavily traveled highways or streets in the State. From the performance of the completed section under heavy traffic conditions, we are assured that even this vast number of cars will be able to easily and expeditiously pass over this modern freeway.

Policeman: "You've been speeding!"
Driver: "The brakes won't work, so I wanted to get home before I had an accident."





Russian Gulch Bridge, a graceful spandrel arch structure 526 feet, 9 inches long on the Mendocino Coast highway was dedicated June 9 when Secretary of State Paul Peek cut the ribbon. The old structure was a timber trestle built 30 years ago.

YOUNG BOYD TO GET REWARD

Anson Boyd, son of California's State Architect, is the lucky finder of a Radio-Meteorograph released by a U. S. Naval Station to determine the temperature of the air, moisture of the air, and also the heights in the air through which the instrument passed.

Young Boyd came upon the instrument on the shore of Mission Bay in Pacific Beach. He was embarked upon an early morning fishing expedition when he spied the peculiar looking box with its bright red silk parachute and bursted balloon lying near the water's edge. He will receive a reward.

An Arkansas editor recently showed his genius when he wrote the following item for his paper:

"Miss Mary Blank, a Batesville belle of twenty summers, is visiting her twin brother, William, aged thirty-two."—Cincinnati Enquirer.

Equipment at work on "Ducor Cut-off," a portion of the Orange Belt highway in Tulare County near Porterville.

Ducor Cut-off Link Completed

ANOTHER portion of the "Ducor Cut-Off" was completed by Contractor L. Biasotti & Son on June 1, 1940. This portion extends 3.1 miles from Thermal School to Ducor.

The "Ducor Cut-Off" is a relocation project, between Standard Oil Tank Farm, near Bakersfield, and Ducor, 12 miles southerly from Porterville in Tulare County, where it connects with State Highway 129. It will form a portion of the "Orange Belt highway" which traverses the Orange Belt at the easterly edge of the San Joaquin Valley and will shorten the distance between Bakersfield and Ducor some 5 miles.

When it is completed, traffic from Bakersfield or points further south and destined for the Orange Belt and General Grant Park, will leave U. S. 99 at a point near Standard Oil Tank Farm and travel almost due north to Ducor. Formerly this traffic left U. S. 99 at Famoso and followed Sign Route 65 through Rich Grove to Ducor. On this old road there were 6 right angle turns, generally indirect alignment, inferior sight distance due to sharply rolling gradients and two railroad crossings.

In contrast, the new route will maintain exceptionally consistent direction, will have very light gradients and curvature, together with a minimum sight distance of 2300 feet and no railroad crossings.

On the "Cut-Off," in addition to the completion of this contract, two portions have been built by county forces in the counties of Kern and Tulare and the construction of a fourth section has recently been started in Kern County, south of Poso Creek, by Contractor George E. France.

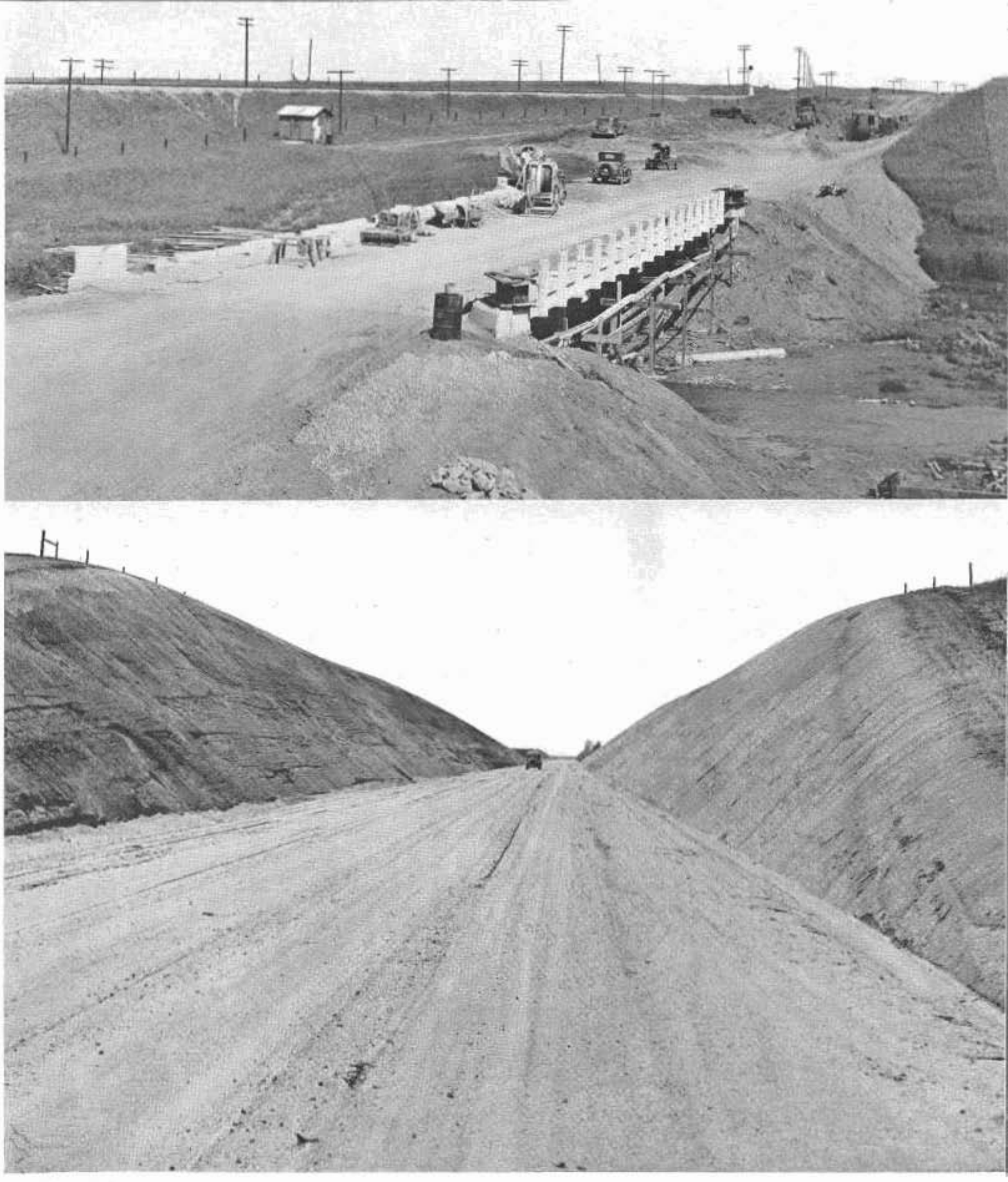
On the section completed June 1, by Biasotti and Son, the excavation was made, for the greater part, with twelve- and fourteen cubic yard carryall scrapers. A ¾-cubic yard shovel was used in completing the long haul on a portion of the selected surfacing. A penetration treatment with SC-2 was applied to hold the surfacing under light traffic until such time as the completion of other sections of the route will call for a more permanent type of surfacing over the entire project. One of the interesting features of the work was the construction of sacked concrete riprap at White River Bridge. A mixer, supplying one-fourth cubic yard per batch delivered the concrete into a hopper, at the bottom of which a hand-operated gate fed into a balanced measuring box, from which each sack was filled with exactly one cubic foot of the mixed concrete.

This control, together with the exercise of care in tying the filled sacks at a definite distance from the top of each sack, provided uniformity in size and flexibility of the sacked units. Thereafter care was exercised to make a uniform lap in laying a new layer of sacked concrete over the previous one and to break joints with the preceding layer. Five anchorage counterforts of sacked concrete were built back into the bank in the construction at each end of the bridge.

The people of Bakersfield and the towns along the Orange Belt hail the construction of this route with enthusiasm. The shortening of distance and the raising of standards of the highway are thoroughly appreciated.

The aggressive wife was hauling her husband over the coals for having made a fool of himself at a party. He sat in dejected silence—hands stuffed into his pockets.

"And don't be sitting there," she shouted, "making fists at me in your pockets, either!"
—The Tennessee Road Builder.



Views of the "Ducor Cut-off" recently completed in Tulare County: At top—Bridge under construction across the White River. At bottom—Looking northerly into big cut. This portion of the cutoff was constructed by Tulare County with county-owned equipment and shows neat slopes and roadbed.

Modernizing Highway System Would Pay Dividends

(Continued from page 9)

cheaper type of surface than is required. The result is increased maintenance and earlier replacement because of the shorter life of the less rugged type of construction. It leads to early obsolescence of the system and means we are faced with earlier reconstruction.

MULTI-LANE ROADS

3—Modernization must also mean increasing the capacity of our heavy traffic arteries by the building of multi-lane roads. At the date of this report there are about 758 miles of our system which should be at least four lanes in width to properly accommodate traffic volume. In addition, many miles of our present two-lane roads would provide safer operation and more comfortable travel if they could be widened immediately to at least three lanes. At the present time there are only about 150 miles of four-lane and six-lane divided roadways in the State Highway System. This mileage will have to be increased considerably, although in round figures one might estimate that only about five to ten per cent of the total system will ever require such extensive improvement.

4—Modernization also means improvement of alignment and grade to provide safe sight distance for safer operation.

There are 8062 locations on major State highways in the Federal Aid System alone in this State presenting a condition where sight distance is less than required for safe passing and 4645 locations where even a safe stopping distance is lacking.

A new concept of design is introduced by this feature of slight distance. It calls for frequent installation of safe passing sections and the shortening of the nonpassing sections. It means that on all these latter there should be a safe stopping distance.

INADEQUATE BRIDGES

5—Modernization also means the construction or reconstruction of inadequate bridges — those inadequate for legal loads as well as those inadequate as to width. Some 1659 bridges have less than 24-foot width of roadway where adjacent pavements are 20 feet wide. Some 400 bridges are now posted for less than legal load limits or restrictions in speed.

The Planning Survey tells us that at the present time we are falling behind at the rate of 38 bridges per year in our replacement program. It probably is not necessary to point out that a restriction in the legal load limit on a bridge immediately imposes on the entire route of which it is a part a limitation which is bound to prove uneconomical to commercial traffic using the highway.

6—Modernization must also provide for the construction of 256 miles of legally designated State highway routes where no traversable road now exists but which are nevertheless a definite obligation.

GRADE SEPARATIONS

7—It means elimination of more of our railroad grade crossings. Although we have 625 on the State highway system we will have plenty to do if we can confine our activities to only those where heavy traffic exists.

8—Modernization means separating the grades of important intersecting roads at heavily traveled intersections. Separation prevents loss of time and operating expense and materially reduces physical hazard, although we must not forget that such separations are expensive. For safety's sake we can, temporarily at least, design and build channelized intersections at grade and we can and should acquire the right of way necessary for ultimate separation before costly developments and improvements make the expense prohibitive.

9—Modernization means the construction of freeways on some of our major routes especially adjacent to and leading into our larger metropolitan areas. The application of this principle to these important roads is imperative, if the integrity, capacity and purpose of our major traffic arteries are to be preserved.

The rapid development of abutting property into ribbon towns destroys the integrity of the highway in a short time. The motorist who pays the bill is confronted with a heavy loss on his investment. It should be protected. The freeway offers a means for relief from congestion and attending hazard.

The present mileage in our highway system is 13,605.5 miles. Its condition may be summarized as follows:

Condition	Mileage	Per Cent
Unimproved and unoiled earth roads	530.0	3.9
Oiled earth—Almost entirely substandard	3,588.0	26.4
Graveled roads—Light oil surface	1,516.0	11.1
Intermediate type surfaces	3,303.0	24.3
High type pavements, some of which are adequate, much of which is obsolete	4,076.0	30.0
Bridges, some of which are adequate, many of which are structurally weak or inadequate	87.5	0.6
Mileage within incorporated areas, not included in above, both adequate and inadequate in type	505.0	3.7
TOTAL	13,605.5	100.0%

The mileage requiring modernization is as follows:

Description	Mileage	Per Cent of Total
Present mileage requiring new construction, reconstruction, widening, resurfacing, etc.	10,640	78.2
New "Freeway" construction required to adequately serve present traffic	60	0.4
Miscellaneous bridges, railroad and highway separation structures, etc., not included with above.		

The financial requirements to modernize the present mileage are estimated as follows:

Description	Amount	Per Cent
Estimated cost of new construction, reconstruction, widening, resurfacing, etc., for 10,640 miles of highway to improve modern standards	$407,133,200	78.0
Estimated cost of constructing new "Freeways"	36,000,000	6.9
Estimated cost building, widening, or replacing bridges and railroad or highway grade separations	65,767,000	12.6
Estimated cost of sea shore protection, safety devices, and miscellaneous work not included in above	3,110,000	0.6
Partial estimated cost of Right of Way (Only few Districts estimated this item)	9,975,000	1.9
Total estimated cost	**$521,985,200**	**100%**

MODERNIZING COST LARGE

The foregoing brief discussion outlines the principal requirements which must be met if we are to modernize our State highway transportation system. It constitutes the basis for the estimates of cost which have been prepared in tabulations accompanying this discussion.

The bill looks large. It is large. However, I will venture to predict right now that the motor vehicle user will probably pay more in operating cost, including physical and property damage, during the next 25 years, if he has to operate over the present

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State Acquires Beaches, Lake and Island

(Continued from page 12)

with the extra areas to ocean frontage, we were able to complete negotiations at reasonable prices.

The following areas, comprising about 69 acres, were acquired from owners who were willing to cooperate, and are now publicly owned:

Near Lake Lucerne, Arroyo de las Frijoles (Bean Hollow) containing a small lake and a beautiful flat, sandy beach extending for nearly a quarter of a mile along the ocean front. Pebble Beach, while small, is a particularly attractive spot, containing varicolored pebbles, constantly changing with the whims of the tides and up to now highly coveted by builders and art lovers for home decoration purposes.

Parts of Pescadero and San Gregorio beaches, which have been obtained, afford places for bathing, fishing, picnics and other recreational purposes. In addition, there has been acquired a small island a short distance from the shore and numerous small beaches, coves and lookout points along the rugged coastline. The preservation of this seaside playground will be sincerely appreciated as time goes on and other beach areas are lost to the public.

These parcels do not include all of the lands it was thought desirable to include in this park area, but for various reasons negotiations with the owners of the remainder of the areas were unsuccessful.

San Mateo County will take title to these areas which were acquired for it by the State of California under an agreement requiring that they be devoted exclusively to public park and recreational purposes. In this manner it has been possible to preserve this coastal region in all its beauty. The county reimbursed the State for the actual cost of acquisition of the areas involved.

The highway construction is planned with flat rounded slopes, adapted to growth of native cover, to merge into and become a part of the terrain. Curves and grades also fit naturally into the picture.

Bay Bridge Traffic for June Again Breaks All Records

JUNE traffic on the San Francisco-Oakland Bay Bridge reached another record-shattering total of 1,364,941 vehicles. This was achieved in spite of a short month and a serious curtailment of truck traffic due to a teamsters' strike in Oakland and other East Bay cities.

The increase of traffic over June of 1939 was 476,546 vehicles, or 53.6 per cent. However, the total revenue collected dropped $1,750.

A year ago the Treasure Island traffic amounted to 157,385 vehicles, while this June it was 220,031. This was an increase of 40 per cent.

There appears to be no question now but that the reduction in bridge tolls has reached a point well past the "point of diminishing returns." The average toll in June, 1939, was 49.8 cents, while this June it was only 32.3 cents, a reduction of 35 per cent. In spite of a tremendous growth in traffic there was a small decrease in money collected.

The abandonment of auto ferry service in May of this year was instrumental in creating a large share of the traffic increase. Had the ferries continued to operate and handle the same number of vehicles this June as last, the bridge revenue would have actually dropped about $85,000, or 20 per cent.

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

	June 1940	June 1939	May 1940	Total Since Opening
Passenger autos and auto trailers	1,258,403	803,846	1,093,789	33,318,319
Motorcycles and Tricars	4,681	3,995	4,513	151,155
Buses	25,528	16,169	21,866	556,155
Trucks and truck trailers	57,174	47,735	61,874	1,616,722
Others	19,155	16,650	20,535	569,932
Total vehicles	1,364,941	888,395	1,202,577	36,212,283

Super-Highway to Break San Rafael Bottleneck

(Continued from page 8)

parabolic curves. These will provide a pleasing appearance from the side.

Included in the contract for the viaduct and located opposite is the construction of a triangular-shaped structure at Irwin Street at the point where Irwin Street crosses the San Rafael Harbor. This will be of reinforced concrete girder type founded on precast concrete piles. The contract has been awarded to the Heafey-Moore Company, Fredrickson & Watson Construction Company at a bid price of $380,999.10.

Construction of this section is proceeding at a rapid pace and with reasonable weather it will probably be open to traffic late this fall, substituting miles of easy curves, wide, smooth roadbed for the weary, twisting present route.

Modernizing Highway System

(Continued from page 24)

inadequate system, than it will cost him to modernize, at the figures shown in these tabulations. It will have to be done eventually—why pay the bill twice? Once in operation cost and once in construction cost.

We have in this current biennium approximately $30,000,000 for construction—that's $15,000,000 a year. Suppose we raise it to $20,000,000 a year. It would then take us 25 years to accomplish the necessary improvements which are needed so vitally right now. It should be obvious to all that further procrastination and delay can only result in annual increase of maintenance, which in turn decreases the amount available for construction, plus a constantly increasing hazard and loss of time as traffic continues to grow.

Small Damage to State Highways By Imperial Valley Earthquake

By E. E. WALLACE, District Engineer

IMPERIAL Valley experienced a severe earthquake on Saturday, May 18, 1940, at 8:37 p.m. The main shock was preceded by two light shocks on Friday and was followed by a series of severe shocks through the night, tapering off with some twenty-five lighter shocks until Sunday noon. The earthquake was the heaviest experienced in Imperial Valley and resulted in much property damage, together with loss of nine lives and several injuries.

Greater loss of life was avoided only because of the fact that the collapse of buildings occurred after the first severe shock and the population had evacuated the buildings and were camped on lawns and in the streets.

A very distinct movement occurred along the extension of the San Andreas fault line and the faulting was in the form of a pressure rift, leaving quite evident surface indications from Brawley to a point some 20 miles below the Mexican border.

Despite the large surface movement comparatively little damage was done to the State Highway System either where the fault line directly crossed the highway routes or developed in close proximity to them.

The vertical displacement near the border approximated three feet, and surveys which have just been completed on Highway Route 202 east of Calexico, where the fault crossed the State Secondary Highway, indicate horizontal movement several miles in length with the easterly side of the fault shifting south and the westerly side shifting to the north. The north movement was apparently somewhat less than the south movement, and the total horizontal shift at the highway crossing was 9.9 inches. The vertical movement at the same location was 1.6 inches, most of which appears to be an upheaval on the westerly side of the fault line extending several miles to the west.

The fault crossed State Route 12 between Holtville and El Centro, where a 16-inch horizontal movement occurred in the pavement, with approximately a 6-inch vertical displacement and an apparent increase in length of 14 inches.

L. J. Foster, construction engineer for the All-American Canal, at Yuma, advised that their surveys were not as yet completed but that the movement at the fault crossing the All-American Canal near the Mexican Border amounted to a net movement of between 14 and 15 feet, with the ground on the east side of the fault moving south and that on the west side moving north. The north movement was in all cases apparently less than the south movement.

Much damage occurred to buildings in El Centro, Holtville, Imperial and Brawley, with far greater damage in Brawley than in any of the other cities of the valley.

The chief damage to the highway occurred at the New River bridge just west of Brawley, where the timber caps were shoved entirely off of the piles, allowing the floor of the structure to sag and requiring diversion of traffic for approximately one week while repairs were made. The approach to this bridge settled approximately 18 inches.

Considerable crushing and buckling of pavement occurred each side of the fault line wherever the highway was crossed. At other locations through the valley the concrete pavement was raised at the joints, causing unevenness and roughness of the pavement, particularly south of Brawley on Route 26.

Heavy damage resulted to the canal systems throughout Imperial Valley and on the main canals in Mexico, through which the water is brought into the valley. Serious damage to crops was avoided by utilizing completed portions of the All-American Canal to carry water to the westerly side of the valley.

Reconstruction work in all the cities is well under way and many of the buildings have been reoccupied.

$77,000 Allotment for Alamo Canal Damage

As a result of the application to Governor Culbert L. Olson by the Imperial Irrigation District of Imperial County for financial assistance in repairing the earthquake damage done to the Alamo Canal, through which water from the Colorado River is supplied to the district, Director of Public Works Frank W. Clark has recommended to the Director of Finance that an emergency allotment of $77,000 be made from the State Emergency Fund.

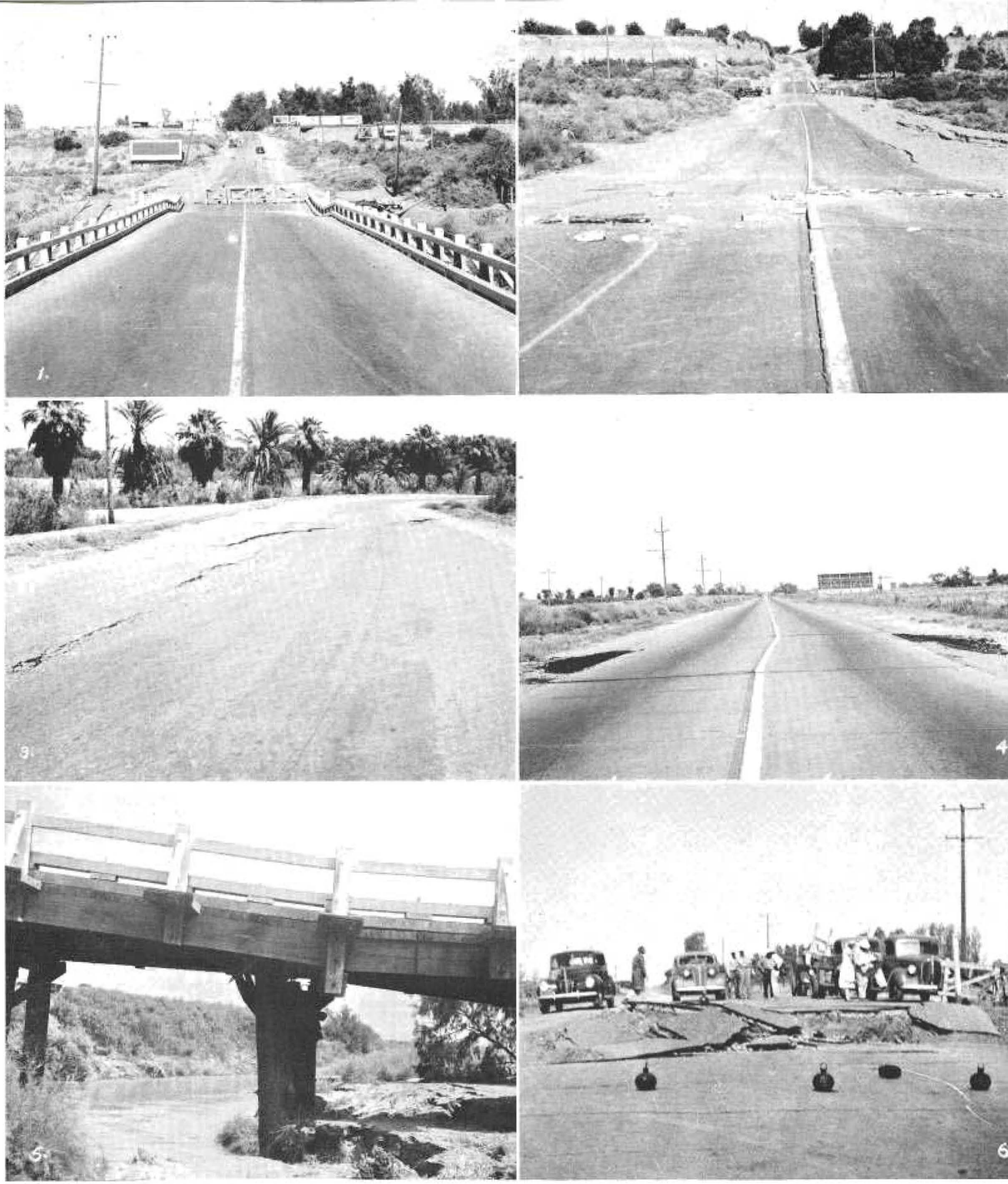
The conditions of the proposed allocation are that a contract be made between the Department of Public Works and the Imperial Irrigation District to provide among other things that the State expenditures shall not exceed one-half of the total cost of said work and in no event exceed $75,000.

Based upon investigations by State Engineer Edward Hyatt, it is estimated that the actual field cost of repair and rehabilitation of the irrigation works in Mexico and California within the jurisdiction of the district will total $150,000 and the cost of State administration and supervision will aggregate $2,000.

Man (handing over his pay envelope to his wife): "You got a nice increase this week, dear."—The Recorder.

Mrs. Green: "Why don't you ask your husband's advice on the matter?"

Mrs. Brown: "I intend to as soon as I've decided what to do."—California Cultivator.



Pictures of earthquake damage to the State highway system in Imperial County. No. 1—Settlement of 18 inches in the approach to New River bridge. No. 2—Pavement shattered west of Brawley. No. 3—Pavement cracked east of Ash Canal. No. 4—Sixteen-inch offset in pavement on Route 27. No. 5—Timber piles shoved from beneath caps of New River bridge. No. 6—Horizontal shift of nine feet where fault line crosses Route 202.

Highway Bids and Awards for the Month of June, 1940

AMADOR COUNTY—Between one mile south of Jackson Creek and two miles south of Ione, about 3.8 miles to be graded and surfaced with plant-mixed surfacing on gravel base. District X, Route 97, Section A. Caputo and Keeble, San Jose, $99,305; A. Teichert & Son, Inc., Sacramento, $104,132; Hemstreet and Bell, Marysville, $104,831; M. J. B. Construction Co., Stockton, $108,190; Marshall S. Hanrahan, Redwood City, $134,430. Contract awarded to Fredericksen & Westbrook, Sacramento, $87,908.

CALAVERAS COUNTY—0.8 mile to be graded and surfaced with plantmixed surfacing between 1.7 and 2.5 miles east of Valley Springs. District X, Route 24, Section B. M.J.B. Construction Co., Stockton, $9,862; Piazza and Huntley, San Jose, $11,003. Contract awarded to Louis Biasotti & Son, Stockton, $9,691.

DEL NORTE COUNTY—Redecking existing bridge across Smith River about eight miles east of Crescent City. District I, Route 1, Section C. E. E. Smith, Eureka, $16,364; Joseph Shaw, Crescent City, $16,654; C. C. Gildersleeve, Berkeley, $16,988; Fred J. Mauer & Son, Eureka, $18,246; A. Soda & Son, Oakland, $19,979; Scheumann & Johnson, Eureka, $21,625. Contract awarded to F. Fredenburg, South San Francisco, $16,355.

FRESNO COUNTY—Across Byrd Slough 19 miles east of Fresno, a concrete slab timber bridge. District VI, Route 41, Section S. James E. Anderson, Visalia, $7,595; Geo. M. Carr, Santa Rosa, $8,160; Valley Construction Co., San Jose, $8,715; E. G. Perham, Los Angeles, $9,004; A. S. Vinnell Co., Alhambra, $9,157; Lindgren & Swinerton, Inc., Sacramento, $10,405; C. C. Gildersleeve, Berkeley, $10,873. Contract awarded to F. Fredenburg, San Francisco, $7,245.

HUMBOLDT COUNTY—Between Scotia and one mile north of Rio Dell, about 1.0 mile to be graded and surfaced with plantmixed surfacing. District I, Route 1, Section E. Contract awarded to A. Soda and Son, Oakland, $52,582.

INYO COUNTY—Between 1.7 and 6.7 miles south of Shoshone, about 5 miles to be graded and road-mixed surface treatment to be applied. District IX, Route 127, Section P. F. Gunner Gramatky, Pasadena, $39,979; C. G. Willis & Sons Inc. and Chas. G. Willis, Los Angeles, $42,924; A. S. Vinnell Co., Alhambra, $45,789; Basich Bros., Torrance, $46,631; Isbell Construction Co., Reno, Nev., $48,092. Contract awarded to Roland T. Reynolds, Anaheim, $36,664.

KERN COUNTY—Between Rosamond and Mojave, 7.8 miles seal coat. District IX, Route 23, Section A. A. S. Vinnell Co., Alhambra, $5,456; G. W. Ellis, North Hollywood, $5,973; Goode & Schroeder, Inc., Roscoe, $6,561. Contract awarded to Basich Bros., Torrance, $4,963.

LOS ANGELES COUNTY—An undercrossing to be constructed under the tracks of the Pacific Electric Railway Co. and Fair Oaks Ave. in South Pasadena and the grading of a portion of Arroyo Seco Parkway and the paving of the approaches to the structure with asphalt concrete. District VII, Route 205, South Pasadena. Oberg Bros., Los Angeles, $46,929; R. R. Bishop, Long Beach, $47,177; J. S. Metzger & Son, Los Angeles, $47,607; Byerts & Dunn, Los Angeles, $47,856; Oscar Oberg, Los Angeles, $48,222; Harry F. Miller, Los Angeles, $48,622; Chas. J. Dorfman, Los Angeles, $48,739; Griffith Co., Los Angeles, $49,763; J. E. Haddock, Ltd., Pasadena, $50,020; Dimmitt & Taylor, Los Angeles, $52,062; Baruch Corp., Los Angeles, $52,960. Contract awarded to Carlo Bongiovanni, Los Angeles, $46,502.

MADERA COUNTY—Between Arcola School and Madera, about 3.1 miles to be graded and surfaced with asphalt concrete and plant-mixed surfacing, a new reinforced concrete bridge to be constructed and an existing reinforced concrete bridge to be raised and lengthened. District VI, Route 4, Section A. Griffith Co., Los Angeles, $169,239; Union Paving Co., San Francisco, $184,885; Marshall S. Hanrahan, Redwood City, $202,837; A. Teichert & Son, Inc., Sacramento, $205,441. Contract awarded to Piazza and Huntley & Trewhitt Shields and Fisher, San Jose, $165,702.

MARIN COUNTY—In the city of San Rafael, a reinforced concrete viaduct having a length of 2207 feet 6 inches to be constructed. District IV, Route 1, Section S.Rf. Earl W. Heple, San Jose, $392,772; Campbell Construction Co., Sacramento, $402,378; Andy Sordal and R. R. Bishop, Long Beach, $409,140; United Concrete Pipe Corp., Los Angeles, $425,165; MacDonald & Kahn, Inc., San Francisco, $429,256; Chas. L. Harney, San Francisco, $447,702; Clinton Construction Co. of California, San Francisco, $457,403; L. E. Dixon Co., Los Angeles, $468,818; The Utah Construction Co., San Francisco, $531,884; Engineers, Ltd., Sacramento, 563,144. Contract awarded to Heafey-Moore Co. & Frederickson & Watson Construction Co., Oakland, $380,999.

MENDOCINO AND LAKE COUNTIES—At various locations, about 32.1 miles of road-mix surfacing and seal coat to be applied. District I, Routes 1, 15, and 48. E. E. Smith, Eureka, $79,955; Independent Construction Co., Ltd., Oakland, $83,791; E. A. Forde, San Anselmo, $87,476. Contract awarded to Oranges Bros. Const. Dept., Stockton, $74,398.

NEVADA COUNTY—Between Donner Summit and two miles easterly, about 0.9 mile to be graded, surfaced with premixed bituminous treated surfacing and seal coat applied. District III, Route 37, Section C. Contract awarded to Fredericksen & Westbrook, Sacramento, $34,974.

ORANGE COUNTY—Between San Juan Capistrano and ½ mile easterly, about 0.5 mile to be graded and surfaced with plant-mixed surfacing. District VII, Route 64, Section A. C. R. Butterfield & Kennedy Co., San Pedro, $22,478; V. R. Dennis Construction Co., San Diego, $22,865; Denni Investment Corp., Wilmington, $22,907; Dimmitt & Taylor, Los Angeles, $23,316; J. E. Haddock, Ltd., Pasadena, $23,803; Oswald Bros., Los Angeles, $26,194; J. S. Metzger & Son, Los Angeles, $26,493; Sully Miller Contracting Co., Long Beach, $26,953. Contract awarded to A. S. Vinnell Co., Alhambra, $21,884.

PLACER COUNTY—Between Rock Creek and Nevada County line, about 1.3 miles crushed rock borders to be constructed and new borders and existing surfacing to be surfaced with plant-mixed surfacing. District III, Route 17, Section C. Contract awarded to Hemstreet and Bell, Marysville, $9,632.

SAN DIEGO COUNTY—Across Sweetwater River at Bonita, a reinforced concrete slab bridge having a length of 609.5 feet to be constructed. District XI, Feeder route. Daley Corp., San Diego, $40,806; R. R. Bishop, Long Beach, $39,177; The Contracting Engineers Co., Los Angeles, $41,352; M. H. Golden, San Diego, $42,083; Bernard G. Carroll and Harry L. Foster, San Diego, $38,955; V. R. Dennis Construction Co., San Diego, $38,736; J. S. Metzger & Son, Los Angeles, $39,845; Griffith Co., Los Angeles, $40,525; A. L. Gabrielson, Arlington, $36,678; Byerts & Dunn, Los Angeles, $40,324. Contract awarded to Oberg Bros., Los Angeles, $34,308.

SANTA CLARA COUNTY—At El Camino Real and University Ave. in Palo Alto, about 0.4 mile to be graded and paved with asphalt concrete and Portland cement concrete. District IV, Route 2, Section A, PA. Earl W. Heple, San Jose, $96,381; Heafey-Moore Co. & Frederickson & Watson Construction Co., Oakland, $99,926; A. G. Raisch, San Francisco, $101,280; Paul J. Tyler, Oroville, $126,959. Contract awarded to Union Paving Co., San Francisco, $93,635.

SONOMA COUNTY—At McClellan Gulch, about 29 miles north of Jenner, about 0.4 mile to be graded and penetration oil treatment to be applied. District IV, Route 56, Section D. Guerin Bros., San Francisco, $25,490; J. L. Conner and Sons, Point Arena, $32,589. Contract awarded to James E. Anderson, Visalia, $22,034.

TRINITY, SHASTA, TEHAMA, LASSEN, PLUMAS AND MODOC COUNTIES—At various locations, about 50.6 miles of seal coat to be applied. District II, Routes 20, 28, 29, 86, 21, 83. J. A. Casson Co., Hayward, $43,838. Contract awarded to C. F. Fredericksen & Sons, Lower Lake, $37,708.

TULARE COUNTY—Between Highway School and Visalia, about 1.0 mile to be graded and surfaced with asphalt concrete. District VI, Route 10, Section B. Louis Biasotti & Sons, Stockton, $86,232; Union Paving Co., San Francisco, $91,632; Denni Investment Corp., Wilmington, $96,763. Contract awarded to Piazza and Huntley, San Jose, $79,505.

YUBA AND BUTTE COUNTIES—Across Honcut Creeks about 1.2 miles to be graded and surfaced with crusher run base and plantmixed surfacing and three reinforced concrete slab span bridges on concrete pile bents to be constructed. District III, Route 87, Sections A, A. Hemstreet and Bell, Marysville, $124,833; Heafey-Moore Co. & Frederickson & Watson Construction Co., Oakland, $134,712; M. J. B. Construction Co., Stockton, $136,021; A. Teichert & Son, Inc., Sacramento, $136,796. Contract awarded to Engineers, Ltd., & Parrish Bros., Sacramento, $119,898.

Engineers Organize Class

(Continued from page 19)

with unit cost of each type into a chart.

The men of the different departments were grouped with a Bridge Department man acting as captain to bring together different viewpoints.

Through cooperation of the C. S. E. A. committee on education and its member in charge of engineering subjects, L. C. Hollister, design engineer for the Bridge Department, arrangements were made for stenographic service to permit the issuance of mimeographed syllabus notes to class members for each week of the course.

State of California

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FRANZ R. SACHSE, Assistant Director

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MAP
SHOWING
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LEGEND
Primary Roads
Secondary Roads
Proposed Roads

SAN FRANCISCO AND VICINITY

See Detail Map

LOS ANGELES AND VICINITY

See Detail Map