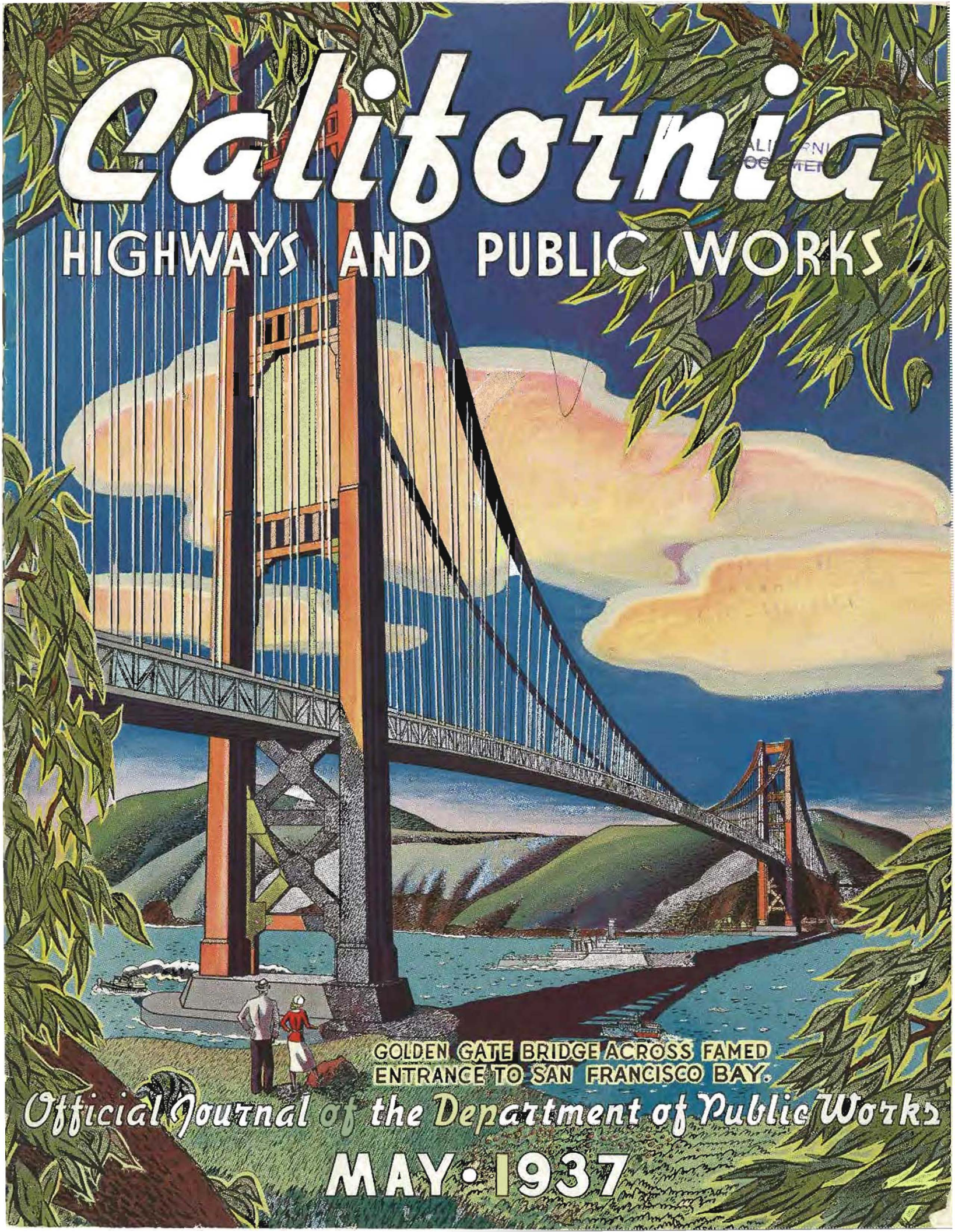
California

HIGHWAYS AND PUBLIC WORKS



GOLDEN GATE BRIDGE ACROSS FAMED ENTRANCE TO SAN FRANCISCO BAY.

Official Journal of the Department of Public Works

MAY · 1937

CALIFORNIA HIGHWAYS AND PUBLIC WORKS

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

EARL LEE KELLY, Director | C. H. PURCELL, State Highway Engineer | JOHN W. HOWE, Editor

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Cities Share of Gas Tax For Present Biennial Period $13,311,614.74

By L. V. CAMPBELL, Engineer of City and Cooperative Projects

APPORTIONMENT by the Department of Public Works through the Division of Highways of the April, 1937, quarterly apportionment of gas tax funds in the sum of $1,750,537.61 for expenditure within corporate limits of municipalities brings the total amount of these funds received by 282 California cities for this purpose to $13,311,614.74 for the biennial period ending June 30 of this year.

This biennial total combined with $5,291,693.72 allotted to the cities from gas tax revenues accrued during the 1933–1935 biennium, brings the cities a total subvention from the gas tax to date of $18,603,308.46, exclusive of State highway funds appropriated by the California Highway Commission for expenditures within municipalities.

The $13,311,614.74 represents the legislative allocation of the net proceeds of ½ cent of the gas tax to the cities for the biennium now drawing to a close.

The total apportionment combines ¼ cent of the gas tax, or $7,047,166.90 allocated by the 1933 Legislature for expenditure upon designated State highway routes within incorporated cities, as provided under Section 203 of the Streets and Highways Code, and ¼ cent of the gas tax, or $6,264,447.84, subsequently allocated by the 1935 Legislature for use upon streets of major importance other than State highway routes as provided under section 194 of the Streets and Highways Code.

During the fiscal year ending June 30, 1936, the apportionment was divided into $3,350,101.11 for the acquisition, maintenance and improvement of State highways, and $2,567,423.96 for a similar purpose on streets of major importance.

While the law provides one-quarter cent for each of these purposes, the amounts being determined upon a per capita basis, the variance between the two amounts for the fiscal year ending last June 30 is due to the fact that no provision was made for an apportionment for streets of major importance out of revenue accruing from the first, or July, 1935, quarterly apportionment, which preceded the effective date of the governing legislative act on September 15, 1935.

The ¼ cent for city streets of major importance for the fiscal year period ending June 30, 1937, also is less than the apportionment for State Highways of this period by $41.91. This amount was deducted from the concluding April, 1937, quarterly apportionment to help cover costs incurred under an appropriation to the Code Commission engaged with drafting of the Streets and Highways Code.

The cost of drafting the Streets and Highways Code was defrayed from the gas tax funds appropriated for that purpose by Chapter 698, Statutes of 1935, the share of the cities apportionment totaling $2,541.91. A previous deduction of $2,500 was made from the preceding 1935–1936 fiscal year apportionment and to this it was necessary to add an extra $41.91.

How $13,311,614.74 Gas Tax Was Divided Among Highway Districts*

	District Headquarters	State Highway	Streets of Major Importance
District I	Eureka	$51,295 82	$45,583 30
District II	Redding	34,094 69	30,316 70
District III	Marysville	254,749 99	226,389 02
District IV	San Francisco	2,247,460 53	1,997,570 97
District V	San Luis Obispo	146,549 80	130,261 94
District VI	Fresno	241,235 00	214,373 47
District VII	Los Angeles	3,288,582 47	2,923,119 10
District VIII	San Bernardino	219,331 26	195,129 65
District IX	Bishop	1,902 82	1,690 92
District X	Stockton	214,022 78	190,577 41
District XI	San Diego	347,941 74	309,435 36
Grand totals		$7,047,166 90	$6,264,447 84

* Allocations to cities in each highway district shown on pages 13–16

POPULATION INCREASE

The capita base upon which the apportionment was made was raised from 4,265,764 given in the Federal census of 1930 as the population of incorporated cities to a total of

(Continued on page 13)

Golden Gate Bridge Ready For Dedication on May 28

WITH her far-famed bay already spanned by the greatest overwater structure in all the world, an achievement visioned by pioneers of her early days, San Francisco, on May 28, will see the fulfillment of another dream of California Argonauts when the Golden Gate Bridge across the entrance to San Francisco harbor is formally opened.

The San Francisco-Oakland Bay Bridge was built by the State of California. The Golden Gate Bridge was financed by six coastal counties of northern California with the State Division of Highways cooperating by building the Marin approach highway which will cost about $2,000,000, as monuments to engineering skill and progressive public spirit.

A five-day Fiesta eclipsing any civic celebration ever attempted in San Francisco will commemorate the dedication of the giant span arching the Golden Gate. Mexico and Canada and all the western States will join with the hostess city and the counties of the Redwood Empire of northern California in observing the occasion.

PEDESTRIANS TO HAVE DAY

For eleven days, San Francisco will indulge in revels, pageantry, parades and civic demonstrations—thrilling shows on land, on water and in the air.

Before the opening day of the Fiesta proper on May 27, there will be a preholiday program consisting of a ceremony of blessing the bridge on May 23, a Radio Stars Show in the Civic Auditorium Tuesday night, May 25; a city-wide luncheon at the Palace Hotel on May 26 and a Queen's Coronation ball that night at the Civic Auditorium.

Pedestrians will have their day on May 27, when no vehicular traffic will be permitted on the huge span. This will mark the opening of the Fiesta.

A highlight of the Fiesta will be the mobilization of cavalcades originating in Canada, in Mexico and western States and joining at the bridgehead on the Marin shore on May 28, the day of the bridge dedication.

FLEET WILL PARTICIPATE

On that date the United States Battle Fleet will arrive from Pacific maneuvers with approximately 50,000 officers and men to participate in the celebration.

In Crissy Field in the Presidio a huge amphitheater is being created for the staging of an historical pageant, telling the story of the upbuilding of California, with a cast of 3000 actors and singers and an orchestra of 100 musicians. Seating accommodations will be provided for 25,000 persons.

Four of the greatest parades San Francisco has ever seen will brighten the Fiesta. Floats of rich and novel design will lend color to the spectacle, with entries scheduled from all the western States and from foreign countries. Bridge workers will be in the line of march. The Army and the Navy will lend to the parades the martial dignity of national participation. These parades are for Thursday, May 27, May 28, the night of May 29, and Memorial Day, May 31. Grandstands will be ready along the line of parade.

HONOR FOR BRIDGE HEROES

Those who lost their lives building the bridge will be remembered at a simple ceremony of religious nature on Memorial Day at the center of the bridge with the children of all the schools, public, private and parochial, dropping flowers into the bay. Of a more material nature will be the Labor Ball of May 29 at the Civic Auditorium, the net returns of which will be given to the families of those who lost their lives building the bridge.

A sports program of infinite variety will run all through the Fiesta period.

For many weeks preparations for the Fiesta have been in progress under the direction of a committee of which Supervisor Arthur M. Brown, Jr., is chairman, and Eric Cullenward general manager. Through them San Francisco invites the world to be her guests for eleven days beginning May 23.

The main center span of the Golden Gate Bridge is the largest single span of any suspension bridge in the world. It is 4200 feet long, 700 feet longer than the George Washington Bridge over the Hudson River.

GIANT TOWERS

Its two giant towers, one off San Francisco's Presidio shore and the other on the Marin County bluff to the north, are 746 feet high, 313 feet taller than the Russ building on Montgomery Street in San Francisco.

The minimum vertical clearance at center is 220 feet above mean high water; the maximum clearance is 236 feet above mean low water—the greatest navigation clearance in the world, far above the mast height of any ship afloat or building.

The total bridge width is 90 feet, divided into a 60-foot roadway, with six lanes for vehicular traffic and two 10½-foot clear width sidewalks.

The grand total length, including the two approach roads, or from Waldo Point in Marin County to the Marina Gate of the Presidio in San Francisco, all embraced in the project, is seven miles.

There are two side-spans—1125 feet each—and if these are added to the 4200 feet of the main center span, there is a total length of the bridge proper of 6450 feet, or one and one-fifth miles.

SIX COUNTIES BACK PROJECT

In the initial plans for the Golden Gate Bridge there were two features that aroused controversy.

First, the unprecedented length of span—4200 feet, or more than twice as long as that of any other bridge that had been erected up to the time when the plans were first made; and second, the problem presented in building the south pier, 1100 feet off shore, in water varying from 65 to 100 feet in depth and subject to extreme storm and tidal conditions.

Confident that the bridge could be built, six counties banded together to form the Golden Gate Bridge and

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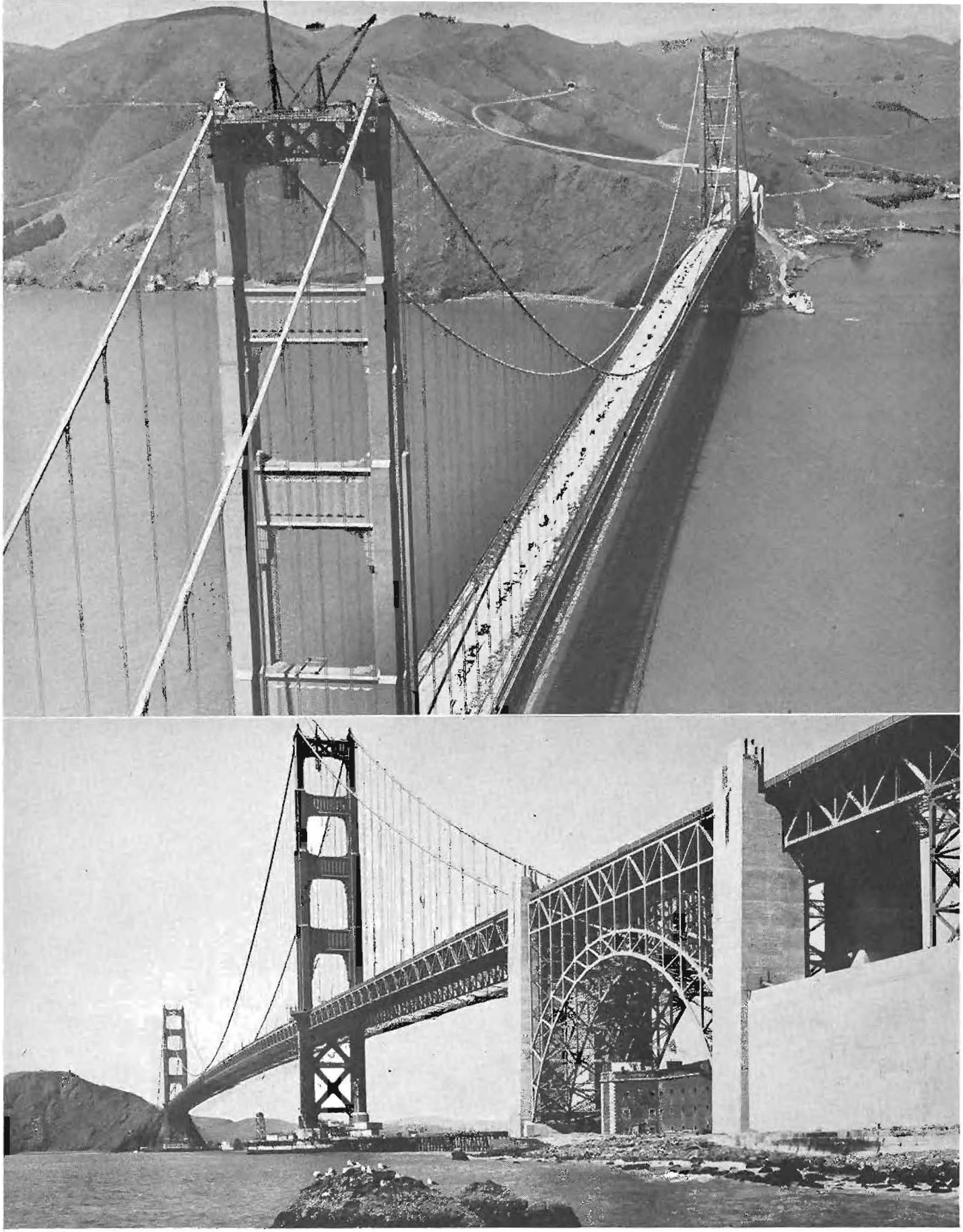


The Golden Gate is bridged! Upper photo is an aerial view of world's longest suspension span showing Waldo approach on Marin side, built by State, winding from northern bridgehead over mountain and through tunnel leading down to Waldo Point. Lower photo shows sweep of bridge from San Francisco side. Historic Fort Mason appears under arch span in foreground.

Marin Approach to Golden Gate Bridge Built by State

By EARL LEE KELLY, State Director of Public Works

WITH the completion of the Golden Gate Bridge, California motorists can view with justifiable pride their proprietary interest in this great undertaking.

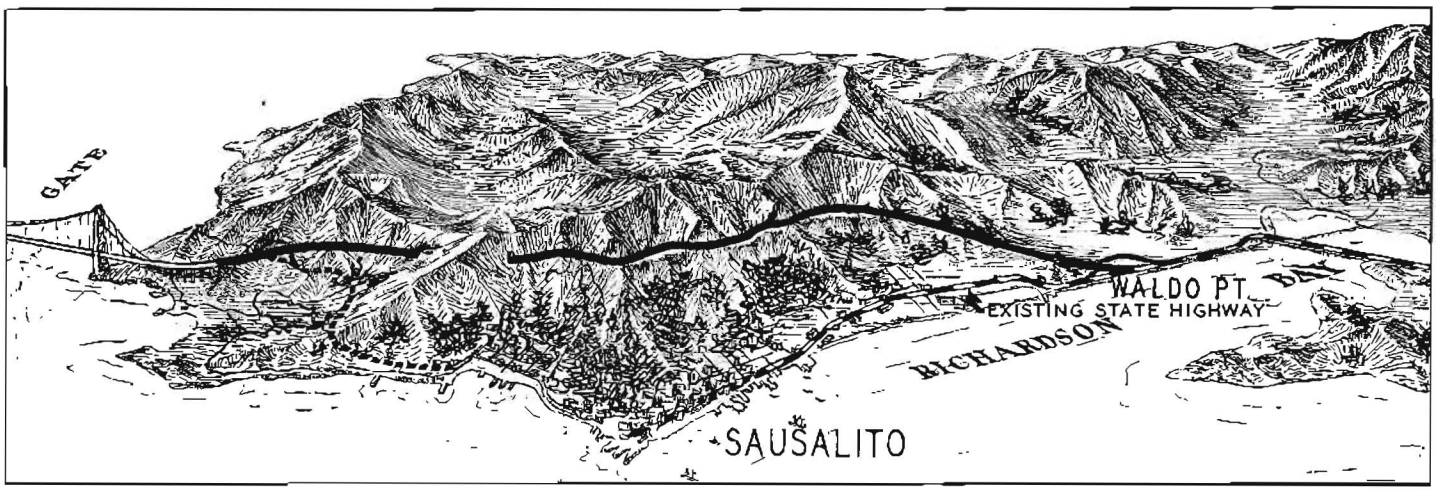
They may drive on to the world's largest and longest over-water suspension span from the Marin shore over a highway approach they themselves built with the monies they contributed to the gasoline tax fund. And in doing so they will travel over one of the biggest single projects for road construction ever entered into by the Division of Highways.

The State of California, through the Department of Public Works, will have expended approximately $2,000,000 for the Waldo approach to the Golden Gate Bridge. An outstanding engineering job, this northerly approach is the State's share of a monumental achievement.

TOLL FREE IN FUTURE

It will come to its complete fruition in the service of the people and the development of the great Redwood Empire of northern counties when this bridge becomes toll free at the expiration of the bond payment period. The inclusion of this provision for eventual free tolls in the financing of the Golden Gate Bridge is in keeping with the purpose of the State to make all California highway bridges free for the use of the motoring public that pays for them through their gasoline taxes.

Final action providing for the construction of an adequate highway approach on the Marin side of the bridge was taken by the California Highway Commission on January 3, 1936, when that body allocated the sum of $1,250,000 to supplement the $500,000 budgeted for that purpose in the budget for the 87th–88th fiscal years.



Sketch shows course of State's approach to Golden Gate span from Waldo Point through tunnel to the bridge.

Construction of this project was planned originally on the basis of a three-lane pavement, as it was felt that the potential slides were of such magnitude that the necessary excess excavation due to slide removal would develop sufficient material to provide for a four-lane width.

PLANS CHANGED

After much local discussion, however, plans were changed to provide for initial construction of a four-lane width. That slide excavation has increased the original estimate of 1,813,000 cubic yards by more than 700,000 cubic yards has borne out the soundness of the engineer's original plan.

With this amount of $1,750,000 available, the Department of Public Works awarded two contracts for the work.

One provided for grading a roadbed 46 feet and 66 feet wide and placing plant mix surfacing on crusher run base 42 feet and 62 feet wide on an alignment through the hills in back of Sausalito. The new road connects with the existing Redwood Highway at Waldo Point near the Richardson Bay Bridge and is about three and one-half miles long.

The other contract provided for the boring and lining with reinforced concrete a tunnel about 1000 feet long and a bore 28 feet 9 inches high on the center line. The roadway width in the tunnel is 42 feet and one sidewalk, 42 inches wide, is provided.

DIFFICULT CONSTRUCTION

The difficulties of construction of the four-lane Marin approach highway are not readily apparent. Mountainous highways have been built elsewhere, but have generally been limited

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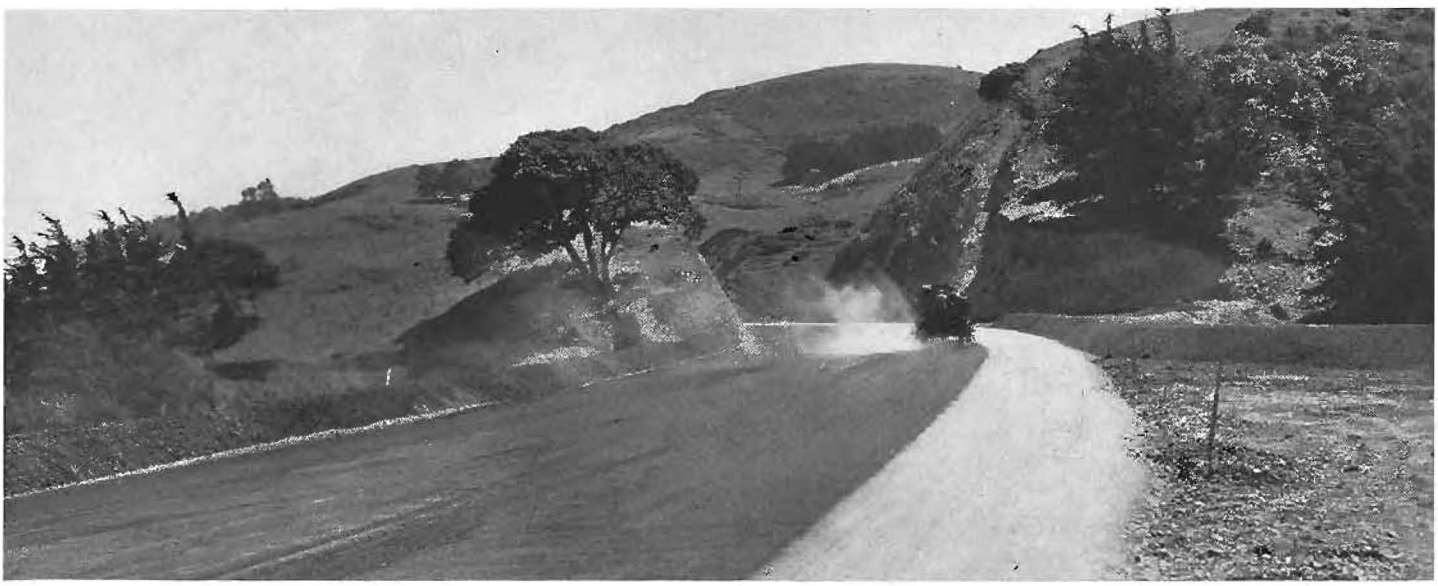
Waldo Approach looking down grade toward Richardson's Bay and junction of new road with State Highway at Waldo Point.

Interior view of State-built tunnel on mountain stretch of Marin approach to Golden Gate Bridge.



Finishing touches being put on section of new $2,000,000 State Highway leading to Golden Gate Bridge.

47 Bad Curves On Redwood Highway Being Eliminated

By J. W. VICKREY, District Engineer

TWO road reconstruction projects nearing completion in Mendocino County will eliminate a total of 47 curves, many of them dangerous, on the Redwood Highway between Outlet Creek and Reeves Creek, north of Willits, and between Eleven Oaks and Willits south of this city. Work on both improvements should be finished early this summer.

The first and larger project will do away with 2118 degrees of curvature embracing 36 curves, and 0.6 of a mile of length in a distance of 4.5 miles. The second has for its primary object the replacement of a narrow concrete bridge over Baechtel Creek in a right angle turn, and also calls for the elimination of ten other curves aggregating 270 degrees of curvature with a minimum radius of 150 feet in a distance of 1.1 miles.

The Outlet Creek-Reeves Creek job, located about three miles north of Willits, will cost approximately $200,000 and will replace on a modern standard the old Oil Well Hill grade which was constructed by the State in 1917. Previous to the first construction, the old county road, which was little better than a trail, carried the traffic in this locality.

HEAVY TRAFFIC INCREASE

It is a high compliment to the engineers involved that the 1917 construction carried traffic as well as it did for twenty years.

The tremendous increase in summer tourist traffic together with the advent of heavy slow moving trucks has, in later years, caused this section to be somewhat of a bottleneck.

The sharp curves and heavy grade reduced the speed of trucks to such a point that the average driver who had the misfortune to be behind one of these trucks was faced with one of two alternatives; to stay where he was and enjoy the scenery at his leisure, or take the chance of passing where sight distance was poor. Impatience being a trait of the average driver, the second decision predominated, with the result that there were many accidents and several fatalities on this section.

The new location is very close to the old State highway and in general cuts through the points and across the canyons around which the original State highway was built. In the rough, steep terrain of the southerly half of the project, this has resulted in numerous heavy cuts and fills. The heaviest cut which is at the summit between Station 200 and Station 212, has a maximum depth of 93 feet and the new grade is about 50 feet lower than that of the old highway.

The original county road, the first State Highway construction and the construction now under way, all cross this summit at the same location and a striking contrast is presented between the trail-like remains of the county road and the present roadway 30 feet wide and nearly 100 feet lower.

From a construction standpoint the most interesting detail of the work is the typical cross-section of the improvement. This is designed for a roadbed 30 feet wide with no side ditches. The customary berms are provided on the low side of fills on curves. Drainage is taken care of by leading water down the surfaced edge of the road to frequent metal pipe culverts. Where these are placed in cut sections, drop inlets with cast steel

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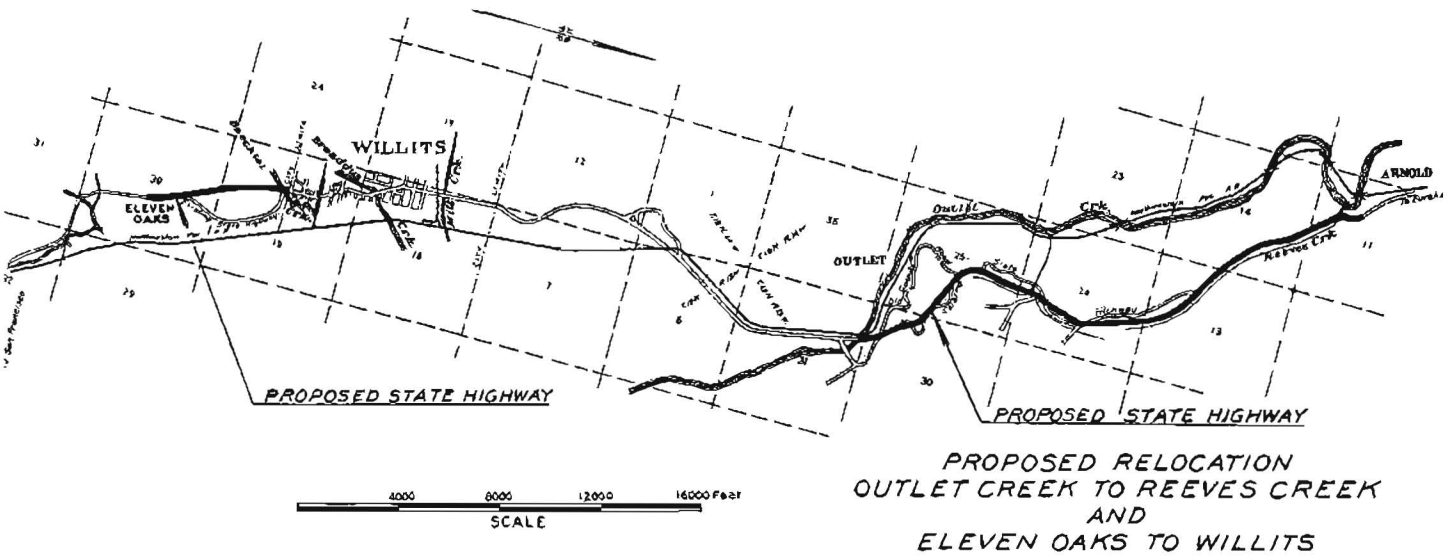
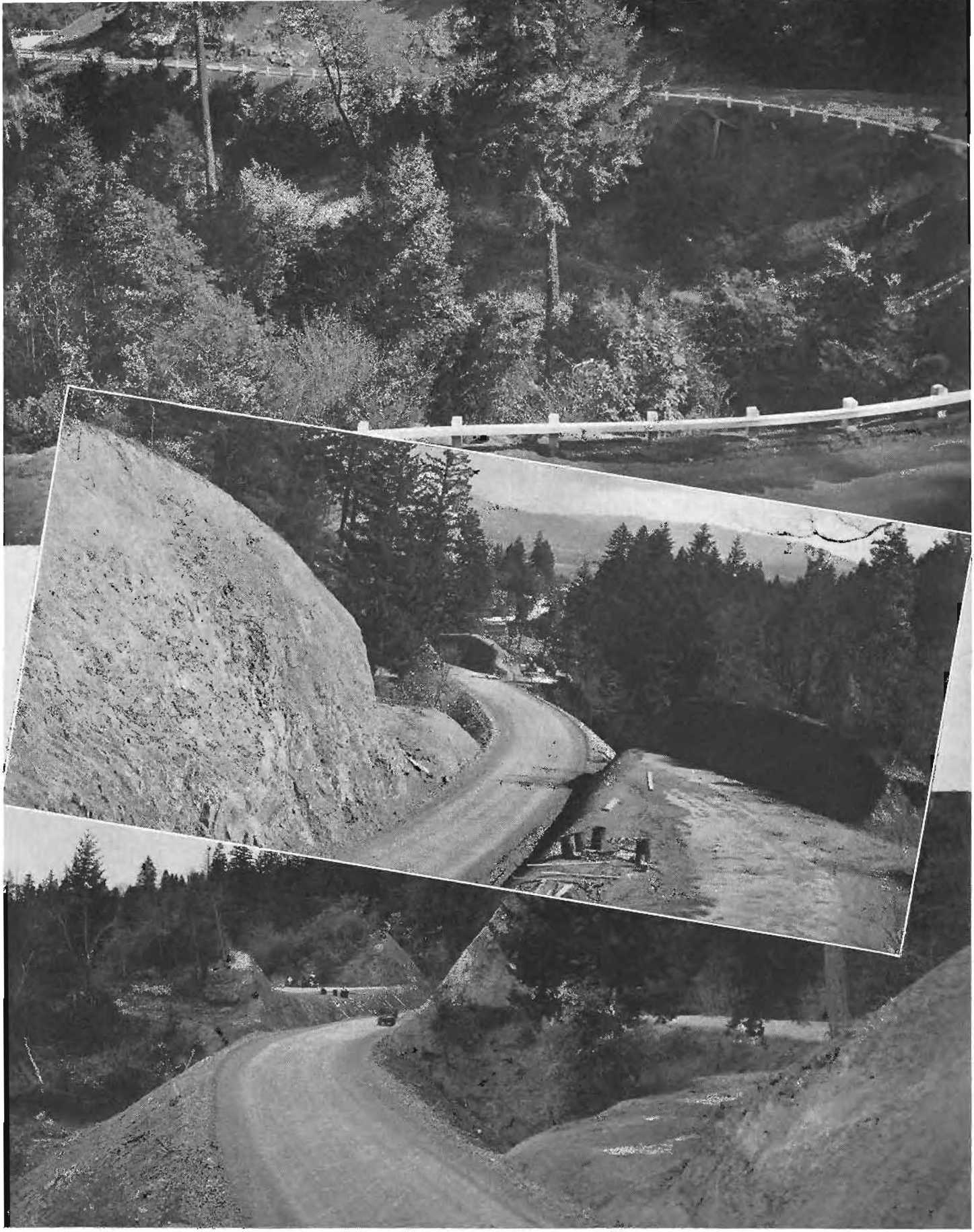


PROPOSED RELOCATION
OUTLET CREEK TO REEVES CREEK
AND
ELEVEN OAKS TO WILLITS



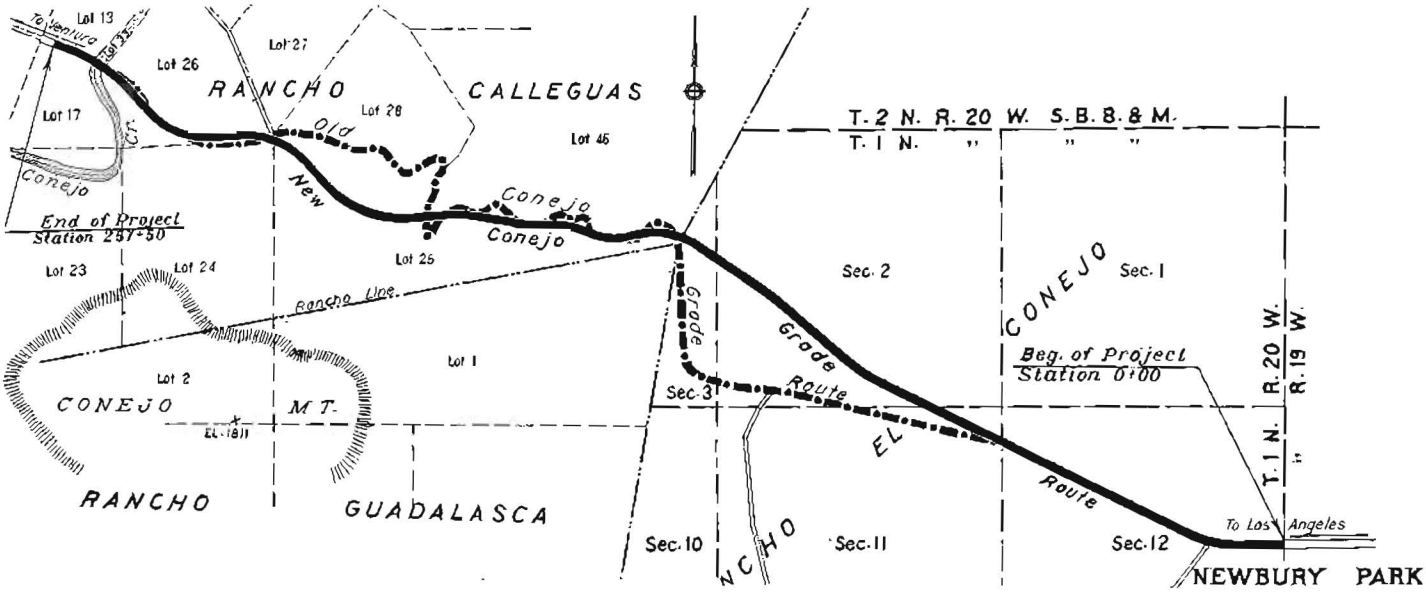
These pictures show sections of Redwood Highway in Mendocino County which are being standardized to eliminate dangerous curves. Upper: Section from Outlet Creek to Reeves Creek, showing crooked alignment of old road. Center: Outlet Creek to Reeves Creek, showing new alignment and bridge across Outlet Creek in distance. Lower: Another section of road on same project showing improved alignment.

Colorful Show Features Conejo Grade Dedication

By S. V. CORTELYOU, District Engineer

WITH pageantry and colorful ceremonies at 3:30 p.m. on Saturday, May 1, 1937, the $570,000 Conejo Grade realignment on the Ventura Route near Camarillo in Ventura County was officially opened to public traffic by Director of Public Works Earl Lee Kelly, acting for Governor Frank F. Merriam.

Director Kelly personally operated the huge power grader which pushed a boulder off the traveled way, symbolizing the removal of the last obstruction to traffic on this newly constructed highway. Immediately after removal of the boulder, long caravans of cars from both the Los Angeles and Ventura ends proceeded the length of the improvement, thus putting in service another great link of State Highway Route No. 2 (U. S. No. 101), and eliminating one of the most dangerous stretches of the old coast highway in its entire length.



Sketch map of Conejo Grade realignment project. Black line shows new road; dotted line old curving highway.

OLD SPANISH SETTING

The day's festivities were commenced at noon in a large grove of fine old oak trees on the ranch of Adolpho Camarillo at the foot of the grade. At one of his famous barbecues Mr. Camarillo, scion of a California pioneer family, was the genial host to city, county and State officials and civic leaders and motion picture celebrities. The setting was that of the early Spanish days of California with Spanish musicians and dancers in costume entertaining the 350 guests. Leo Carrillo was master of ceremonies and entertained the gathering with his humor and anecdotes of early California times, while Adolpho Camarillo gave a most informative and interesting talk on the historical features of Conejo Pass.

Immediately following the barbecue, the gathering reassembled near the summit of the grade where a speakers' stand with public address system had been erected. Thousands of cars gathered at the barricades a short distance on each side of the stands and the occupants filled the highway and covered the surrounding hill overlooking the ceremonies. Music was furnished by the Ventura Junior College Band, the Ventura County Recreational Club Orchestra and the Oxnard Municipal Band.

PICTURESQUE CAVALCADE

Presently there came into view around one of the curves, the Transportation Cavalcade sponsored by the California Mission Trails Association, Ltd., under the direction of C. M. C. Raymond, depicting progressively the modes of transportation in vogue in that country from the time the great Spanish explorer Portola first traveled on foot through Conejo Pass in 1669, to the streamlined automobile of 1937.

Adolpho Camarillo, the universally beloved pioneer of Ventura County, who donated the right of way for the changed alignment on Conejo Grade, in his capacity of President of the Camarillo Chamber of Commerce, acted as grand marshal of the cavalcade. Among his aides were Roy B. Witman and Leo Carrillo, all mounted on Mr. Camarillo's famous Arabian white horses.

Brown-robed Franciscan friars fol-

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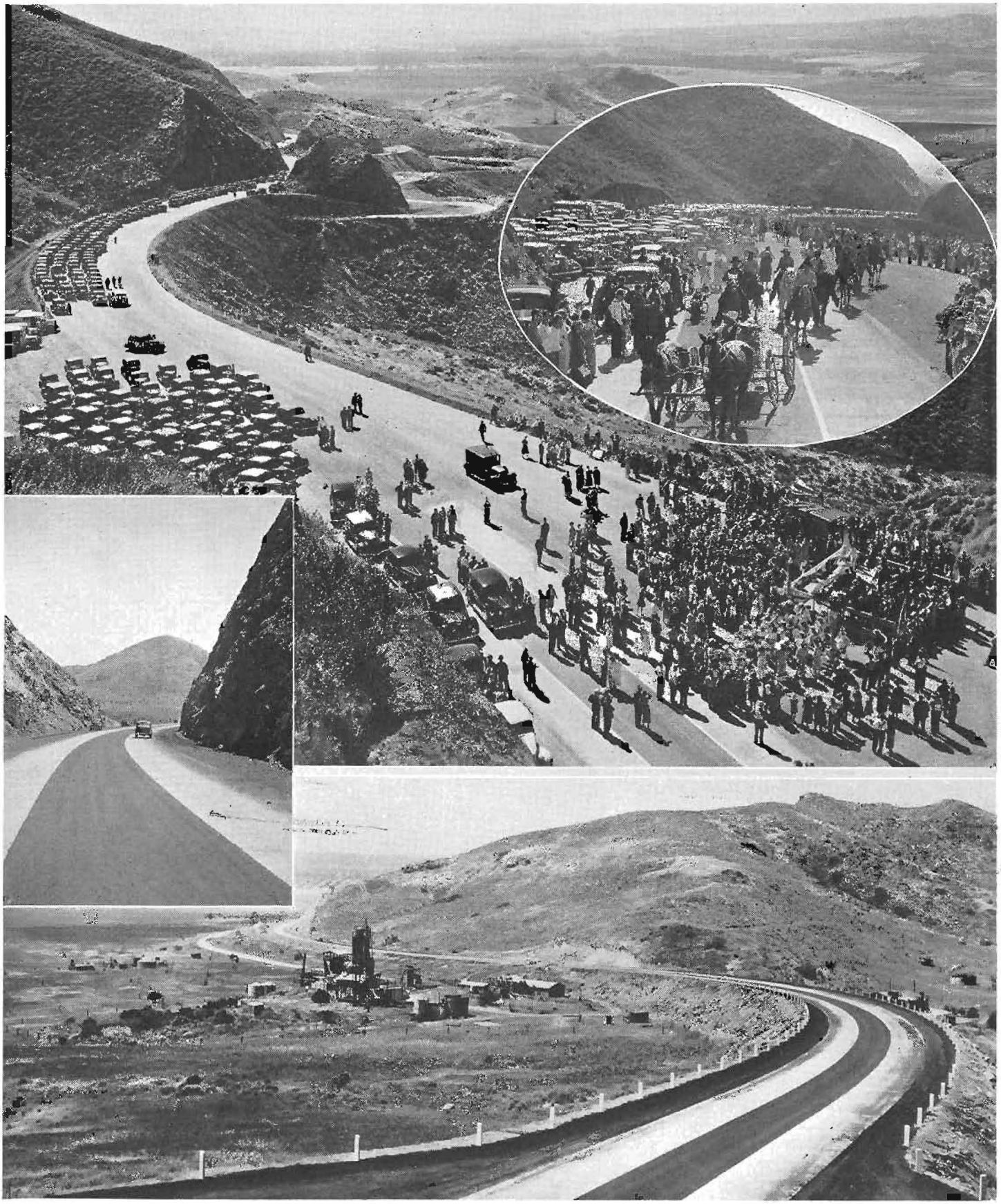


Dedication of the new Conejo Grade was picturesque affair. Upper right: Portion of Transportation Pageant. Center: Scene during ceremonies showing new alignment and in middle distance old highway winding down grade. Left center: Section of completed road showing deep cut. Lower: At bottom of Conejo Grade showing new highway looking north toward Camarillo.

Charter Way Underpass In Stockton Opened To Traffic

By R. E. PIERCE, District Engineer

WITH Governor Frank F. Merriam and Director of Public Works Earl Lee Kelly as the principal speakers, ceremonies dedicating and opening to traffic the newly completed Charter Way Underpass in Stockton were held on Saturday morning, May 8.

San Joaquin County and city officials joined with representatives of the State administration and the Division of Highways in commemorating the occasion.

The need of safety on highways is of paramount importance in the building of roads, Governor Merriam said in a brief dedication address. He said that many highways are constructed at tremendous expense, but soon pay for themselves by cutting down mileage and making travel safer for motorists. He added that such highways can not be built in the future unless gasoline tax funds are zealously guarded and diversion of them to purposes other than highway construction and maintenance is prevented.

PROTECTING SCHOOL CHILDREN

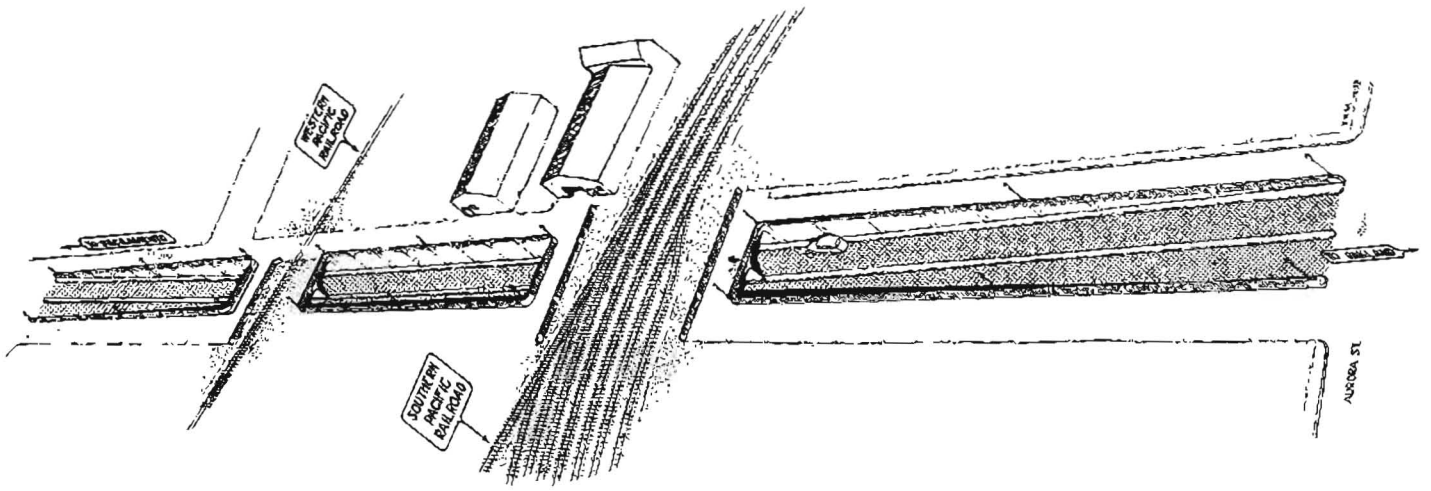
Director Kelly outlined the highway program of the Department of Public Works and said that the Division of Highways is committed to the policy of routing highways away from school buildings. More California school children were killed in highway accidents last year, he declared, than perishd in the Texas school building blast recently. He told of the plan to move the highway at Galt west of the high school and away from the business district as a safety measure for children.

Other speakers were Mayor Ralph W. Fay and C. P. Rendon. Three members of the California Highway Commission were present, P. A. Stanton of Anaheim, Paul Jasper of Fortuna, and William Hart of Carlsbad, as were Edward J. Neron, Deputy Director of the Department of Public Works, and State Adjutant General Harry H. Moorehead.

Following the dedication, the guests were entertained at a luncheon in the Hotel Wolf.

The underpass carries State highway traffic under the tracks of the Southern Pacific and the Western Pacific railroads on U. S. 50 in the southern part of the city of Stockton, and is an important relief to a large volume of traffic using this route.

Charter Way is in effect a by-pass to the business district of Stockton. Connecting as it does U. S. 99, east of the business district, the main route in the interior valley of California and the State highway running through Tracy to San Francisco via the Altamont Pass, it will serve a large volume of passenger traffic as well as the truck freight traffic originating southeast of Stockton and coming to the Port of Stockton, newly built and modernly equipped, serving a large number of ocean-going freighters.



This sketch shows how Stockton grade separation project underpasses city streets and tracks of two railroads.

NEW UNDERPASS PLANNED

Prior to the completion of this underpass, traffic entering Stockton from the northeast, en route to points to the southwest preferred to cross Stockton via Miner Avenue on which is located a city-built underpass under the Southern Pacific and Western Pacific railroads, rather than take the chance of a delay in crossing these railroads at grade, on Charter Way, in spite of the congested city traffic that has to be traversed by the other route.

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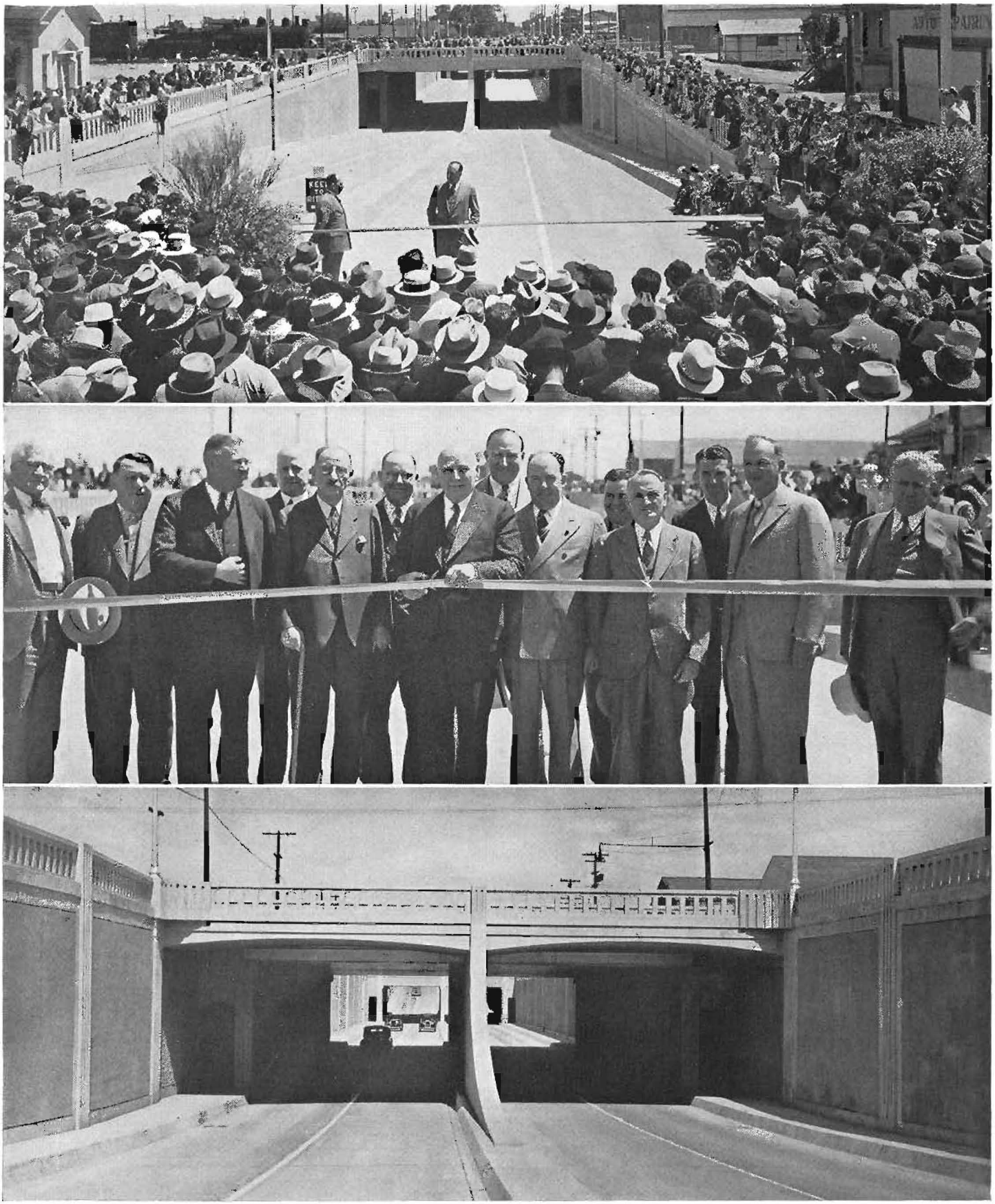


Scene at dedication of Charter Way Underpass in Stockton. Upper: Director of Public Works Earl Lee Kelly addressing dedication crowd before ceremony of ribbon cutting. Center: Left to right: C. P. Rendon, Louis Biasotti, District Highway Engineer R. E. Pierce, Adjutant General H. H. Moorehead, Highway Commissioner P. A. Stanton, Chas. H. Menzies, Governor Frank F. Merriam, Earl Lee Kelly, Mayor Ralph Fay, Al Biasotti, Highway Commissioner W. T. Hart, City Attorney Thomas Quinn, Highway Commissioner Paul Jasper, City Manager W. H. Hogan. Lower: Close-up view of underpass.

State-Wide Surveys Covering All Highway Uses and Trends

At the last annual convention of the American Association of State Highway Officials held in San Francisco, H. S. Fairbank, Chief, Division of Information, U. S. Bureau of Public Roads, delivered a talk on the objects and methods of the State-wide highway planning survey. California now is engaged in making its planning survey and the subject of Mr. Fairbank's address being still a timely one, the following excerpt from his discussion is printed.

By H. S. FAIRBANK, U.S. Bureau of Public Roads

FORTY States are now cooperating with the Bureau of Public Roads in State-wide highway planning surveys which cover the whole rural highway system and its urban connections. They include a road inventory, traffic surveys, and a financial study, coordinated to supply all the facts needed for intelligent planning of all the highways as essential parts of the transportation system of the whole country.

In our early highway planning we limited the State highway systems and the Federal Aid system to direct connections between important cities, which was sufficient to serve the greater portion of the motor vehicle traffic; and we adopted the "stage-construction" policy, which meant building or improving all of the selected system to a standard suitable for immediate needs, and as funds became more plentiful, raising these standards where necessary.

We have now practically completed the selected main highway systems, but largely because of the high speed of modern traffic many parts of the system are inadequate in grades, alignment, and width. Moreover there is a vast mileage of other roads which require improvement, but to what extent we do not know.

NEW TREND EVIDENT

Originally highways were built with funds from property taxes, but in recent years motor vehicle license fees and gasoline taxes have relieved property owners of that burden almost entirely. In fact, the need of revenue for other purposes during the depression inspired such raids on motor vehicle funds that a serious depletion of highway revenues was halted only by the Hayden-Cartwright Act.

Highway administration shows a new trend. Local authorities are yielding responsibility to State governments and the Federal Government. Shall the Federal Government assume full responsibility for a Federal system of highways?

The regulation and taxation of road use are problems. Interstate traffic is hampered by variable State laws. Commercial use of the roads is increasing. The altered relations of road to vehicle and of highway transport to other forms of transport arouse spirited controversies. Truck taxes have no definite relation to the loads carried, and other vehicle taxes have no rational basis.

REVERSING ECONOMIC PICTURE

Our people and our industries are located where they are largely because of the concentrative forces of railroads and steam power. Industry needed transportation, and needed coal to supply steam power, so cities were located on railroads. Farms, which depended on railroads and cities for markets, were valued according to their proximity to railroads. Highway transportation and widely distributed electric power, on the other hand, are diffusive. They are reversing the whole social and economic trend.

All these problems of highway planning must be solved on a basis of absolute facts. The objective of these surveys is to obtain such facts.

The inventory will reveal the actual mileage of our highways and the condition of their surfaces; sight distances, curvature and grades on main roads; and conditions at all railroad-highway grade crossings in rural territory. From the railroads and our traffic survey parties we shall obtain data on highway and rail traffic densities, accidents, and damage claims at each grade crossing.

PURPOSE OF SURVEYS

The inventory will show the location in rural territory of dwellings, buildings, and places of all kinds that are the origin and destination of highway traffic; roads used as mail routes; routes of school buses, common carrier buses and trucks; all railroads, routes of air lines, courses of navigable streams; and stations, ports, and wharves.

All these data will be classified in statistical tables and charted on large-scale maps.

The traffic surveys will show the flow of traffic over all the rural highways. Precise measurements of the weight and dimensions of various kinds and sizes of vehicles are being obtained, generally at pit scales, to provide data for use in solving problems of road design, taxation and regulation of vehicles.

CHARACTER OF DATA

One type of origin-and-destination study will show the range of movement over all roads, and the relative interest in the highways of city and county dwellers. Another, at locations where there are both free and toll facilities, will help us to measure the value that drivers put upon savings of time and distance. Still another will be made of highway routing.

(Continued on page 27)

Cities Share of Gas Tax for Present Biennial Period $13,311,614.74

(Continued from page 1)

4,297,408 by annexations of unincorporated territories and by city incorporations, an increase of 31,644.

The 1935 Legislature under section 194 of the Streets and Highways Code provided for participation in the apportionment of cities incorporated subsequent to the 1930 Federal census and for annexations by cities of unincorporated territories. Calculation of such populations is determined by multiplying the number of registered electors residing therein by three.

Cities incorporated subsequent to 1930 are: Indio, Riverside County; Westmorland, Imperial County; Gardena, Los Angeles County; Fairfax, Marin County; Bay Shore, San Mateo County; Dos Palos, Merced County; and Tulelake, Siskiyou County. The latter city was incorporated March 1, 1937, and therefore is entitled to participate in the April, 1937, quarterly apportionment only.

The apportionment to cities by districts is as follows:

District I

CITY AND COUNTY	STREETS OF MAJOR IMPORTANCE Section 194 — Fiscal Year Ending June 30 1936	STREETS OF MAJOR IMPORTANCE Section 194 — Fiscal Year Ending June 30, 1937	STATE HIGHWAYS Section 203 — Biennium Ending June 30, 1937
Del Norte County			
Crescent City	$1,028.98	$1,480.41	$2,823.88
Humboldt County			
Arcata	$1,022.40	$1,470.93	$2,805.79
Blue Lake	332.02	477.68	911.18
Eureka	9,423.59	13,557.72	25,861.34
Ferndale	531.85	765.16	1,459.55
Fortuna	741.23	1,066.41	2,034.16
Trinidad	64.01	92.10	175.67
Totals	$12,115.10	$17,430.00	$33,247.69
Lake County			
Lakeport	$788.49	$1,134.41	$2,163.88
Mendocino County			
Fort Bragg	$1,807.90	$2,601.03	$4,961.45
Point Arena	230.32	331.37	632.08
Ukiah	1,868.92	2,688.81	5,128.91
Willits	851.92	1,225.64	2,337.93
Totals	$4,759.06	$6,846.85	$13,060.37
Totals District I	$18,691.63	$26,891.67	$51,295.82

District II

Lassen County			
Susanville	$812.42	$1,168.83	$2,229.54
Modoc County			
Alturas	$1,398.71	$2,012.31	$3,838.49
Shasta County			
Redding	$2,505.45	$3,604.61	$6,875.78
Siskiyou County			
Dorris	$455.86	$655.85	$1,251.03
Dunsmuir	1,561.42	2,246.43	4,285.04
Etna	226.74	326.20	622.23
Fort Jones	180.67	259.93	495.82
Montague	303.31	436.38	832.40
Mt. Shasta	603.62	868.44	1,656.54
Tulelake		61.10	61.10
Yreka	1,316.75	1,894.39	3,599.90
Totals	$4,648.37	$6,748.72	$12,804.06
Tehama County			
Corning	$823.79	$1,185.18	$2,260.74
Red Bluff	2,104.04	3,027.08	5,774.15
Tehama	113.66	163.53	311.93
Totals	$3,041.49	$4,375.79	$8,346.82
Totals District II	$12,406.44	$17,910.26	$34,094.69

District III

CITY AND COUNTY	STREETS OF MAJOR IMPORTANCE Section 194 — Fiscal Year Ending June 30 1936	STREETS OF MAJOR IMPORTANCE Section 194 — Fiscal Year Ending June 30, 1937	STATE HIGHWAYS Section 203 — Biennium Ending June 30, 1937
Butte County			
Biggs	$276.99	$398.50	$760.14
Chico	4,762.65	6,852.02	13,070.24
Gridley	1,161.19	1,670.62	3,186.69
Oroville	2,212.33	3,182.86	6,071.31
Totals	$8,413.16	$12,104.00	$23,088.38
Colusa County			
Colusa	$1,265.89	$1,821.24	$3,474.01
Williams	509.10	736.12	1,400.82
Totals	$1,774.99	$2,557.36	$4,874.83
El Dorado County			
Placerville	$1,389.13	$2,037.28	$3,850.95
Glenn County			
Orland	$714.91	$1,028.53	$1,961.93
Willows	1,210.85	1,742.05	3,322.95
Totals	$1,925.76	$2,770.58	$5,284.88
Nevada County			
Grass Valley	$2,283.50	$3,285.28	$6,266.67
Nevada City	1,017.62	1,464.05	2,792.68
Totals	$3,301.12	$4,749.33	$9,059.35
Placer County			
Auburn	$1,591.94	$2,290.31	$4,368.78
Colfax	545.60	784.97	1,497.32
Lincoln	1,252.73	1,802.30	3,437.89
Rocklin	433.13	623.16	1,188.65
Roseville	3,843.74	5,529.98	10,548.44
Totals	$7,667.14	$11,030.72	$21,041.08
Sacramento County			
North Sacramento	$1,254.53	$1,804.88	$3,442.83
Sacramento	56,085.65	80,690.48	153,916.99
Totals	$57,340.18	$82,495.36	$157,359.82
Sierra County			
Loyalton	$500.73	$720.41	$1,374.18
Sutter County			
Yuba City	$2,156.68	$3,102.82	$5,918.62
Yolo County			
Davis	$743.63	$1,069.85	$2,040.74
Winters	536.02	771.17	1,471.02
Woodland	3,331.64	4,793.23	9,138.15
Totals	$4,611.29	$6,634.25	$12,649.91

Gasoline Tax Apportionment to the Citi

District III—Continued

CITY AND COUNTY	STREETS OF MAJOR IMPORTANCE Section 194 Fiscal Year Ending June 30, 1936	STREETS OF MAJOR IMPORTANCE Section 194 Fiscal Year Ending June 30, 1937	STATE HIGHWAYS Section 203 Biennium Ending June 30, 1937
Yuba County			
Marysville	$3,447.70	$4,960.21	$9,461.60
Wheatland	286.55	412.27	786.39
Totals	$3,734.25	$5,372.48	$10,247.99
Totals District III	$92,814.43	$133,574.59	$254,749.99

District IV

Alameda County			
Alameda	$20,958.38	$30,152.85	$57,516.52
Albany	5,126.38	7,375.33	14,068.42
Berkeley	49,121.47	70,671.09	134,805.03
Emeryville	1,397.51	2,010.59	3,835.20
Hayward	3,308.31	4,759.66	9,079.05
Livermore	1,865.93	2,684.52	5,120.73
Oakland	169,939.83	244,492.56	466,369.31
Piedmont	5,583.44	8,032.90	15,322.75
Pleasanton	740.03	1,064.69	2,030.88
San Leandro	6,852.91	9,859.30	18,806.59
Totals	$264,894.19	$381,103.49	$726,954.48
Contra Costa County			
Antioch	$2,696.90	$3,880.03	$7,228.93
Concord	673.03	968.29	1,847.00
El Cerrito	2,315.22	3,330.91	6,353.70
Hercules	234.51	337.39	643.67
Martinez	4,073.46	5,860.49	11,135.15
Pinole	467.23	672.22	1,282.24
Pittsburg	5,749.16	8,271.30	15,777.52
Richmond	12,020.58	17,313.56	33,007.86
Walnut Creeek	606.62	872.75	1,664.77
Totals	$28,836.71	$41,506.94	$78,940.73
Marin County			
Belvedere	$299.12	$430.34	$820.88
Corte Madera	614.40	883.95	1,686.11
Fairfax	1,749.88	2,517.54	4,802.21
Larkspur	742.43	1,068.12	2,037.45
Mill Valley	2,491.10	3,583.94	6,836.37
Ross	810.63	1,166.25	2,224.61
San Anselmo	2,781.84	4,002.26	7,634.29
San Rafael	4,799.14	6,904.52	13,170.38
Sausalito	2,193.77	3,156.18	6,020.42
Totals	$16,482.31	$23,713.10	$45,232.72
Napa County			
Calistoga	$598.25	$860.70	$1,641.78
Napa	3,850.91	5,540.32	10,568.14
St. Helena	946.42	1,361.62	2,597.30
Totals	$5,395.58	$7,762.64	$14,807.22
San Francisco County			
San Francisco	$379,524.29	$546,021.91	$1,041,536.18
San Mateo County			
Atherton	$792.08	$1,139.56	$2,173.71
Bay Shore	687.39	988.95	1,886.42
Belmont	597.65	859.84	1,637.41
Burlingame	7,938.73	11,421.45	21,786.41
Daly City	6,046.21	7,260.00	13,739.63
Hillsborough	1,131.29	1,627.58	3,104.61
Lawndale	220.75	317.60	605.83
Menlo Park	1,348.44	1,940.01	3,700.56
Redwood City	5,361.49	7,713.58	14,713.65

District IV—Continued

CITY AND COUNTY	STREETS OF MAJOR IMPORTANCE Section 194 Fiscal Year Ending June 30, 1936	STREETS OF MAJOR IMPORTANCE Section 194 Fiscal Year Ending June 30, 1937	STATE HIGHWAYS Section 203 Biennium Ending June 30, 1937
San Bruno	$2,159.68	$3,107.12	$5,926.84
San Carlos	677.22	974.31	1,858.50
San Mateo	8,050.01	11,581.56	22,089.62
So. San Francisco	3,704.94	5,330.31	10,167.55
Totals	$37,715.88	$54,261.87	$103,390.74
Santa Clara County			
Alviso	$227.93	$327.92	$625.50
Gilroy	2,095.06	3,014.17	5,749.52
Los Gatos	1,895.25	2,726.70	5,201.19
Morgan Hill	543.21	781.52	1,490.75
Mountain View	1,979.00	2,847.19	5,431.01
Palo Alto	8,199.28	11,907.76	22,603.11
San Jose	37,104.47	53,382.24	101,789.38
Santa Clara	3,770.16	5,424.13	10,346.52
Sunnyvale	1,850.97	2,662.99	5,079.65
Totals	$57,666.33	$83,074.62	$158,316.63
Santa Cruz County			
Santa Cruz	$8,611.77	$12,389.75	$23,633.45
Watsonville	5,169.45	7,437.29	14,132.50
Totals	$13,781.22	$19,827.04	$37,765.95
Sonoma County			
Cloverdale	$454.06	$653.28	$1,246.10
Healdsburg	1,373.58	1,976.16	3,769.54
Petaluma	4,932.55	7,096.45	13,536.49
Santa Rosa	6,362.95	9,154.38	17,461.97
Sebastopol	1,054.11	1,516.55	2,892.82
Sonoma	586.29	843.49	1,608.96
Totals	$14,763.54	$21,240.31	$40,515.88
Totals District IV	$819,059.05	$1,178,511.92	$2,247,460.53

District V

Monterey County			
Carmel	$1,352.03	$1,945.18	$3,710.42
King City	887.20	1,276.41	2,434.76
Monterey	5,468.58	7,867.65	15,007.53
Pacific Grove	3,325.05	4,783.76	9,125.02
Salinas	6,260.06	9,006.35	17,142.96
Soledad	355.36	511.26	975.22
Totals	$17,648.28	$25,390.61	$48,395.91
San Benito County			
Hollister	$2,247.62	$3,233.65	$6,168.18
San Juan Bautista	461.84	664.46	1,267.45
Totals	$2,709.46	$3,898.11	$7,435.63
San Luis Obispo County			
Arroyo Grande	$533.63	$767.74	$1,464.46
Paso Robles	1,639.29	2,214.67	4,224.30
San Luis Obispo	4,951.10	7,123.14	13,587.39
Totals	$7,024.02	$10,105.45	$19,276.15
Santa Barbara County			
Lompoc	$1,702.01	$2,448.70	$4,670.88
Santa Barbara	20,108.88	28,930.65	55,185.19
Santa Maria	4,221.83	6,073.94	11,586.04
Totals	$26,032.72	$37,453.29	$71,442.11
Totals District V	$53,414.48	$76,847.46	$146,549.80

ies for Biennium Ending June 30, 1937

District VI

CITY AND COUNTY	STREETS OF MAJOR IMPORTANCE Section 194 Fiscal Year Ending June 30, 1936	STREETS OF MAJOR IMPORTANCE Section 194 Fiscal Year Ending June 30, 1937	STATE HIGHWAYS Section 203 Biennium Ending June 30, 1937
Fresno County			
Coalinga	$1,705.59	$2,453.84	$4,680.70
Clovis	787.30	1,132.68	2,160.58
Firebaugh	302.72	435.52	830.76
Fowler	700.55	1,007.88	1,922.53
Fresno	31,424.71	45,219.92	86,245.90
Kingsburg	790.89	1,137.85	2,170.45
Parlier	337.41	485.44	925.97
Reedley	1,648.86	2,228.35	4,250.57
Sanger	1,774.99	2,553.70	4,871.16
San Joaquin	97.52	140.29	267.61
Selma	1,822.86	2,622.65	5,002.52
Totals	$41,293.40	$59,418.02	$113,328.74
Kern County			
Bakersfield	$15,663.39	$22,391.07	$42,710.95
Delano	1,674.59	2,265.36	4,321.17
Maricopa	640.72	921.81	1,758.34
Taft	2,059.17	2,962.52	5,651.01
Tehachapi	440.31	633.47	1,208.35
Totals	$20,278.18	$29,174.23	$55,649.82
Kings County			
Corcoran	$1,057.71	$1,521.72	$2,902.67
Hanford	4,204.47	6,048.98	11,538.42
Lemoore	836.94	1,204.12	2,296.86
Totals	$6,099.12	$8,774.82	$16,737.95
Madera County			
Chowchilla	$506.71	$729.01	$1,390.58
Madera	2,790.83	4,015.16	7,658.93
Totals	$3,297.54	$4,744.17	$9,049.51
Tulare County			
Dinuba	$1,776.61	$2,554.65	$4,872.81
Exeter	1,606.29	2,310.98	4,408.19
Lindsay	2,320.00	3,337.79	6,366.82
Porterville	3,172.60	4,564.29	8,706.37
Tulare	3,713.32	5,342.36	10,190.65
Visalia	4,345.06	6,251.24	11,924.24
Totals	$16,932.78	$24,361.21	$46,468.98
Totals District VI	$87,901.02	$126,472.45	$241,235.00

District VII

CITY AND COUNTY	STREETS OF MAJOR IMPORTANCE Section 194 Fiscal Year Ending June 30, 1936	STREETS OF MAJOR IMPORTANCE Section 194 Fiscal Year Ending June 30, 1937	STATE HIGHWAYS Section 203 Biennium Ending June 30, 1937
Los Angeles County			
Alhambra	$17,631.53	$25,366.61	$48,386.67
Arcadia	3,120.45	4,489.40	8,563.51
Avalon	1,134.88	1,632.75	3,114.48
Azusa	2,876.37	4,138.24	7,893.69
Bell	4,716.67	6,785.75	12,943.81
Beverly Hills	10,426.85	15,001.11	28,614.60
Burbank	9,967.99	14,340.95	27,355.35
Compton	7,487.66	10,772.51	20,548.54
Covina	1,659.54	2,387.57	4,554.28
Culver City	3,391.47	4,879.30	9,307.26
Claremont	1,626.63	2,340.24	4,464.01
El Monte	2,081.31	2,994.36	5,711.77
El Segundo	2,095.66	3,015.03	5,751.17
Gardena	4,214.05	6,062.76	11,564.70
Glendale	37,531.62	53,996.77	102,998.79
Glendora	1,651.76	2,376.39	4,532.96
Hawthorne	3,946.04	5,677.17	10,829.19
Hermosa Beach	2,869.20	4,127.91	7,873.98

District VII—Continued

CITY AND COUNTY	STREETS OF MAJOR IMPORTANCE Section 194 Fiscal Year Ending June 30, 1936	STREETS OF MAJOR IMPORTANCE Section 194 Fiscal Year Ending June 30, 1937	STATE HIGHWAYS Section 203 Biennium Ending June 30, 1937
Huntington Park	$14,711.49	$21,165.43	$40,373.04
Inglewood	12,815.04	18,437.02	34,814.86
La Verne	1,710.99	2,461.60	4,695.50
Long Beach	85,280.70	122,693.42	233,942.98
Los Angeles	742,170.24	1,067,760.93	2,036,713.43
Lynwood	4,380.97	6,302.91	12,022.78
Manhattan Beach	1,131.29	1,627.58	3,104.61
Maywood	4,064.49	5,847.59	11,154.25
Monrovia	6,514.90	9,373.00	17,878.99
Montebello	3,289.17	4,732.12	9,026.52
Monterey Park	3,832.36	5,513.64	10,517.25
Pasadena	45,658.20	65,711.44	125,281.03
Pomona	12,445.93	17,905.97	34,155.61
Redondo Beach	5,591.83	8,044.95	15,345.73
San Fernando	4,526.93	6,512.90	12,423.36
San Gabriel	4,366.61	6,282.24	11,969.70
San Marino	2,231.46	3,210.40	6,123.84
Santa Monica	22,222.48	31,971.50	60,985.60
Sierra Madre	2,123.77	3,055.48	5,828.33
Signal Hill	1,754.06	2,523.57	4,813.71
South Gate	11,744.79	16,897.24	32,231.46
South Pasadena	8,213.93	11,817.38	22,541.65
Torrance	5,284.91	7,603.41	14,218.65
Vernon	759.18	1,092.23	2,083.43
West Covina	549.79	790.98	1,481.47
Whittier	8,867.22	12,767.35	24,344.56
Totals	$1,134,672.31	$1,632,487.00	$3,113,080.99
Orange County			
Anaheim	$6,588.50	$9,478.87	$18,077.67
Brea	1,456.73	2,095.80	3,997.74
Fullerton	6,496.96	9,347.18	17,829.75
Huntington Beach	2,207.53	3,175.97	6,058.16
Laguna Beach	1,186.13	1,705.04	3,252.36
La Habra	1,359.82	1,956.37	3,731.77
Newport Beach	1,317.95	1,896.12	3,616.85
Orange	4,825.45	6,942.40	13,242.61
Placentia	960.78	1,382.29	2,636.70
San Clemente	399.03	574.08	1,095.06
Santa Ana	18,140.04	26,098.10	49,782.09
Seal Beach	691.57	994.96	1,897.88
Tustin	563.98	797.01	1,520.30
Totals	$46,183.47	$66,444.19	$126,738.94
Ventura County			
Fillmore	$1,730.73	$2,490.00	$4,749.68
Ojai	878.23	1,263.51	2,410.13
Oxnard	3,759.98	5,409.49	10,318.59
Santa Paula	4,458.13	6,413.92	12,234.56
Ventura	6,941.46	9,986.68	19,049.58
Totals	$17,768.53	$25,563.60	$48,762.54
Totals District VII	$1,198,624.31	$1,724,494.79	$3,288,582.47

District VIII

CITY AND COUNTY	STREETS OF MAJOR IMPORTANCE Section 194 Fiscal Year Ending June 30, 1936	STREETS OF MAJOR IMPORTANCE Section 194 Fiscal Year Ending June 30, 1937	STATE HIGHWAYS Section 203 Biennium Ending June 30, 1937
Riverside County			
Banning	$1,646.38	$2,374.94	$4,524.48
Beaumont	796.87	1,146.45	2,186.85
Corona	4,198.50	6,040.38	11,522.02
Elsinore	807.63	1,161.95	2,216.41
Hemet	1,337.08	1,923.66	3,669.37
Perris	456.46	656.71	1,252.67
Riverside	17,765.55	25,559.29	48,754.36
San Jacinto	805.23	1,158.50	2,209.83
Totals	$27,813.70	$40,021.88	$76,336.98

District VIII—Continued

CITY AND COUNTY	STREETS OF MAJOR IMPORTANCE Section 194 Fiscal Year Ending June 30, 1936	STREETS OF MAJOR IMPORTANCE Section 194 Fiscal Year Ending June 30, 1937	STATE HIGHWAYS Section 203 Biennium Ending June 30, 1937
San Bernardino County			
Chino	$1,865.33	$2,683.66	$5,119.08
Colton	4,794.35	6,897.63	13,157.23
Needles	1,380.89	2,706.04	5,161.75
Ontario	8,125.99	11,690.86	22,300.32
Redlands	8,481.35	12,202.12	23,275.54
Rialto	982.32	1,413.28	2,695.81
San Bernardino	23,149.77	33,544.47	63,547.83
Upland	2,819.53	4,056.48	7,737.72
Totals	$52,099.53	$75,194.54	$142,995.28
Totals District VIII	$79,913.23	$115,216.42	$219,331.26

District IX

Inyo County			
Bishop	$693.37	$997.55	$1,902.82
Totals District IX	$693.37	$997.55	$1,902.82

District X

Amador			
Amador City	$102.31	$147.18	$280.74
Jackson	1,199.49	1,725.70	3,291.78
Plymouth	205.20	295.22	563.13
Sutter Creek	606.01	871.89	1,663.12
Totals	$2,113.01	$3,039.99	$5,798.77
Calaveras County			
Angels	$547.40	$787.55	$1,502.25
Mariposa County			
Hornitos	$37.09	$53.37	$101.79
Merced County			
Atwater	$548.59	$789.26	$1,505.52
Dos Palos	556.37	800.45	1,357.37
Gustine	607.82	874.47	1,668.05
Livingston	480.39	691.15	1,318.36
Los Banos	1,121.71	1,613.81	3,078.34
Merced	4,227.22	6,081.69	11,600.82
Totals	$7,542.10	$10,850.83	$20,528.46
Sacramento County			
Isleton	$1,738.51	$2,501.19	$4,622.31
San Joaquin			
Lodi	$4,060.90	$5,942.02	$11,244.02
Manteca	965.56	1,389.16	2,649.82
Stockton	28,693.73	41,281.67	78,744.75
Tracy	2,290.69	3,295.61	6,286.37
Totals	$36,010.88	$51,908.46	$98,924.96

District X—Continued

CITY AND COUNTY	STREETS OF MAJOR IMPORTANCE Section 194 Fiscal Year Ending June 30, 1936	STREETS OF MAJOR IMPORTANCE Section 194 Fiscal Year Ending June 30, 1937	STATE HIGHWAYS Section 203 Biennium Ending June 30, 1937
Solano County			
Benicia	$1,742.69	$2,507.21	$4,782.50
Dixon	598.24	860.71	1,641.78
Fairfield	676.62	973.45	1,856.86
Rio Vista	783.10	1,126.65	2,149.09
Suisun	541.42	778.93	1,485.81
Vacaville	930.87	1,339.25	2,554.61
Vallejo	8,800.31	13,148.88	24,595.94
Totals	$14,073.25	$20,735.08	$39,066.59
Stanislaus County			
Ceres	$586.88	$844.34	$1,610.58
Modesto	8,291.70	11,929.28	22,761.80
Newman	759.18	1,092.22	2,083.43
Oakdale	1,263.50	1,817.80	3,467.45
Patterson	541.43	778.93	1,485.83
Riverbank	480.39	691.14	1,318.34
Turlock	2,558.09	3,680.35	7,020.25
Totals	$14,481.17	$20,834.06	$39,737.68
Tuolumne County			
Sonora	$1,362.80	$1,960.67	$3,739.97
Totals District X	$77,906.21	$112,671.20	$214,022.78

District XI

Imperial County			
Brawley	$6,245.10	$8,984.83	$17,138.55
Calexico	3,768.36	5,421.54	10,341.58
Calipatria	929.67	1,337.52	2,551.33
El Centro	5,045.62	7,259.13	13,846.78
Holtville	1,051.72	1,513.11	2,886.26
Imperial	1,162.39	1,672.34	3,189.98
Westmorland	883.02	1,270.38	2,423.27
Totals	$19,085.88	$27,458.85	$52,377.75
Riverside County			
Blythe	$610.21	$877.91	$1,674.61
Indio	1,556.04	2,238.69	4,270.28
Totals	$2,166.25	$3,116.60	$5,944.89
San Diego County			
Chula Vista	$2,314.61	$3,330.05	$6,352.04
Coronado	3,245.49	4,669.28	8,906.67
El Cajon	628.16	903.73	1,723.87
Escondido	2,046.60	2,944.45	5,616.54
La Mesa	1,503.40	2,162.94	4,125.80
National City	4,367.80	6,283.96	11,986.64
Oceanside	2,102.24	3,024.49	5,768.13
San Diego	88,539.36	129,541.22	245,139.41
Totals	$104,747.66	$152,860.12	$289,619.10
Totals District XI	$125,999.79	$183,435.57	$347,941.74

Autos Add to Realty Values

Motor vehicles are directly responsible for 5.35 per cent of urban real estate tax revenues, it is indicated in a survey made by the Bureau of Business Research of Boston University. The bureau, selecting the town of Winchester, Mass., with 12,719 population, found that assessments on buildings totaled $603,450 in 1935, of which $32,291, or 5.35 per cent, was tax receipts from public and private garages, filling stations, and automobile sales rooms.

The bureau did not consider land values in its survey. It is believed that had it done so the percentage of real estate taxes derived from motor vehicles would probably have been larger, for driveways and garages occupy from one-quarter to one-third of the land in residential communities.

"Hoskins, the cook advises me that you were badly intoxicated last night and that you were trying to roll a barrel out of the basement. Can this be true?"

"Yes, my lord."

"And where was I during this time?"

"In the barrel, my lord."

Fiesta Celebration Will Mark Golden Gate Bridge Opening

(Continued from page 2)

Highway District. They are San Francisco, Marin, Sonoma, Napa, Mendocino and Del Norte.

Finally the completed plans for the bridge were submitted by Chief Engineer Joseph B. Strauss and adopted by the district directors, who proposed a bond election after the engineer had assured them that the project could be completed within a cost of thirty-five million dollars.

DRILL THROUGH SOLID ROCK

The most difficult part of the project centered about erection of the south pier, located in the open seaway off Fort Winfield Scott.

Diamond drill borings had indicated a solid rock foundation, but the hardness of this rock was not appreciated until the work of excavation was commenced. This work involved the use of specially designed high explosive bombs, which were driven into the rock bottom, then detonated.

First an area of approximately an acre had to be leveled off. Then it was necessary to go down into the rock an average depth of 35 feet to provide suitable footings for the pier.

The job required months of arduous labor, some during the winter, when workers were forced to perform their tasks as seas and chilling winds beat against them.

While this work was under way, the north pier on the Marin shore at Lime Point had been completed and the mighty 746-foot steel tower erected on it.

When the towers were completed, work on the concrete and steel anchorages at either side of the Golden Gate had progressed to the point where they were in readiness to receive the parallel wire cables, each 36½ inches in diameter, the largest suspension bridge cables in the history of this type of construction.

The anchorage blocks, huge concrete monoliths, in which are imbedded steel reinforcing bars and the eye-bars, to which the cables are attached, each weigh approximately 64,000 tons and each is so designed that the weight of the bridge structure upon it exerts its pull against the solid rock in which it is imbedded.

This pull at each anchorage is 63,000,000 pounds, or half what the anchorages are capable of supporting.

Between the anchorages and towers the cables are supported by pylons, through which they run.

SIX HIGHWAY LANES

On the north side the pylons are part of the anchorage structure, but on the south side the pylons are distinct structures, between which a gigantic arch spans Fort Winfield Scott, making the preservation of this historic structure possible.

The cable construction, which required the use of more than 80,000 miles of specially-drawn, galvanized steel wire—sufficient to encircle the earth three and one-half times, was let to the John A. Roeblings' Sons Company, builders of the Brooklyn Bridge and contractors for the cable erection on the George Washington Bridge.

The Bethlehem Steel Company erected the suspended structure and last November the two sections built out from each tower joined each other at the center of the span.

The completed Golden Gate Bridge has six highway traffic lanes, flanked on either side by 10½-foot sidewalks for pedestrian traffic.

EARTHQUAKE PROOF

As in the case of the San Francisco-Oakland Bay Bridge the possible effect of earthquakes was thoroughly considered in designing the Golden Gate Bridge, which its engineers declare is constructed to withstand a far more serious earthquake shock than ever has been known in this or any other area.

At the same time wind pressures were taken into account during the designing of the span, which has a safety factor of 2.6 at a wind velocity of 90 miles an hour. The greatest recorded wind velocity at the Golden Gate is 58 miles.

Expansion and contraction of the long steel span also is amply provided for, so that the bridge may raise or lower itself 16 feet as influenced by heat or cold.

Unlike the San Francisco-Oakland Bay Bridge, the Golden Gate Bridge, while of a public nature, is not a State project. It has been built and will be operated, until such time as it is made toll free, by the Golden Gate Bridge and Highway District, a subdivision of the State government consisting of the six counties of San Francisco, Marin, Sonoma, Napa, Mendocino and Del Norte.

Waldo Approach Is State's Share of Gate Bridge

(Continued from page 4)

to two traffic lane capacity, due to combined light travel and prohibitive construction costs. This particular area, however, is so shaken by earthquakes of the past and is located so close to a major earthquake fault, that the disturbance of its present equilibrium with the heavy cuts and fills required, provides unpredictable damage from slides.

Provision for stable foundations for the heavy fills required removal of soft material to depths of as much as forty feet, with rock backfill and other special drainage provisions.

It is probable that this section of highway will not become fully stabilized for a number of years to come, but the achievement in opening it to traffic with the Golden Gate Bridge is one of the remarkable features of the project as a whole.

The construction of this northerly approach to the bridge is one of the largest single projects for road construction entered into by the Division of Highways. The yardage of roadway excavation was estimated originally at 1,813,000 cubic yards, with anticipated slides set as a variable quantity. The anticipation that slides would develop into a serious problem has been borne out by the fact that by April 1, with construction only about 85 per cent complete, slides had increased material removal to the point that a total of more than 2,500,000 cubic yards of roadway excavation had been moved.

The unusual size of the project is also shown by the fact that the work included over 50,000 cubic yards of tunnel excavation, 436,000 pounds of reinforcing steel, 1,000,000 pounds of structural steel and over 21,000 lineal feet of corrugated metal culverts and underdrains.

Completion of Manchester Blvd. Fruition of 13 Years of Effort

By JULIEN D. ROUSSEL
Secretary, California Highway Commission

THE last unit of the Manchester Boulevard Route, (State Highway Route No. 174) was formally dedicated for public use by Highway Commissioner P. A. Stanton and Director of Public Works Earl Lee Kelly at Anaheim on Friday, April 30th.

This route extends easterly from State Route No. 60 in Los Angeles County at Playa del Rey, through the cities of Inglewood, Los Angeles and South Gate, thence southeasterly in a direct line through the communities of Downey, Norwalk and Buena Park, and through the southwesterly corner of the city of Anaheim, connecting with State Route 2 (U. S. 101) in Orange County at Miraflores, and makes a total distance of 33.01 miles.

The opening ceremony was held at the intersection of Manchester Boulevard and Broadway in the city of Anaheim. Caravans from other cities met at the scene of the dedication. After musical numbers by the Anaheim High School band, an address of welcome was given by Mayor Charles H. Mann of Anaheim, who presented the first speaker, Mr. Phil A. Stanton, senior member of the California Highway Commission, a resident of that city and for many years a prominent citizen and developer of Orange County.

MR. STANTON CUTS RIBBON

Following a brief address by Mr. Stanton, other prominent visitors, including Justus F. Craemer, Assistant Director of Public Works; Highway Commissioners William T. Hart of San Diego County and Paul G. Jasper of Humboldt County, Julien D. Roussel, Secretary of California Highway Commission; C. C. Carleton, Chief of Division of Right of Way and Contracts, L. V. Campbell, Engineer of City and Cooperative Projects, and other prominent State, County and City officials were introduced.

Mr. Kelly then made a short address preceding the dedication ceremony.

In deference to Mr. Stanton's long years of service on behalf of better highways, Mr. Kelly then delegated to him the honor of formally dedicating this highway by cutting the ribbon, which had been extended across the road by Virginia Myer of Norwalk and Betty Ruth Boney of Anaheim.

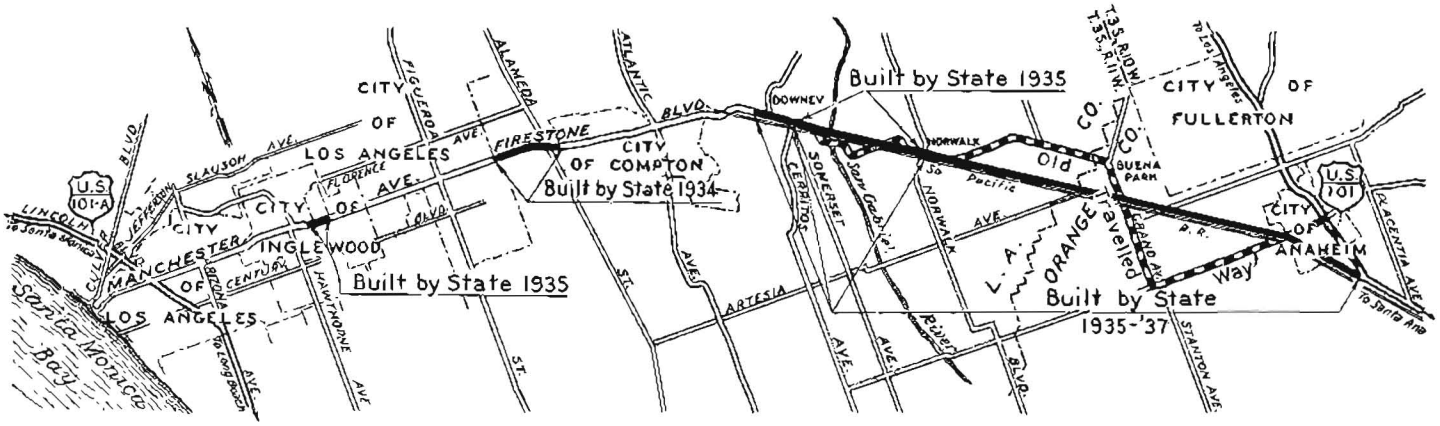
STARTED IN 1924

The meeting then adjourned to the Anaheim Elks Club for luncheon and the completion of the program. There were approximately one hundred fifty persons in attendance at the luncheon held in conjunction with the Anaheim Lions Club.

Commissioner Stanton, in his remarks, recalled the history of the road which started with the formation of the Greater Manchester Avenue Improvement Association in 1924.

He said:

"Although only partially completed several months ago this road carried as many as five hundred vehicles per day. That number has now increased to where nine thousand cars per day pass over."



Improved sections of Manchester Boulevard and Firestone Boulevard, which is part of former. Dotted line shows old route.

MAJOR STATE ARTERY

"Already a major State artery," Mr. Stanton said, "the highway represents one of the most progressive steps taken for this vicinity. It is my hope that before my present term of office shall expire that I will see a fourth lane constructed along the entire distance of thirty-three miles."

Mr. Kelly, in his remarks, paid tribute to Mr. Stanton's work in sponsoring the road. He spoke of the immense growth of traffic in the past

(Continued on page 28)

Official guests at opening of Anaheim link of Manchester Boulevard. Upper, left to right: State Highway Commissioner P. A. Stanton, Assistant Director of Public Works Justus F. Craemer, Director of Public Works Earl Lee Kelly, Highway Commissioner Paul Jasper, President Victor Loly, Anaheim Chamber of Commerce; E. E. East, District Highway Engineer S. V. Cortelyou and Mayor C. H. Mann of Anaheim. Holding the ribbon are Betty Ruth Boney and Virginia Myer. Center: New link of Manchester Boulevard south of Anaheim. Lower: Stretch of highway between Norwalk and Downey increased to three-lane road.

Conejo Grade Dedicated With Colorful Show

(Continued from page 8)

lowed with prospectors, trappers, oxen and Mexican carreta, covered wagons, pony express riders, stage coach and four skilled Spanish equestriennes, buckboards, surrey and automobiles ranging from the earliest models now in running condition to the "1937 car of streamlined elegance." It might well have been called a pageant of progress in transportation and the Mission Trails Association and Mr. Raymond should feel proud of the inspiring result.

PROGRAM OF SPEECHES

Immediately after passage of the transportation cavalcade, a few well-worded speeches were delivered. Master of ceremonies Frank C. Balfour introduced the speakers. The district engineer made a brief talk explaining some of the obstacles which were overcome in carrying this huge project through to completion and introduced the members of his staff. Other speeches were made by Frank Miratti, Jr., of Santa Barbara, first president of the California Mission Trails Association, Ltd., and now one of its directors, and S. K. Mittry of Mittry Bros. Construction Company, general contractor on the project. General regret was expressed that it Mittry Bros. Construction Company, was impossible for our local highway Commissioner Mr. P. A. Stanton, to be present.

The California Highway Commission was represented by Commissioners H. R. Judah from Santa Cruz and Paul G. Jasper from Fortuna. Both commissioners spoke briefly. The principal address was given by Director of Public Works Kelly, who commented on the magnitude of the project, its relation to the unified system of highways for the entire State of California and other interesting facts regarding State highway work.

Following this speech. Mr. Kelly took his position in the driver's seat of the motor grader and pushed aside a large boulder from the pavement while a battery of news cameras made a record of the official opening to traffic of this new improvement.

The old Conejo Grade highway constructed by the California Highway Commisison in 1914–15 was 5.6 miles in length or 0.8 mile longer than the revised alignment just completed.

It might be stated in this connection that the road as originally constructed in 1914–15 was built to adequate standards of alignment and grade for that era of our highway development. Since that date, however, both highways and automotive transportation have developed rapidly and the highway standards of that date can no more be considered adequate in 1937 than could the 1914 automobile be considered suitable for present-day needs.

HIGHWAY WORK COST $550,000

The contract for the new improvement was awarded November 27, 1935, and work started December 11, 1935. An average of 100 men have been employed on this project since commencement of construction operation and a total direct employment of 272,000 man hours have been utilized. The cost of the highway work is about $550,000. The bridge over Conejo Creek at the foot of the grade, constructed by Robert D. Paterson, contractor, cost $20,000 making a total cost of the whole improvement of approximately $570,000.

The roadbed is graded to a width of 46 feet, on which a payment of concrete 20 feet in width was placed with wide oil mixed shoulders on each side. On the Conejo grade itself the pavement is separated in two 10-foot wide pavement lanes with a 10-foot wide strip of plant-mixed surfacing between to facilitate passing the slower moving vehicles.

A total of over 800,000 cubic yards of excavation, mostly hard rock, have been required to complete the project. The minimum sight distance on this highway is 800 feet which means a high degree of safety built in to the fundamental design of this important traffic artery.

"Now," said the teacher, "which of you can name five things that contain milk?"

"I can," shouted a freckle-faced youngster, "Butter, and cheese, and ice cream, and two cows."

47 Curves Taken Out of Redwood Highway Sector

(Continued from page 6)

grates are provided so that the full section of highway may be traveled.

JOB SPEEDED UP

There were two main reasons for the adoption of this section. The first was economy. Cuts were made 30 feet wide at grade instead of the usual 36 feet to 38 feet; this resulted in a saving of at least twenty-five per cent in excavation. The second factor considered was safety. Ditches contribute to many accidents, particularly in this section where average annual rainfall fluctuates between forty and sixty inches.

The contract for this project was awarded to Hemstreet and Bell in August, 1936. By utilizing a large number of heavy construction units and a force up to two hundred men, they were able to complete all the work on this job with the exception of half the base gravel and the surfacing for the south mile before the winter storms. The application of asphaltic seal coat and general cleaning up remains to be completed when weather permits.

BUILD NEW BRIDGE

The project north of Willits was carried on concurrently with a short project immediately south of town. This was designated as I-Men-1-E. Eleven Oaks to Willits. This job provides for the replacement of a narrow concrete bridge over Baechtel Creek.

The contract was awarded to A. Soda & Son, in October, 1936, at an estimated cost of $56,200.40. Due to the very dry fall the contractors were able to get the grading almost completed, more than half the pit run gravel base placed and the new bridge completed. The project should be entirely finished early this summer.

Upon the completion of these two projects in Mendocino County, a real step forward in safety and economy of operation will have been accomplished in behalf of both heavy and passenger traffic who use the Redwood Highway.

She: "Did you notice anything funny about John's niece?"

He: "Yeah, they're kinda knobby."

INTERESTING AND VALUABLE

San Francisco, April 13, 1937.

Calif. Highways & Public Works,
Sacramento, California.

Gentlemen:

On the reading table of the Olympic Club yesterday I read from the March issue of your magazine.

If it is possible I would like to receive a copy of the March issue and also have my name placed on your mailing list. Your magazine certainly contains much interesting and valuable matter.

Yours very truly,

Wm. A. Sherman, President,
MERCHANTS ICE AND
COLD STORAGE COMPANY.

Praise for Magazine

University of California,
School of Jurisprudence,
Berkeley.

Editor, California Highways and
Public Works, Department
of Public Works.

Dear Mr. Howe:

This is to acknowledge the receipt of the Bridge Edition of the California Highways and Public Works Bulletin. I appreciate very much your sending this to me.

I have shown it to several friends here on the faculty and they are all full of praise for its fine composition and workmanship.

Very sincerely yours,

R. E. STONE.

IMPRESSIVE RESEARCH WORK

AMERICAN AUTOMOBILE
ASSOCIATION

Washington, D. C., April 30, 1937.

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

Dear Sir:

I have just concluded reading the article on traffic accidents by T. H. Dennis in the April, 1937, issue of "California Highways and Public Works." May I say that this was extremely well done and constitutes what is to my mind an impressive piece of research work which should be made available to people interested in the proper development of our highways from the standpoint of safety.

I wonder if you would be kind enough to send me a dozen additional copies of the detailed tabulations referred to in the last paragraph of the article on page 11? I will greatly appreciate having this material and will be glad to remit, if there is a charge.

Yours very truly,

A. J. Montgomery, Director
Department of Public Relations.

100 Bush Street
San Francisco

May 10th, 1937

California Highways and
Public Works
Sacramento, California

Dear Mr. Howe:

My copies of California Highways and Public Works which I receive at my home address, 1134 Excelsior, Oakland, are as thumb-worn by my friends as the new "Life" magazine.

It would be difficult to estimate the value of your publication in advertising the fine highways and the work of the Division throughout the State.

Sincerely yours,
THE PACIFIC LUMBER COMPANY,
Max E. Cook,
Agricultural Engineer

THE TEXAS COMPANY

135 East 42nd Street, New York

Editor, California Highways and Public Works.

Dear Sir:

Your publication is one of the few that I look forward to each month and read with a great deal of interest and pleasure. It contains information that is of vital importance to those of us who are identified with the direction of motorists.

I have been especially interested in the articles on "California's Uniform Road Sign System Provides Drivers An Infallible Guide to Safety," as we have been emphasizing safety and carefulness, beginning in 1930, in all our publicity.

You may be interested in knowing that in the last two years we have emphasized the meaning of the diamond and the octagon shape sign on all Texaco Road Maps. And that the meaning of the five standard shapes has been emphasized in the routing suggestions that we sent to over one-half million motorists last season.

Cordially,

S. C. HAWLEY, Director.

A large redwood tree that threatened damage to the Eel River Lodge near Benbow was removed last month by men of the maintenance crew of the Division of Highways under C. A. Miller, Maintenance Superintendent, District 1, and their service in this respect prompted the following letter of appreciation. The tree was approximately five feet in diameter and was leaning directly over the main buildings of the Eel River Lodge at about 20 degrees from vertical.

EEL RIVER LODGE

On the Redwood Highway,
Benbow, California

April 6, 1937

Mr. J. W. Vickrey,
Eureka, California.

Dear Sir:

The hazard of the leaning tree opposite the Lodge to which I referred in my letter of March 2 has been removed and while the removal of such hazards may be an everyday matter in your department I can not refrain from expressing my personal appreciation of the skilful manner in which Mr. Miller laid his plans, put them into effect with the utmost care and finally with the able assistance of Mr. Sam McCush and a picked crew of men laid this extremely dangerous tree up the hill exactly on the spot pointed out to me prior to the completion of the operation.

My lay wonder at the accuracy of the operation and the care taken to safeguard my property may appear to be foolish in your eyes but I am grateful to you and Mr. Miller for the removal of the tree and the considerate care taken in performing the operation and I wish to go on record to this effect.

Yours very truly,

(Signed) C. H. PELL,
Eel River Lodge.

Maryland, New Jersey Penalized by U.S. for Gas Tax Diversion

TWO States, Maryland and New Jersey, already have been penalized under authority of the Hayden-Cartwright Act of 1934 for diversion of gas tax funds.

Maryland has been deprived by the U. S. Bureau of Public Roads of one-third of its 1937 share of Federal road aid funds because it diverted approximately $4,000,000 of gasoline and motor vehicle tax revenues to purposes other than highway construction and maintenance and now New Jersey has suffered withdrawal of $558,906 of Federal aid for the same reason.

Thomas H. McDonald, chief of the Bureau of Public Roads, notified the Maryland State Road Commission that this year's allocation of Federal monies has been reduced $341,666.66 and has informed New Jersey of the penalty imposed upon it. Governor Hoffman of New Jersey recently vetoed a bill designed to provide for additional diversion of the State's highway funds to emergency relief financing.

In announcing the penalties, McDonald said that his bureau is now investigating the expenditures of gas tax revenues and motor vehicle registration fees in every State with the idea of applying penalties wherever these funds have not been spent on highways.*

When Governor Harry W. Nice of Maryland was informed of the State's loss, he immediately advocated the cancellation of all diversions and urged that all money diverted in the past be restored to the highways.

In view of the widespread investigation being conducted by the Bureau of Public Roads it is believed penalties will run into millions of dollars, since a number of States have been diverting gas tax and motor vehicle license fees for other than highway purposes. The largest diversion has been in New York, it is said.

Attention was first called to the poor condition of rural roads in Maryland by the dynamiting of a farmer's automobile to clear the way for other stalled cars. Then students in a rural school struck because impassable roads made it impossible for them to attend school regularly, following which the government discontinued mail service on Rural Route No. 2 out of Rockville, Montgomery county.

OTHER STATES TO SUFFER

Maryland imposes a 4 cent per gallon gasoline tax, plus motor vehicle registration fees, ostensibly to finance roads. The Legislature, however, has ordered part of these revenues used for other purposes and during the present session has proposed to divert additional money.

Commenting on the penalty inflicted upon Maryland, Congressman Wilburn Cartwright, one of the authors of the Hayden-Cartwright Act, and chairman of the House Committee on Roads, said:

"Section 12 of the Hayden-Cartwright Act of 1934, provides that States diverting highway funds shall be penalized not to exceed one-third of the Federal-aid allotments for highways. It appears certain that the Secretary of Agriculture will announce and take action immediately on penalties through the loss of Federal aid to several States for diversions heretofore made.

DIVERSION INDEFENSIBLE

"There is strong sentiment in the roads committee and in Congress for increasing the penalty at this session to two-thirds of the apportionments or denying Federal aid altogether to States that persist in the indefensible practice of diverting their own gasoline and other motor-vehicle tax revenues to nonhighway purposes. In fact, some consideration is being given to discontinuing the policy of Federal aid for highways, if States, by their diversions, defeat the purpose of Congress to hasten the completion of the State highway system.

"There is no longer one shred of an excuse for this type of dishonest misappropriation of the public's money. I repeat again the unquestionable truth that the State that continues to divert its gasoline-tax and motor-vehicle revenues to nonhighway purposes will suffer a stiff penalty in Federal aid."

A Warning to All Other States

The United States Bureau of Public Roads has just cut the Federal allowance of Maryland one-third, or $341,666.66, because that State has diverted a large part of the proceeds of her gasoline tax into nonhighway purposes.

The Hayden-Cartwright Road Act of 1934 provides that States may be penalized up to one-third of their Federal apportionment during any year in which gasoline tax money is diverted. Maryland is the first State to suffer the penalty; but she is not likely to be the last.

Here is a plain warning to the legislatures of nearly all the States. The Hayden-Cartwright Act was passed to protect the motorist against the sort of class taxation which results when legislatures use gasoline tax money for purposes other than those for which the money really was paid.

Every one who owns an automobile should be happy to learn that the Hayden-Cartwright Act is in effect; that it has teeth; and that the Bureau of Public Roads intends to make use of it. The American motorist has been mulcted long enough by legislators who found it easier to soak him than to devote any real thought to the problem of fair taxation.— *Sacramento Bee.*

* Such a loss of Federal funds probably never will be suffered by California because Governor Frank F. Merriam and the Legislature of this State as well as the electorate have gone on record several times as opposed to any diversion of gas tax funds.

Bay Bridge Tolls Decrease During Month of April

ALTHOUGH the daily average number of vehicles crossing the San Francisco-Oakland Bay Bridge and the total number of vehicles passing over the structure during April showed a slight increase over March, there was a decrease in the amount of tolls collected, according to the monthly traffic report submitted to Director of Public Works Earl Lee Kelly by Chief Engineer C. H. Purcell.

"The daily average number of vehicles crossing the bridge for April was 25,559; for March, 24,720," Mr. Kelly said. "The total number of vehicles for April was 766,790; for March, 766,315. Total collections for April were $399,731.60 as compared with $401,975.30 for March."

"This tends to show," Mr. Kelly said, "that there was unusually heavy traffic for March beyond the seasonal expectancy.

"Evidences of summer vacationists are shown in the increased number of auto trailers, which last month amounted to 1045—an increase of 336 over the preceding month or one-quarter of the total since the bridge opened."

Last month's figures brought the total number of vehicles crossing the bridge since its opening to 4,111,000, according to Mr. Kelly.

Freight pounds for April were increased by 2,000,000 over the March total.

Out of 4,111,000 vehicles which have crossed the bridge since it opened only 37 accidents involving personal injury have occurred, with a total of five accidents involving fatalities.

Based on the total car miles of 34,943,500 from November 12 to May 1, there has been one accident involving personal injury for every 944,419 car miles. There has been one fatal accident for every 6,988,700 car miles. In other words, a vehicle would have to drive 6,988,700 miles before it had a fatal accident. The number of car miles involving accidents, which include property damage as well as personal injury, is 537,591 per vehicle. There have been 65 persons injured in bridge and approach traffic accidents.

Highway Bids and Awards of Contracts for the Month of April

LOS ANGELES COUNTY—Between Center Street and Firestone Blvd., 3.5 miles to be graded and paved with Portland cement concrete and plant-mix surfacing applied. District VII, Route 168, Section A. B. G. Carroll and C. B. Grove, San Diego, $170,687; C. F. Robbins and Atlas Construction Co., Pasadena, $184,403; C. O. Sparks and Mundo Engineering Co., Los Angeles, $195,,203; Sully Miller Contracting Co., Long Beach, $191,167; Griffith Co., Los Angeles, $172,531; Oswald Bros., Los Angeles, $163,582; United Concrete Pipe Corporation, Los Angeles, $193,516; J. E. Haddock, Ltd., Pasadena, $173,608. Contract awarded to Matich Bros., Elsinore, $161,365.50.

LOS ANGELES COUNTY—Grade separation structure at Firestone Blvd. and Graham Ave., sidewalks and stairways to be constructed. District VII, Route 174. Section B. S. Tedesco, Huntington Park, $15,292. Contract awarded to D. A. Loomis, Glendale, $14,668.

SAN DIEGO COUNTY—A crossing over tracks of A. T. and S. F. Ry. near Solano Beach, consisting of reinforced concrete bridge and grading 0.10 mi. of roadway and applying plant-mix surfacing. District XI, Feeder Road. E. S.-N. S. Johnson, Pasadena, $19,210; A. S. Vinnell Co., Los Angeles, $17,541; C. O. Sparks and Mundo Engineering Co., Los Angeles, $17,916; Oscar Oberg, Los Angeles, $18,795; R. R. Bishop, Long Beach, $19,477; J. R. Lippincott, Los Angeles, $22,182; B. G. Carroll, San Diego, $16,108; V. R. Dennis Construction Co., San Diego, $17,869; D. A. Loomis, Glendale, $16,959; F. O. Bohnett, San Jose, $16,799. Contract awarded to Griffith Co., Los Angeles, $15,315.

SAN DIEGO COUNTY—A reinforced concrete girder crossing over the tracks of the A. T. & S. Fe Ry. near San Onofre. District XI. Route 2, Section D. F. O. Bohnett, San Jose, $59,600; Andy Sordal, Long Beach, $52,010; Sauder Pearson, Santa Monica, $51,715; Oscar Oberg, Los Angeles, $57,072; Parish Bros., Los Angeles, $48,883; R. R. Bishop, Long Beach, $51,907; Carlo Bongiovanni, Los Angeles, $57,870; Gates and Huntley, Los Angeles, $52,839; T. A. Allen Construction Company, Los Angeles, $58,548; C. O. Sparks and Mundo Engineering Co., Los Angeles, $49,051; Atlas Construction Co. and C. F. Robbins, Pasadena, $54,479; Griffith Co., Los Angeles, $53,584; Daley Corp., San Diego, $55,036; D. W. Thurston, Los Angeles, $64,701; J. E. Haddock, Ltd., Pasadena, $56,196. Contract awarded to B. G. Carroll, San Diego, $47,763.

SAN DIEGO COUNTY—Furnish and haul earth for district shop and maintenance yard site. District XI, Route 2, Section S.D. V. R. Dennis Construction Co., San Diego, $7,295; A. C. Bussey, Riverside, $13,570; Triangle Rock and Gravel Co. and Chas. Holmes, San Bernardino, $10,202; E. P. Watson, San Diego, $7,012; R. E. Hazard and Sons, San Diego, $8,745; C. B. Graves, San Diego, $6,651. Contract awarded to John Hansen, San Diego, $5,396.

SAN MATEO COUNTY—Roadside trees to be trimmed between Millbrae and San Mateo. District IV. Route 2. Section A, Burl., Hil., S.M. Union Paving Co., San Francisco, $13,030; Davey Tree Surgery Co., San Francisco, $5,957; A. G. Raisch, San Francisco, $14,570; Sohner's Tree Service, San Anselmo, $10,350. Contract awarded to Rexroth and Rexroth, Bakersfield, $2,691.50.

SANTA BARBARA COUNTY—Between Miramar Ave. and Olive Mill Road, 0.6 mile to be graded and surfaced with asphalt concrete or natural asphalt concrete and a reinforced concrete bridge to be widened. District V, Route 2, Section J. Healey-Moore Co., Oakland, $88,711; Daley Corporation, San Diego, $88,181. Contract awarded to J. E. Haddock, Ltd., Pasadena. $81,292.10.

SIERRA COUNTY—Between Goodyears Bar and Downieville, 3.9 miles to be graded, surfaced with selected material and penetration oil treatment applied. District III, Route 25, Section A. A. Teichert and Son, Inc., Sacramento, $132,746; Larsen Bros. & Harms Bros., Sacramento, $141,442; Fredrickson and Watson Const. Co., and Fredrickson Bros., Oakland, $148,939; Louis Biasotti and Son and John Rocca, Stockton, $154,152; Young and Son Co., Ltd., Berkeley, $155,067; Earl W. Heple, San Jose, $160,121; John Carlin, San Francisco, $182,176. Contract awarded to Hemstreet and Bell, Marysville, $131,360.

44 PER CENT OF HIGHWAY FATALITIES, PEDESTRIANS

Pedestrian fatalities in 1935 were 44 per cent of the annual highway killing. Approximately 16,150 persons walked to their deaths. Another 325,000 were injured, according to a report of the Reasearch Board.

Urban places, comprising cities having a population of over 10,000, account for 47 per cent of all pedestrian fatalities; the remaining 53 per cent occur in rural areas, including small towns. The pedestrian toll in cities is 64 per cent of all city traffic deaths, while in the case of rural deaths the pedestrian accounts for only 35 per cent of the total.

The trend in urban and rural casualties from 1930 to 1935 reveals that in urban places total highway deaths decreased 10 per cent, while pedestrian deaths fell 11 per cent. In rural areas, however, while total traffic fatalities rose 28 per cent, those involving the pedestrian increased 40 per cent.

Destination, Information And Location Sign Types Described

By F. M. CARTER, Assistant Maintenance Engineer

UNDER the classification of "Guide Group," signs used by the California Division of Highways for the safeguarding of motor vehicle traffic are designated as Route Markers, Destination, Location and Information. Route Markers were discussed in these columns last month and in this, the fifth of a series on highway signs, the other three signs will be taken up.

Destination Signs are more commonly called directional signs, as they are used to direct traffic to destination points.

Such signs are almost always positioned at intersections.

With the advent of the automobile the destination sign became an important factor in highway driving.

ONLY FOUR DESTINATION SIGNS

Each increase in speed has necessitated reduction of names until now the common practice is to hold all destination signs to four names. On the more important and heavily travelled highways the names on the destination signs are reduced to three on a plain sign, and to two names when reflectorized.

This reduction in the number of names permits the use of larger wording which is much more easily read.

On routes leading through a hilly or mountainous section where the same route is used for several towns and communities, it is desirable to indicate several points of importance along the route.

This is also true in the thinly populated areas where towns are very far apart.

CAREFUL NAME SELECTION

At the intersections in such areas the stranger motorist should be given enough information to reach his desired destination.

This necessity for the reduction of names on destination signs makes the selection of the right name an extremely delicate problem. Naturally every community whose name was on the multiple name sign resents being eliminated. This is, of course, a natural stand to take and also one that is highly commendable from a local interest point of view, but when such public spirited citizens stop and consider that in the interests of safety the highway signs must be more easily and quickly read local interest is suppressed in the desire to do the most good.

Conforming to our social common law the names of the well-known and important cities are used.

COUNTY SEATS IMPORTANT

The common practice is to use the county seat as the most important city in the county or the important city at the terminus of the route.

The use of the names of such well known cities enables a traveller to obtain the information he desires with the least confusion.

For night driving reflectorized name signs are placed approximately one hundred feet in advance of the intersection. Where physical features do not permit such advance positioning, the signs are placed to give the indication as soon as possible before the motorist reaches the point of decision of routes.

REFLECTORIZED SIGNS

These reflectorized name signs have not more than two names, one in each direction.

In addition to the reflectorized name signs the reflectorized numbered shield is used in advance of intersections to indicate to the night driver that such a numbered route is beginning or crossing the route he is traveling.

In some cases where such signing is feasible the reflectorized name of the terminus of the numbered route is used in conjunction with the reflectorized numbered shield and arrow.

The trend in all such indicational signing is to educate the motorist to the use of numbers—all travel maps now show the numbered routes and if people planning a trip will determine those numbered routes which will take them to their destination, the ease of driving will be increased and the confusion at intersections will be reduced.

LOCATION SIGNS

When driving even on a numbered route the motorist wishes to know the names of the communities through which he is passing, and also to reassure himself that he is on the right route and how much farther he has to travel. This information is given to the motorist by placing a sign at the boundaries showing the name of such communities. These names are black, on a white background, in letters five inches in height, and are easily read. Such signs are placed at limits of all communities having a post office or a railroad station with a regular attendant.

These city and town name signs are placed at the limits facing travel entering the community.

REASSURANCE SIGNS

Directly across the highway facing traffic leaving the community is a three name sign. The first name is the next city or town. The second name is the county seat. If the county seat is not on the highway being travelled the second name will be the principal city, of the county, which is on the highway.

The last name is the terminus of the route.

The three name signs with mileages are commonly called reassurance signs. The motorist learns the name of the next city or town with the distance and also the distance to a large city and the terminus. This enables him to plan his trip as he proceeds.

Other information signs include names of rivers, at bridge heads, names of counties at county lines,

(Continued on page 28)

"Directional" Group of California Road Signs

Informational sign to mark or direct traffic to registered historical landmarks.

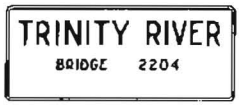
Placed about 400 feet in advance of intersection, directing traffic to turn from traveled way into another road to reach city directed to.

Reassurance directional sign. Placed at the limits of cities and towns to guide travel leaving the community.

Informational sign to identify boundaries of California State Parks. Placed at actual park boundary lines.

Standard single name reflectorized sign. Placed a short distance in advance of intersections or cross roads to guide traffic without delay.

Directional sign placed at intersections and cross roads to guide traffic to three different cities or towns.



Information sign to identify a river and bridge. Placed at each end of bridge.

Placed at intersections to mark or designate important county roads. Reflectorized for night driving.

One-name directional sign placed at intersections and cross roads to direct traffic to a particular town or city.

This sign is placed on highways to designate the location of a county line.

This directional sign is the same as above except for size and is used to direct traffic to four different cities or towns. Placed at intersections and cross roads.

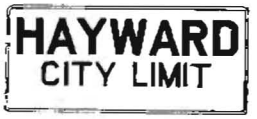
Large reflectorized directional sign, having from six to twelve inch letters. Placed at important intersections to avoid confusion by properly directing travel in advance. Only one name and corresponding arrow is used for each direction.

Placed at highway summits of mountain passes to identify location and inform traffic of correct elevation.

Another directional sign similar to above except it contains names of two cities or towns.

Same as above, except the vertical arrow is used to convey the message of proceeding straight ahead for Oakland, while a left turn is necessary for San Jose.

Placed in advance of public drinking fountains. Traffic is directed to park off highway at these points.



This sign is placed to mark the limits of cities and unincorporated towns. When placed for towns, words "city limits" not used.

Placed usually on mountain highways to inform motorists of elevations. Used in multiples of 1000 only.

Plain type directional sign, showing the name of the next principal city or town in each choice of direction.

Used at intersections to designate county roads in same manner as street name signs are used in cities.

During the last week of March and the first week of April the main annual snow survey was made throughout the Sierra Nevada mountains from Mount Shasta in the north to Kernville on the south. This two-weeks measuring period was characterized by a series of storms intermingled with occasional days of fine weather.

All of the snow surveys have now been received and the results analyzed, and forecasts of runoff for the coming year have been made. All of these forcasts together with supporting data have been assembled and published in the regular snow survey bulletin dated April 1st and mailed to the public on April 12th.

An analysis of the snow surveys shows that while there is a slight shortage in the Sacramento-Pit region in the north, elsewhere the spring runoff will be above normal, and from the San Joaquin River south to the Kern will be the greatest since the snow surveys were begun in 1930.

IRRIGATION DISTRICTS

On March 30th, the Fallbrook Irrigation District in San Diego County voted by large majority, a bond issue in the amount of $500,000 for construction of irrigation works and development of a water supply from San Luis Rey River.

Two districts completed refinancing programs during the month. Tracy Clover Irrigation District received a loan of $20,000 from the Reconstruction Finance Corporation with which to retire an existing debt of $65,670. Citrus Heights Irrigation District refunded outstanding bonds in the amount of $142,000 with a loan of $86,000, augmented by district funds.

Of special interest to districts in the process of refinancing was the approval by Governor Merriam on March 30th, of an emergency measure known as the "Irrigation District Refinancing Act," which provides ways and means through State law for liquidating and readjusting indebtedness of irrigation districts in default.

Districts Securities Commission

Two meetings of the Commission were held in San Francisco during the month for consideration of petitions filed by irrigation districts.

At the meeting of April 9th, Richvale Irrigation District was granted permission to issue bonds in the amount of $90,000 to purchase additional water rights and canals for lands that were recently annexed to the district.

At the meeting of April 19th, the Commission reviewed the plans for refinancing the indebtedness of Palo Verde Irrigation District, and approved the same, in order that the district might file a petition for readjustment in the Superior Court under the recently enacted Irrigation District Refinancing Act.

FLOOD CONTROL AND RECLAMATION

Relief Labor Work

An average of 118 men on WPA Project No. 5416 were engaged during the month in clearing the overflow channel of the Feather River north of Marysville and near Nicolaus. SRA Transient Camp No. 7 in the Sutter Basin furnished an average of 48 men for work on the east levee of Sutter By-pass, at Pumping Plant No. 1 and No. 2 and at the Sutter maintenance headquarters. It was impossible to work in the Tisdale By-pass during this period on account of overflow.

WPA Project No. 6654, Yolo County, commenced operations on April 2d, since which time an average of 31 men have been employed on clearing brush and timber from levees of the Sacramento By-pass and poisoning squirrels.

Flood Measurements

All danger of flood for this season seems to be passed, and operation will be discontinued on the river stage stations at various times from May 15th to 30th. The four radio sending stations were discontinued on April 25th, the equipment being removed for summer use by the irrigation water masters of the Division.

SUPERVISION OF DAMS

Application was filed on March 25, 1937, for the alteration of the Lafayette Dam of the East Bay Municipal Utility District. This application covered certain changes in the discharge lines and spillway provisions.

Construction on the fill at San Gabriel Dam Number One of the Los Angeles County Flood Control District is progressing in a satisfactory manner. The spillway excavation is well under way and the plans for the lining of the same have been completed. At the Cajalco Dam of the Metropolitan Water District the work of placing fill on the dike is practically completed and the pouring of the concrete face on the dam and dike is progressing rapidly. The cutoff in the main dam is practically completed.

Work resumed last month after the temporary shutdown due to weather conditions at O'Shaughnessy Dam of the City and County of San Francisco, is progressing rapidly. The concrete downstream from the old structure is practically completed to the old crest of the dam.

WATER RIGHTS

Supervision of Appropriation of Water

Twenty-one applications to appropriate water were received during March. 19 were denied and 24 were approved. Eleven permits were revoked and the rights under 6 permits were confirmed by the issuance of license.

Among the applications approved were six by the Santa Clara Valley Water Conservation district of San Jose involving appropriations from Almaden, Guadalupe, Los Gatos, Calero and Stevens Creeks at an estimated cost of $1,961,000.

SACRAMENTO-SAN JOAQUIN WATER SUPERVISION

During the past month, this office has been preparing the data to publish a report showing the amount of water diverted from and returned to streams in the Sacramento and San Joaquin territory. This report will show the amount of land irrigated, flow in the stream channel, and the rate of advance and retreat of salinity in the delta.

Field work has commenced and at present consists of observing all points of diversion to insure that records of operations will be kept during the coming season. The abundance of rainfall has made early irrigation unnecessary this year.

CENTRAL VALLEY PROJECT

The United States Bureau of Reclamation continued work during the month on the preparation of plans necessary for starting construction on the initial units of the project. Preliminary investigations and exploration work have been continued at Kennett and Friant dam sites as have the surveys along the Contra Costa conduit and Friant-Kern canal.

New Charter Way Underpass Opened in Stockton City

(Continued from page 10)

This new underpass will doubtless take most of this traffic, especially after an underpass is completed under the Santa Fe tracks on Wilson Way, on U. S. 99. Bids for this project will be opened this month.

The signing by President Roosevelt of the Emergency Relief Appropriation Act of 1933 made available Federal funds for the construction of highway-railroad grade separation structures. Charter Way underpass is one of the structures now completed by the State under this act.

RAILROAD CROSSING PROBLEM

At Charter Way, U. S. 50, crossed at grade a total of eight separate railroad tracks, one of the Western Pacific and seven of the Southern Pacific, all within a distance of five hundred feet.

Design studies were made to determine the most satisfactory structure for the problems involved, which included the separation of the highway and eight railroad tracks, and the maintenance of accessibility to adjoining improved property. To this end an undergrade crossing which would carry highway traffic under the railroad tracks was selected.

The crossing consists of a depressed portion 1072 feet 6 inches long, providing two 22-foot roadways separated by a 3-foot safety curb and two 4-foot pedestrian sidewalks, all flanked with retaining walls running the full length of the depressed portion.

RETAINING WALLS USED

Reinforced concrete construction was used throughout with the exception of the spans carrying the railroad tracks over the highway which were made of steel.

DIVIDED ROADWAY

Division of the roadway area into 2 two-lane roadways by means of the safety curb is in accordance with modern safety practice, providing as it does two traffic lanes for traffic traveling in the same direction. The safety curb also became of economic value for it permitted the use of intermediate piers to support the vehicular bridge and track span superstructures. Had it been necessary to span the entire roadway from retaining wall to retaining wall, much heavier bridge superstructures would have been required with consequent increased cost.

As is usual in the case of undergrade crossing structures, with depressed portions below natural ground line, drainage of water entering the roadway had to be provided for. To this end two electrically operated pumping units, to operate alternately, were provided to pump from a sump located below the point of lowest grade line. Each pumping unit is capable of discharging not less than 750 gallons per minute and is so controlled that should water enter the depressed portion in excess of the pumping capacity of the pump in operation, the idle pump will come into operation. With this pumping equipment, it is believed the run-off from the heaviest rain will be handled without difficulty.

SAFETY FOR NIGHT TRAFFIC

To provide additional safety for night traffic, adequate lighting equipment to illuminate the roadway for the entire length of the depressed portion has been provided. For illuminating the roadway areas outside the limits of the vehicular bridge and track spans, electroliers supported on the retaining walls flanking the roadway are provided, and for the areas beneath the vehicular bridge and track span superstructures lighting units mounted in recesses cast in abutments and piers have been provided.

COST IS $310,000

The total construction cost for the underpass is approximately $310,000 including the cost of engineering. This project was financed from the Federal Works Program Grade Separation funds.

The subway was constructed by the State Division of Highways under contract awarded to Biasotti, Willard, & Biasotti & Rocca & Company.

All necessary right of way for the project was furnished by the city of Stockton, financed from the city's ¼¢ gas tax and other city funds.

States Making Surveys of All Highway Trends

(Continued from page 12)

Studies of commodities carried by trucks, and of the origins and destinations and trip-distances of trucks will throw light on the competition between highway carriers and railroads and other transportation facilities.

The financial studies are an indispensable part of the surveys. By analyzing both the revenues and the purposes of expenditures of the State and all its parts, we hope to estimate the future ability of the State to sustain a maximum highway investment.

That investment will not be limited merely by the number of miles the State can build and pay for, but the number which it can continue to pay for indefinitely after they are built.

Within that limit we hope to choose the most important coordinated sections of roads and streets which should comprise the ultimate improved system.

SURVEYS MUST CONTINUE

The road use and motor vehicle allocation studies will show us how to distribute the costs of the highways in proportion to their use. Another study will determine the economic life expectancy of road surfaces.

The investigation of general economic and social trends is now in the formative stage.

The work is not finished. Each State should consider the planning survey as a continuing function. Suspend it now, and the value of the work now done will soon be lost. The 1½ per cent provision has been retained in the Federal law for the fiscal years 1938 and 1939.* It should remain permanently, and possibly be enlarged; and no State should forego the opportunity it affords for intelligent highway planning.

* The 1½ per cent provision referred to by Mr. Fairbank requires that 1½ per cent of funds allocated by the national government to states under the Works Progress Program, the Works Grade Separation Program and Federal Aid to Highways shall be expended for highway planning surveys. Editor.

Manchester Boulevard Opening Climax of 13 Years Work

(Continued from page 18)

few years, saying that California will have three million dollars tourist trade this year, one of her "biggest crops."

Closing the program at the Elks Club, Mr. Kelly declared the State's highway system is eight to ten years behind the needs. "By the end of 1937," he said, "California will have more pleasure cars registered than has any other State."

Manchester Avenue already has required the addition of a third lane, and Mr. Kelly forecast the day when a fourth will be needed. "In time, Manchester will become one of the great highways of the State," he declared.

The plan to project this Manchester Avenue route from the Roosevelt Highway (U. S. No. 101-Alt.), near Playa del Rey, to connect with Coast Highway Route No. 2 (U. S. No. 101), near Santa Ana, became a unified program of the State in 1933, when this proposed route became a part of the State Highway System as Route 174.

At that time portions of the road had been laid as city streets, but with no connecting links. Then the only portion of this road improved to full width pavement was 5.9 miles within the city of Los Angeles. Since January 9, 1934, when construction was started by the State on the first contract, work has progressed steadily. With the cooperation of the cities and counties, rights of way have been secured, widening and new construction completed on 27.1 miles of highway, the completed roadway pavement surface varying in widths from thirty feet to seventy-six feet.

This entire program, costing some $2,700,000, has been financed out of the gasoline tax, with contributions being made by the cities and counties out of their share of the gas tax revenues.

Manchester Boulevard had its beginning in Graham in 1924, when a group of far-seeing business men met and formed the Manchester Avenue Improvement Association. While, at that time, Manchester Avenue was merely a line projected on a map, soon meetings began to be held at regular intervals along the proposed route.

MANY GROUPS GAVE AID

Since the inception of the plan, the following associations became affiliated with the Greater Manchester Improvement Association, and have worked towards promotion of the road: Los Angeles County Regional Planning Commission, City Planning Commission of Los Angeles, South Gate, Anaheim and Santa Ana; Chambers of Commerce of Inglewood, Graham, South Gate, Downey, Norwalk, Buena Park, Fullerton, Anaheim, and Santa Ana, the Inglewood Manchester Improvement Association; Southwest Chamber of Commerce; Vermont-Manchester Business Association; Harbor District Chamber of Commerce; Eastside Organization of Los Angeles County, and City Planners Association of Los Angeles County.

The first problem was construction of the road from Central to Alameda streets. The county of Los Angeles joined the State to obtain the right of way. From this strip, extensions east and west have been continuous, with hardly a day passing that some part of the road was not under construction.

FUTURE WIDENING PREDICTED

The last allotment of funds by the Highway Commission built the remaining 1.3 mile gap through the city of Anaheim, in connection with which it is of interest to note that in securing the right of way, the property of an old abandoned line of the Southern Pacific Railway was acquired between Anaheim and Miraflores Junction with Route 2. This same allotment also provided for the construction of a third strip of pavement from Anaheim to Norwalk, making the paved portion of roadway not less than thirty feet in width at any point. The right of way is one hundred feet.

It is anticipated that further widening will be carried on from time to time to properly and safely handle the constantly increasing traffic.

The dub golfer on the first tee swung three times at the ball and missed. Not discouraged, he looked up at the crowd, on the club porch and grinned. "Tough course," he said.

Direction Signs Are Important in Guide Group

(Continued from page 24)

names of passes with the elevation and location, approach signs at drinking fountains, etc.

California has one distinctive sign. It is used for historical landmarks, and is made up with white letters on a brown field. Such signs are placed on the main highway at the point of departure of the highway leading to the landmark. One such sign is provided for each direction of highway traffic and motorists are routed to those landmarks over the quickest and best route.

The historical landmarks are, as their name signifies, verified landmarks of California's early history. The points are marked by a plaque or nameplate, after being checked and approved for their authenticity by the State Chamber of Commerce and their registration by the Department of Natural Resources. Descriptions of these historical landmarks are available and the brown and white directional signs inform the motorist where the landmarks are located.

The description of signs in this article has to do with signs as they will be when brought up to date. There are many old type signs now in place, but as fast as it is economically and physically possible, these are being removed or repositioned to conform to signing as described.

SIGNS REPOSITIONED

The city and town name signs and the reassurance signs are being positioned on the main routes now, and all should be in place for the summer travel.

Much study and experimenting has been done to develop the signing of today. It is necessary to know the past history in order to plan the future. California wishes to make travelling easy—much money is spent each year informing the world as to the innumerable advantages in California.

The stranger from other States begins to form his opinion the moment he crosses the line into California. Our signing must be uniform, authentic, easy to read and follow. It is as important as the alignment, grade and surface of our highways.

STATE OF CALIFORNIA

Department of Public Works

Headquarters: Public Works Building, Eleventh and P Sts., Sacramento

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JUSTUS F. CRAEMER.....Assistant Director

EARL LEE KELLY.....Director

EDWARD J. NERON.....Deputy Director

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Port of Eureka—William Clark, Sr., Surveyor

43806 5-37 15,000

CALIFORNIA STATE PRINTING OFFICE
GEORGE H. MOORE, STATE PRINTER
SACRAMENTO, 1937

MAP
SHOWING
STATE HIGHWAY SYSTEM