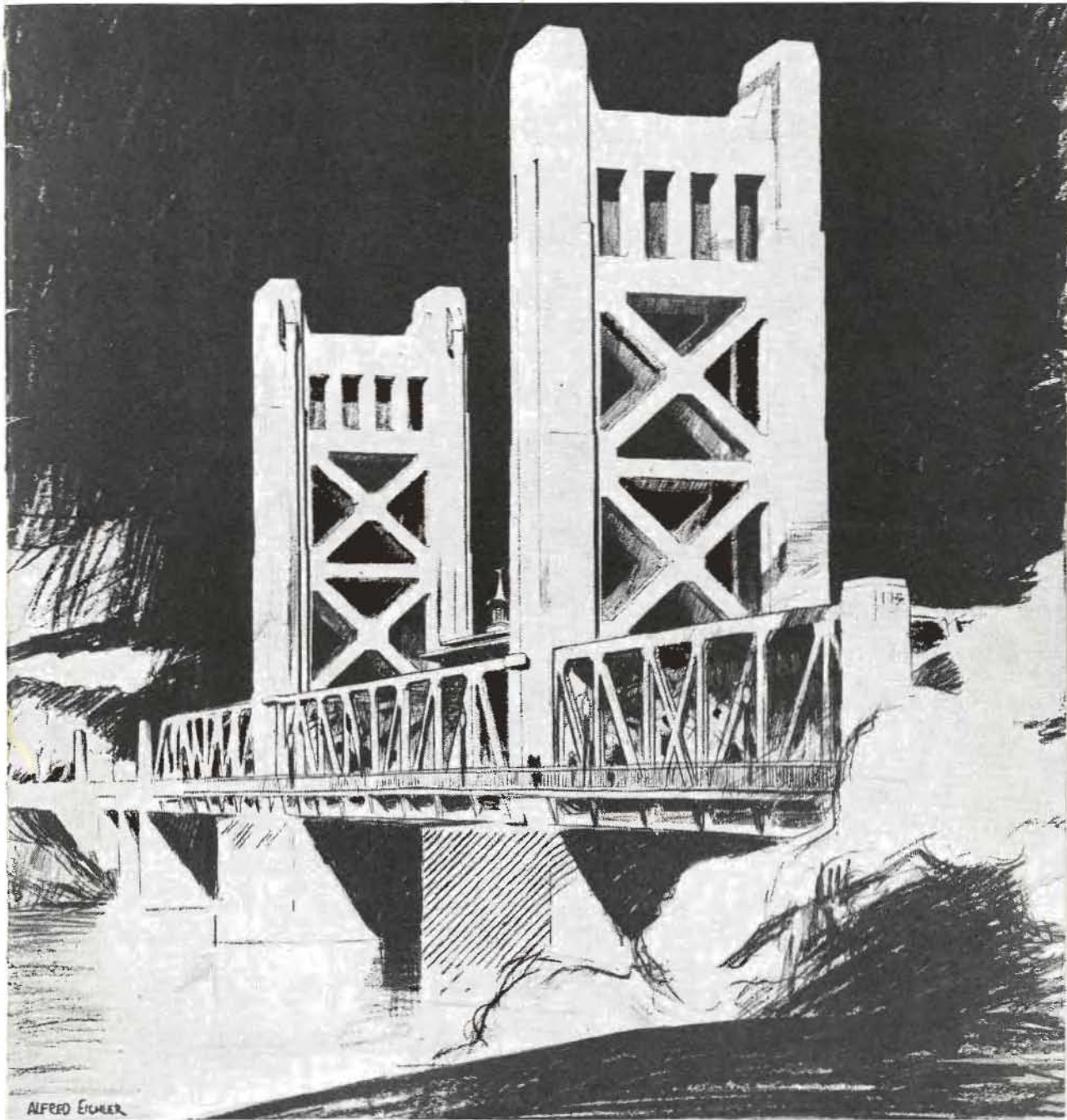


University of California Library
CALIFORNIA DOCUMENT

CALIFORNIA

HIGHWAYS AND PUBLIC WORKS



"M" Street Vertical Lift River Bridge at Sacramento, A Unique Design with Architectural Treatment

Official Journal of the Department of Public Works

AUGUST ~ 1934

Table of Contents



	PAGE
Power Development Must Not Be Divorced from State Water Plan.....	1
<i>By Governor Frank F. Merriam</i>	
Three Tunnels Necessary on Feather River Canyon Route.....	2
<i>By F. W. Haschwood, District Engineer</i>	
Location of Feather River Canyon Tunnels Pictured.....	3
Great Caravan Officially Opens Sausalito and Cloverdale-Hopland Projects	4
Scenes Along Cloverdale-Hopland Relocation.....	5
Cutting the Barriers at Sausalito and Hopland—Illustrated.....	6-7
Western State Officials Urge Imposts on Diesel and Aeroplane Fuel...	8
<i>By H. H. Baldock, State Highway Engineer of Oregon</i>	
Resolutions Passed by Western State Highway Officials Convention....	9
New Highway to Point Loma Officially Opened.....	10
<i>By W. L. McFadden, Associate Highway Engineer</i>	
Illustrations of New Point Loma Highway.....	11
Palisades Beach Bottleneck Eliminated on Santa Monica Coast Highway	12
Pictures of Palisades Beach Highway Improvement.....	13
Highway Commission Meets at Lakeport—Illustrated.....	15
Governor Merriam Leads First Party Through Yerba Buena Tunnel...	16
Scenes at Yerba Buena Tunnel Opening.....	17
\$2,729,600 Highway Work Put Under Way.....	18
Edward J. Neron Appointed Deputy Director of Public Works— Illustrated	19
State Highways to Be Numbered and Signed.....	20
<i>By T. H. Dennis, Maintenance Engineer</i>	
Map Showing Numbered State Routes.....	21
Water Resources Report of State Engineer.....	23
How Highway Development Increases State Fair Attendance.....	24
Aerial Picture of State Fair Grounds.....	25
Governor Dedicates Rumsey-Clear Lake Highway.....	28
Illustration of Dedication Ceremony.....	29
Bids and Awards of Contracts for July.....	30
List of State Highway Sign Numbers.....	32

Governor Merriam Declares Power Development

Must Not Be Divorced From

State Water Plan

By FRANK F. MERRIAM, Governor of California

NEGOTIATIONS with the Federal government for the financing of our \$170,000,000 State Water Plan, which is of the greatest concern to the people of California, appear to be in a critical stage. According to a newspaper statement from Washington the Public Works Administration is preparing a report of its investigation of the Central Valley Water Plan as submitted by our State Division of Water Resources. It is said that this report finds the project both feasible and advisable as to its flood control features and as an aid to navigation and salinity control in the Delta region, but recommends further study of the financial set-up of the project and the economic consequences to the State and nation of power development with the possibility of its consideration in the long range Public Works Administration program of the government.

It therefore appears that we have one more hurdle to jump in Washington before we can secure the full measure of Federal participation in this plan for aiding the great valleys of California that have been improved to a high degree of agricultural production by the toil and capital investment of our citizens, but

are fast becoming desert again for lack of water.

The people voted for this Central Valley Water Plan in a statewide referendum election held in December, 1933, and I hold it is just as sacred a duty for the Governor to

carry out the will of the people expressed in that majority referendum vote as it is to obey the mandate of any law enacted by the Legislature. It is for this same reason that I oppose the diversion of the gas tax for any other purpose than road building, as mandated by the people in another referendum vote.

The progress and prosperity of the whole State of California are vitally linked with the well-being and prosperity of every section of our State and the great central valley areas can not be permitted to revert to desert for lack of water and cheap



FRANK F. MERRIAM

electric power.

Therefore, as the Governor of all California, I hold it my solemn, sworn duty to protect and safeguard the interest and prosperity of the State and people of the great central valleys in this issue, just as much as it was my duty to protect the property and interest of the State and the people of San

Three Highway Tunnels Will Pierce Rock Barriers in Feather River Gorge

By F. W. HASELWOOD, District Engineer

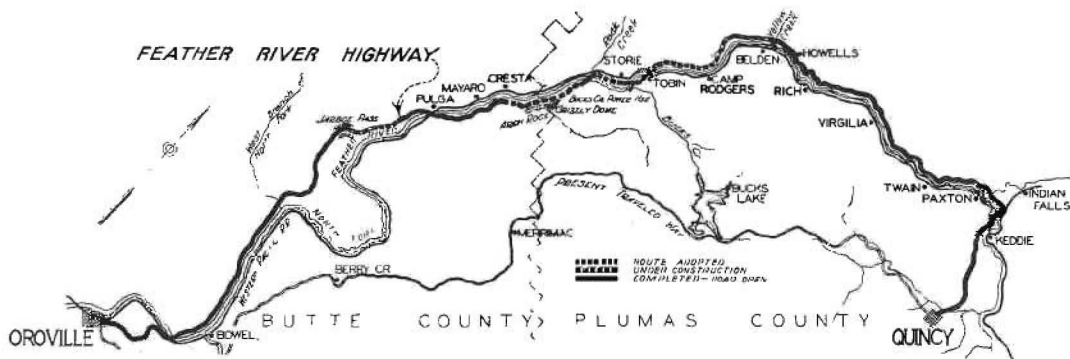
THROUGH the rugged canyon of the North Fork of the Feather River and its tributaries, the East Branch and Spanish Creek, the construction of the long heralded Feather River Highway is entering its last lap. On this great and important project construction work has been in progress as rapidly as the financial ability of the State would permit for six years.

Two more years at the somewhat accelerated rate of progress now being attained will see the completion of this low level, snow free highway between Oroville, famed for its production of gold, oranges and olives, and Quincy, the county seat of Plumas County,

tion with Route 29, eight miles from the Nevada line, was made a State highway, thus transforming it into a major interstate route. Traversing as it does the river canon and crossing low passes, this interstate route offers less obstruction from snow during the winter than any other trans-Sierra highway.

The distance from Oroville to Quincy by way of the North Fork of the Feather River is 77.75 miles, of which 70.75 miles is being built as a single project, no portion of which is of appreciable value until the whole is completed.

From May to November traffic to Quincy



SKETCH MAP of Feather River Canyon Route.

located in the heart of one of the most attractive regions of the Sierras.

The legal necessity for this highway is created by the original bond act of 1910 requiring that all county seats be served by the highway system then contemplated. The actual necessity is found in the vast area in Plumas, Lassen and Sierra counties that will be served by this direct connection to the Sacramento Valley, and in the ease with which not only residents of the Valley but all of Northern California can reach this unexcelled vacation and outing area.

INTERSTATE ROUTE

The necessity and importance of this highway was further increased in 1931 when the road from Quincy east through Portola, Beckwith and Beckwith Pass to a connec-

and surrounding territory is served by the ridge road by way of Merrimac and Bucks Lake. During the remainder of the year, when this road is closed by snow, traffic may reach the interior valley by way of Reno, Truckee and Auburn, with an increased length of travel of about 85 miles.

WORK STARTED IN 1928

Grading and structures on this 70.75 miles between Oroville and the existing road at Keddie, seven miles from Quincy, will cost about \$7,000,000. At the end of the current biennium approximately \$6,000,000 will have been expended.

Work was started on this project April 27, 1928, by establishment of a convict camp on the East Branch near Paxton. A month later

(Continued on page 22)



63

TWO TOUGH SPOTS for highway building are encountered in the **GRIZZLY DOME** and **ARCH ROCK** areas of the Feather River Canyon Route. Three tunnels are necessary, two in the **ARCH ROCK** area as shown by dotted lines in the upper picture and one through the dome-shaped granite mass of **GRIZZLY DOME** rising sheer some several thousand feet from the river's edge.

64



Great Caravan and 10,000 Participants Mark 2 Redwood Highway Dedications

HEADED by Governor Frank F. Merriam, Director of Public Works Earl Lee Kelly, Chairman Harry Hopkins and members of the Highway Commission, and Grand Marshal Harry Ridgway, some 10,000 highway enthusiasts participated August 5th in the celebration and monster caravan, commemorating the official dedication and opening of the Waldo-Sausalito and Cloverdale-Hopland sectors of the Redwood Highway.

State highway officials declared that the caravan was one of the largest and the celebration and ceremonies among the most spectacular ever held in California.

The day's events were sponsored and mobilized by the celebrations committee of the Redwood Empire Association, H. G. Ridgway, chairman, with the cooperation of the Mayor and Chamber of Commerce of Sausalito, the mayor and Chamber of Commerce of Cloverdale, D. G. McMillan and Judge Don Ward of Hopland, and a number of city and county chambers of commerce throughout the nine counties.

DINNER TO GOVERNOR

The week end's events commenced with an informal dinner tendered Governor Merriam, Director Kelly and members of the Highway Commission at Sausalito by the city officials, Lions Club and Chamber of Commerce of Sausalito.

Sunday's events commenced with a program and ceremonial in Sausalito's historic plaza—dedicating the Waldo-Sausalito sector.

This was immediately followed by an unique "barrier-breaking" ceremony. A sailing yacht and a power boat—typical of Sausalito's outdoor sports attractions—were placed anglewise across the new Waldo-Sausalito highway sector, with a "barrier" of redwood boughs strung between the two boats.

Signalizing the opening of this highway to traffic, Governor Merriam's car was driven through the barrier. Simultaneously, an attractive Sausalito sailorette crashed a bottle of Napa County wine on the bow of one of the boats.

Sausalito arrangements were in charge of the mayor and Chamber of Commerce of

Sausalito, including Mayor Webb H. Mahaffey, Captain W. T. Dillon, president of the Chamber of Commerce; Dick Lewis, Henry Meyer, W. Robert Miller, Andy Anderson, Manuel Monetti and others.

General Chairman Harry Ridgway presented Judge Paul Helmore as master of ceremonies for the Sausalito festivities.

The caravan, which was mobilized during the speaking program by the State Highway Patrol and Sausalito Police Chief Manuel Monetti, then started its historic pilgrimage to Cloverdale and Hopland.

En route delegations were picked up in San Rafael, Novato, Petaluma, Cotati, Santa Rosa, Windsor, Healdsburg and Asti. Petaluma arrangements were in charge of L. J. Peterson, Sam Brown and Dolph Young, secretary of the Chamber of Commerce.

REFRESHMENTS AT SANTA ROSA

At Santa Rosa, a brief stop was made to enjoy refreshments served by the Santa Rosa Chamber of Commerce, in charge of Mayor George R. Cadan and G. Lansing Hurd, secretary.

On arrival at Cloverdale, American Legion drum corps from Healdsburg, Cloverdale, Hopland and Ukiah, together with the Lytton Boys' School band, led the procession over Cloverdale's gaily decorated main street. Several hundred more automobiles joined the cavalcade at Cloverdale. Cloverdale arrangements were in charge of Mayor R. M. McClelland and President of the Chamber of Commerce Hilmer Peterson.

Continuing on schedule, the monster cavalcade proceeded over the newly completed Cloverdale-Hopland sector, one of the most spectacular and panoramic highway units in the State highway system.

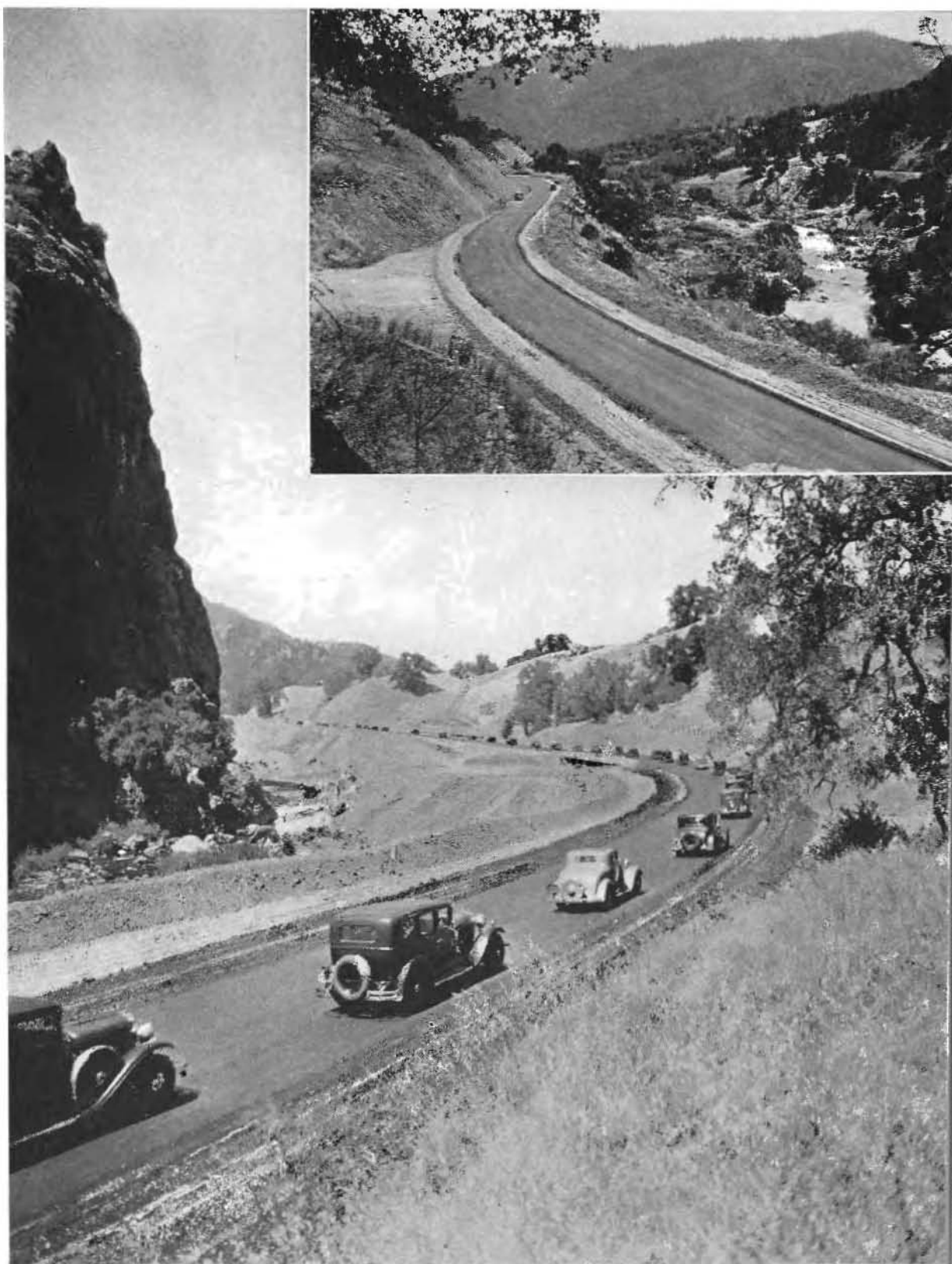
As the motorcade passed majestic "Squaw Rock," Pomo Indians by smoke signals informed Hopland that the caravan approached.

BARRIER OF HOP VINES

Arriving at the outskirts of Hopland, the caravan was stopped by a substantial "barrier of hops," made of interwoven hop vines.

With some difficulty Governor Merriam cut this "barrier" with a pair of large pruning

(Continued on page 6)



OPENING DAY CARAVAN passing Squaw Rock on the new Cloverdale-Hopland sector of the Redwood Highway Sunday, August 5th. Inset shows another portion of this fine modern highway along the Russian River.

Thousands Greet Governor at Hopland

(Continued from page 4)

shears, thus officially opening the new Cloverdale-Hopland unit to the public at large. The American Legion drum corps and Lytton band escorted the caravan into Hopland.

The official guests and speakers were entertained at luncheon by the Parent-Teacher Association, The Ladies' Catholic Guild and the Farm Center of Hopland.

An elaborate speaking program followed, broadcast to the many thousands assembled under a bright blue sky by a public address car.

Included in the assemblage were Federal, State, county and city officials, automobile club representatives, newspaper publishers,

ser, engineer U. S. Bureau of Public Roads; A. E. Dalton of Eureka, Chairman Nine-Counties Highways Committee, Redwood Empire Association; Colonel John H. Skeggs, District Engineer, Division of Highways (San Francisco); State Senator Charles F. Reindollar of Marin County, State Senator Herbert Slater of Sonoma County, State Senator R. R. Ingels of Mendocino and Lake counties, State Assemblyman Hubert Scudder of Marin and Sonoma counties, Assemblyman M. F. Burns of Mendocino, Humboldt and Del Norte counties; Frederick Thompson, supervisor of Marin County; Ed. Gordon, chairman Mendocino County board of supervisors; Ed Enzenauer, chairman Sonoma County board of supervisors; R. M. McClelland, mayor of Cloverdale; W. F. Whitney, secretary Mendocino County Chamber of Commerce; J. P. Kelly, president Associated



BREAKING THE FIRST BARRIER at Sausalito, Governor Merriam and Director Earl Lee Kelly at left wave the caravan on its way between two yachts manned by jaunty sailorettes.

chambers of commerce and other organization representatives and a host of other officials and leaders from various parts of the Pacific coast.

Immediately following the speaking program, colorful Indian ceremonials were staged, under the direction of Hopland Chairman D. G. McMillan—reminiscent of yesteryears before the coming of the white man.

NOTABLE LIST OF SPEAKERS

Speakers during the day's events included Governor Frank F. Merriam, Earl Lee Kelly, Director of Public Works; Harry A. Hopkins, Chairman California Highway Commission; Timothy A. Reardon, Highway Commissioner from San Francisco; Dr. W. W. Barham, Highway Commissioner from Yreka; M. Goldman of Petaluma, President of the Redwood Empire Association; C. H. Sweet-

Chambers of Commerce of Sonoma County; Supervisor John Ratto of San Francisco; E. W. Kramer, Regional Engineer, U. S. Forest Service; C. C. Cottrell, California State Auto Association; H. L. Holley, Auto Club of Southern California, and John Casey, city engineer of San Francisco.

The newly completed Waldo-Sausalito and Cloverdale-Hopland sectors eliminate two of the worst "bottlenecks" and traffic hazards in the State highway system.

INTERESTING DATA

District Engineer John H. Skeggs of District IV, which includes both projects, received high commendation for the splendid job of engineering and construction executed under his direction.

The new Waldo-Sausalito sector in Marin

(Continued on page 26)



CROWDS AND CARS filled every available inch of space around the speakers' stand at Hopland, the northern terminus of the new road where the caravan ended its 15 mile journey. An elaborate program followed, during which Governor Merriam, the principal speaker, was given a great ovation.



HOP VINES ARE TOUGH as Governor Merriam discovered as he sheared the barrier. Front row, left to right: Highway Commissioners Barham and Reardon; the Governor; Miss Redwood Empire, Director Earl Lee Kelly and Chairman Harry A. Hopkins of the Highway Commission.

Western State Highway Officials Urge Imposts on Diesel and Airplane Fuel

By R. H. BALDOCK,

State Highway Engineer of Oregon and Secretary-Treasurer Western Association of
State Highway Officials

THE Fourteenth Annual Convention of the Western Association of State Highway officials was held at Seattle, Washington, on July 5, 6 and 7, with every one of the eleven western States represented by delegates.

The convention was opened with addresses of welcome by Mayor Charles L. Smith of Seattle and Governor Clarence D. Martin of the State of Washington, to which President T. S. O'Connell of the association responded.

In the first address of the meeting Leslie M. Scott, chairman of the Oregon State Highway Commission, speaking on "Highways of Progress," traced the development of highways since the invention of the wheel and eulogized the Roman roads, which were built straight toward their objectives and have lasted twenty-three centuries. He called attention to the fact that 100 years ago the highways had all the traffic, until 60 years ago, when they were superseded by the railroads.

During the past two decades rapid strides have been made in highway development and the highways have again become the most important means of transport of passengers and commodities. With relation to the present conditions, quoting Mr. Scott:

"RAILROAD METHODS OBSOLETE"

"Railroad executives fuss and fume. They cry that highway vehicular traffic must be curbed by law from taking railroad business. They scold and bedevil legislatures. Harried by debts and labor rules, high costs and slow facilities, obsolete and heavy equipment, they demand higher rates of transport to their own growing loss. Their old ideas of monopoly, heavy equipment, perpetual capitalization, disregard of repayment of debts, are bringing them ruin. * * * Their efforts are as vain as that of the Persian king, whose soldiers lashed the offending waves of the ocean with whips. Present methods of the railroads are obsolete. Maybe the next generation of executives will be less devoted to old idols and better prepared to meet modern exigencies."

Mr. Scott called attention to the necessity of correct and final locations free from political interferences of all kinds, and to the need for forward-looking executives in the design and construction of road systems to the end that alignment, gradient, sight distance and the superelevation and spiraling of curves

would permit speeds of from 80 to 100 miles per hour. He called attention to the two divergent theories of Telford and McAdam, starting 100 years ago, and spoke in favor of Telford's idea of building heavy foundations under all types of surfacing as preferable to the idea of John Loudon McAdam of building thin surfaces over yielding subgrades.

NATIONAL POLICY ASSURED

O. S. Warden, chairman of the Montana State Highway Commission and President of the American Association of State Highway Officials, speaking on "National Legislation," said: "Until the national government began to contribute and became a partner, road building in the United States was a disconnected, desultory and hesitating enterprise."

The most forward legislation yet enacted by Congress, Mr. Warden stated, is the Hayden-Cartwright bill that provides for a three-year program, which is a distinct accomplishment in highway economic planning and an assurance that road building will continue as a national policy. Congress has also given full and ample notice to the states that they can not further divert highway revenue to other than road building purposes without suffering forfeiture of a large percentage of their government allotments. Mr. Warden pointed out that it is indeed high time for the enactment of this regulation because the State legislatures of 1933 chiseled road revenues in an alarming fashion.

Mr. Warden called attention to the fact that government grants could not continue indefinitely and it was much better for the states to return to the matching basis. The speaker called attention to the broadening of the scope of government expenditure outside of a Federal system of roads initiated in the grant of 1933 and stated that whether this policy of the government would continue is an open question, but rather inferred that it is quite probable the government will take more active interest in farm-to-market roads and provide matching money for their construction and improvement.

Mr. Warden commended the states for the rapidity with which work had been placed

Million Men Employed at Peak Operations on Federal Aid Roads

under contract and men furnished with employment in this national emergency. Nearly a million men were employed directly and indirectly at the peak of the operation. The record made by the expenditure of the emergency grant funds cleared the way for the three-year program just passed by the last Congress.

Assistant State Highway Engineer George T. McCoy of California spoke in memory of James Allen, former State Highway Engineer of Washington, under whom Mr. McCoy served for many years as Assistant State Highway Engineer of Washington.

Dr. L. I. Hewes, Regional Director of the U. S. Bureau of Public Roads, spoke on "Highway Development for the Whole State" and gave some very interesting statistics, a resume of which is as follows:

Since the original Federal Aid Act of 1916 and, in fact, practically since the subsequent Federal Highway Act of 1921, the Federal aid system in the eleven western states has reached a total of 37057 miles upon which \$340,000,000 of Federal money has been expended; this in contrast to the expenditure of \$1,843,600,000 expended on approximately 108,000 miles of road of a total mileage of 206,000 in the entire system. The corresponding cooperation by the western states has been about \$130,000,000 or 34 per cent of a total of approximately \$520,000,000. This expenditure has been made on approximately 20,280 miles of the Federal aid system, representing an expenditure of approximately \$26,000 per mile.

\$509,000,000 FEDERAL AID

During the past nine years the gasoline imposts alone have equaled \$510,000,000; the registration fees \$266,000,000, or a total road operating revenue in the eleven western states in the past nine years of \$776,000,000. The government has also built directly, through the Bureau of Public Roads, 5800 miles of forest roads costing \$123,000,000 and 1200 miles of national park roads costing \$37,000,000. The expenditure on public lands highways has amounted to \$9,800,000. In consequence the total Federal expenditure on roads in the West to July 1 of this year amounts to approximately \$509,000,000, distributed on 29,000 miles of road.

Dr. Hewes pointed out that in a short time there will be left a very few miles of wholly unimproved road on the present Federal aid system of the western states. The time has now arrived for the states to study and classify all their highways with respect to service and revenues. There is no question but that strong sentiment exists for throwing a greater burden of mileage upon the State highway system or for turning a larger mileage over to the control and financing of the states. He stated that in his opinion (which I believe is shared by all thinking men) it is far better for new roads to be brought into the State highway system rather than to split the road revenues for the addition of new roads without State control.

Dr. Hewes stated that it is increasingly clear

RESOLUTIONS ADOPTED BY WESTERN STATE HIGHWAY OFFICIALS AT CONVENTION

The convention of the Western State Highway Officials held in Seattle, July 5, 6 and 7, 1934, adopted a number of resolutions dealing with highway matters in the eleven western states. A summary of the more important resolutions follows:

1. That cooperation be extended to the legislative and administrative bodies of the western states by the Western Association to result in the common good.

2. That the association recommend to the respective legislatures of the eleven western states that fees for licensing motor vehicles operated by Diesel fuels and/or other similar fuels be correspondingly and equitably increased.

3. That the appreciation of the association be extended to Senator Carl Hayden of Arizona and to Congressman Wilbur Cartwright for their untiring efforts in support of the Hayden-Cartwright bill.

4. That the Western Association of State Highway Officials endorse the State and regional planning boards and pledges its aid and support.

5. That the American Legislators Association at Salt Lake City having adopted a resolution recommending the construction of test roads in the western States for the purpose of obtaining further facts pertaining to highway design and cost, it is resolved that the matter be referred to Thomas H. MacDonald, Chief of the Bureau of Public Roads, with the suggestion that such test roads be constructed.

6. That the Western Association recommend to their respective legislatures that proper legislation be enacted to the end that fees be collected from airplane fuel and expended for the construction and maintenance of airports and roads connecting the air fields with the trunk highway system and that such expenditures be made under the direction of the various State highway departments.

that there is an obligation against the road revenues for the extension of State roads into the cities and called attention to the inadequate roads in metropolitan areas and to the very heavy tax burden borne by the urban motorist. However, "road revenues spread too thin over either urban or rural roads will compel highway depreciation because it is fundamental that our whole improved mileage is absolutely dependent upon organized maintenance under efficient technical control."

Based on traffic data gathered in Michigan, it would appear that of a total mileage of roads in the eleven western states, amounting to approximately 530,000, 30 per cent or 159,000 can be tentatively termed general use roads with prior claims on road revenues. Of this mileage about 69,000 are on the State systems, leaving a balance of approximately 90,000 miles of general use roads not on the State systems.

(Continued on page 31)

El Camino Cabrillo, New Highway to Point Loma Officially Opened to Public

By W. L. McFADDEN, Associate Highway Engineer

ON MONDAY, July 16, 1934, San Diego, in a fitting and proper way, celebrated its official 165th birthday. It was the anniversary of that day long ago when Father Junipero Serra founded the first settlement in what is now California.

Before Father Serra was born, Cabrillo, a Portuguese seaman in the employ of the Spanish kings, explored San Diego Bay with the thought of establishing a base for the galleons from the Philippines.

On beautiful Point Loma, past which Cabrillo sailed into the bay, Director of Public Works Earl Lee Kelly officially opened to the public on July 17, 1934, the newest completed State highway in San Diego County, named in honor of the first explorer—El Camino Cabrillo.

In the presence of prominent Federal, State, county and city officials and hundreds of residents from San Diego, Colonel Ruhlen, commanding officer of Fort Rosecrans, assisted by General William Gatchell, who commanded the fort when the old road was built, cut the ribbon and dedicated the new road to the residents of California.

DIRECTOR KELLY SPEAKER

Mr. Kelly extended greetings from Acting Governor Merriam and complimented the people of southern California on their cooperation in obtaining this new road.

Frank Forward, chairman of the San Diego Chamber of Commerce Highway Committee, was master of ceremonies. He introduced and called upon some of the following for short addresses: President John L. Fox, of the San Diego Chamber of Commerce; Harry C. Clark, chairman of the National Highway Committee; Supervisors Tom Hurley and Edgar F. Hastings; City Manager Fred Lockwood; State Senator William Harper; Congressman George Burnham; State Assemblymen George B. Bowers, Bruce R. Stannard, and Charles W. Stream; former Senator Leroy Wright, president of San Diego Historical Society, and General F. S. Strong, State SERA Director.

Colonel John R. White, superintendent of El Cabrillo monument, Yosemite and Sequoia National Parks, was represented by Assistant

Superintendent Daniel J. Tobin. Mr. Tobin told of the efforts being made to obtain an allotment of \$35,000 from the Federal government for further improvement of the monument park.

The new highway just completed is 2.7 miles long and extends along the high bluffs of Point Loma to El Cabrillo Monument encircling the old Spanish lighthouse. It comprises the first improvement by the Division of Highways on this unit of the State highway system which is one of the new secondary routes added to the system by the last Legislature.

The work consisted of constructing a bituminous treated surfacing 20 feet wide on a 36-foot graded roadbed and was completed at a cost of approximately \$57,550.

As the project lies within the limits of the Fort Rosecrans Military Reservation, Federal funds, apportioned to California for highway construction through National Public Lands, were used in addition to State funds for financing the project.

JOB FOR SEVENTY MEN

The construction of this new highway unit has furnished employment to an average of seventy men since the work started. Labor was furnished by the reemployment bureau in San Diego. The contract was awarded by Mr. Kelly on January 17, 1934.

The completed section extends from the San Diego city limits to the old Spanish lighthouse. At the lighthouse a large surfaced parking area has been provided so that the public may conveniently view the unexcelled seascape from this vantage point.

9,152,282 MILES OF HIGHWAYS IN WORLD. U. S. HAS ONE-THIRD

A survey just completed by B. P. Root of the Department of Commerce shows that the United States has one-third of the total highway mileage of the world.

His survey covers 145 countries and political subdivisions and shows a total of 9,152,282 miles and 3,042,780 for the United States.

Russia is second with 1,682,109 miles of highways recorded. Japan is third with 635,399 miles of highway.



EL CAMINO CABRILLO is the historic name of the new highway just completed along the bluffs of Point Loma through the National Monument Park to the old Spanish lighthouse at the entrance to San Diego Bay.



OFFICIAL DEDICATION GROUP at the opening of Point Loma Highway. Left to right: Supervisor Ed Hastings of San Diego County; Congressman George Burnham; Director Earl Lee Kelly of the Department of Public Works; President John L. Fox, San Diego Chamber of Commerce; Frank Forward, master of ceremonies; Col. George Ruhlen, U. S. A., commanding officer of Fort Rosecrans; Assistant Superintendent D. T. Tobin, National Park Service; Mayor John Forward of San Diego and Supervisor Tom Hurley.



OLD SPANISH LIGHTHOUSE at the extreme end of Point Loma. The new highway provides wide parking areas where motoring visitors can enjoy a striking panorama of sea and coastline.

Santa Monica Coast Highway Widened to 80 Feet Eliminating Bad Bottleneck

A DANGEROUS "bottleneck" on the Santa Monica coast boulevard was eliminated on July 2d when with picturesque ceremonies Director Earl Lee Kelly formally dedicated and opened to public use the newly widened and paved link of State Highway No. 60, extending from Santa Monica Canyon along the Palisades Beach to the California Avenue incline, approximately a mile in length.

The traffic on this highway is the greatest of any in the State, with a count of 53,000

Monica shared. The work required three months and 400 men were employed.

The improvement consists of 40 feet of 8-inch thick asphalt concrete pavement laid adjacent to the old 20-foot pavement on the northerly side. From the edge of this asphaltic concrete pavement, 13 feet of 4-inch asphaltic concrete was laid to the gutter line. The gutters are 3 feet wide and a 4-foot sidewalk is provided on the north side.

This project has been under discussion for a great many years, but it was not until the



UNLOCKING THE BARRIER, Director Earl Lee Kelly dedicated the improved Santa Monica Coast Highway unit along Palisades Beach July 2d assisted by Oxnard equestrienne girls, Perry Henshey and Santa Monica bathing girls.—Photo courtesy Los Angeles Examiner.

cars in 16 hours just westerly of Channel Road at the mouth of Santa Monica Canyon.

On the old 20-foot pavement traffic was hemmed in between the beach cottages and clubs on one side and the little used Pacific Electric right of way and tracks along the base of the Palisades. The improved highway is 80 feet wide with two pedestrian tunnels giving safe access to the beach.

The paving and widening of the artery cost approximately \$280,000 in which the State, Los Angeles County and the city of Santa

latter part of 1932, when the Pacific Electric Railroad decided to abandon its car service on the Santa Monica Canyon line, that steps were taken to secure the necessary right of way.

At that time it seemed that railroad right of way would revert to the original property owners and be subdivided and sold in small lots. If this had been done the improvement of the highway would have had to be postponed indefinitely on account of the high valuation which would have been placed on these small parcels of land, so close to the beach.

(Continued on page 26)



FROM BOTTLENECK TO BOULEVARD—Improved link of State Highway No. 60 at Santa Monica along the coast below the Palisades, now a fine four-lane highway is pictured at top. The old 20-foot pavement with the widening operation under way is shown in center picture, and below are “before” and “after” views of the California Avenue Incline connection.

Power Essential to State Water Plan

(Continued from page 1)

Francisco by ordering the troops into that city during the recent strike.

It has been suggested that if we will drop the power development feature of the plan the PWA would probably grant funds necessary to carry out the immediate construction of the water conservation project.

But Director Earl Lee Kelly of the Department of Public Works and State Engineer Edward Hyatt, who has worked assiduously for ten years to bring this great plan to fruition, advise me that development and sale of electric power is absolutely essential to the success of the plan as a whole and that the water and power features can not be divorced. And I have the fullest faith and confidence in the wisdom and judgment of these two able executives of the Department of Public Works.

WOULD HALVE REVENUES

Mr. Hyatt states that the elimination of the power feature would reduce the cost of the project by about 20 per cent, but would also reduce the revenues by as much as 50 per cent. A large amount of electric power will be necessary for pumping the water in San Joaquin Valley. If the cost of that power must be added to the other cost of amortization and operation of the plan in the sale of water, it would appear that the cost to the farmer purchaser would be prohibitive.

If President Roosevelt was correctly reported in his address made recently at the site of the \$31,000,000 Bonnieville Dam Federal project in Oregon, I feel sure that we can get his support of our State Water Plan in its entirety. The President is reported as saying that "the principle of government needs yardsticks so that people in this country will know whether they are paying the proper price for the electricity of our times. I conceived the idea," he continued, "that the government could create yardsticks. One already has been started on the Colorado River [Boulder Dam]. Two other yardsticks have been undertaken—a Tennessee, and a Columbia project—and the fourth, the St. Lawrence, is going to be started."

The Central Valley Water Plan would be such a yardstick for California and one that

is just as much needed and would be just as beneficial as those he mentions for other States in the Union.

I am sure, therefore, that we can rely upon the utmost consideration and cooperation from President Roosevelt in securing the eventual success of our plan, and I will, accordingly, use all the power and influence conferred on me as Governor to achieve for California the realization of the Great Central Valley Water Plan in its entirety with both water and power features included and carried into successful operation.

Furthermore, and of almost equal importance, is the employment that the building of this great project would give to thousands of our people. It is estimated by the engineers of the State Water Department that the construction of this project would provide directly and indirectly employment of 25,000 men for a period of approximately three years.

TWO NEW TOPOGRAPHIC MAPS OF COOPERATIVE SURVEYS AVAILABLE

New topographic maps covering the Los Viejos Hills and Kettleman City quadrangles in Kings County and the Halls Flat Quadrangle in Lassen and Shasta counties are now available.

The Los Viejos Hills Quadrangle was surveyed in 1930 by the U. S. Geological Survey in cooperation with the State of California. It is published on a scale of 1:31,680 with contour intervals of 5 and 25 feet and covers an area lying south and east of Murray.

The Kettleman City Quadrangle was likewise surveyed by the topographic branch of the U. S. Geological Survey in cooperation with the State of California. This is an advance sheet only and will later be published in final form in color. The scale is 1:31,680 and the contour intervals are 5 and 25 feet. It covers an area in and about Kettleman City.

The Halls Flat Quadrangle is a Federal sheet published at present in advance form only. It will later appear in final form in color. The advance sheet is on a scale of 1:96,000. The final sheet will be published on a scale of 1:125,000 with a contour interval of 50 feet. It covers an area south of Fall River Mills and east of Hat Creek.



POST-BANQUET SMILES—In this official group that assembled after the barbecue at Lakeport are, front row left to right: Simeon Chapman, President Lake County Chamber of Commerce; Supervisor Frank Noel; Secretary John Howe; Ex-Mayor Herbert V. Keeling; Highway Commissioners Timothy A. Reardon, Philip A. Stanton, Harry A. Hopkins, chairman, and Dr. W. W. Barham; Director of Public Works Earl Lee Kelly. Rear row: Assemblyman E. C. Crowley; Secretary George Cook; Supervisors E. L. Herrick, W. T. Smith, and J. S. Kelsay; Editor W. J. Bolce; J. M. Paige, Ontario; E. W. Spencer, Pomona; District Engineer J. W. Vickrey; L. V. Campbell, Engineer, City and Cooperative Projects; Supervisor L. L. Burger; A. Dalton, Chairman Redwood Highway Counties Committee.

Highway Commission Meets in Lakeport

AT THE request of the Lake County bureau of information, chamber of commerce, board of supervisors and other civic bodies, the California Highway Commission held a meeting in the city of Lakeport on July 18th.

A caravan of representatives of the nine counties of the Redwood Empire Association escorted the commissioners from Sacramento via Napa, St. Helena, Calistoga, Middletown, Lower Lake and Kelseyville.

On arrival in Lakeport the party was greeted by a reception committee composed of Chairman J. A. Youngren, Mayor H. G. Crawford and W. W. Prather, who escorted the officials to a beautiful spot on the shore of Clear Lake, where a bountiful barbecue feast was served. Former Mayor Herbert V. Keeling acted as toastmaster and master of ceremonies at the barbecue program, which included musical selections and speeches by Harry A. Hopkins, chairman of the commission, and Commissioners Philip A. Stanton, Timothy A. Reardon and Dr. W. W. Barham. Director Earl Lee Kelly of the Department of Public Works brought a message from Governor Frank F. Merriam, and Chairman A. E. Dalton of the Redwood Empire Association Nine Counties Committee spoke on road matters.

COMMISSIONER REARDON PRAISED

Chairman Hopkins, in behalf of the commission, expressed deep appreciation for the hospitality of the people of Lake County, and explained the reasons for the postponement of the original plan to meet in Lake County on July 6th and 7th.

Director Kelly lauded the good work that Commissioner Reardon has been doing in behalf of Lake County, which lies in the district that he represents on the board. Commissioner Reardon replied that the present Highway Commission had done much to take

off the shackles of the people of rural northern California in many sections where for lack of roads they were virtually shut-ins.

Ernest C. Crowley, the blind Assemblyman, who represents Lake, Napa and Solano counties, concluded his remarks by stating that he felt that the Highway Commission would cooperate in every way to help in the up-building of that district.

COMMISSION MEETING HELD

Following the barbecue, a regular meeting of the commission was held in the superior courtroom in the county courthouse and was attended by a large number of people. Chairman Hopkins, in his opening remarks, stated that while the coming of the commission to Lakeport was much in the nature of a courtesy visit, the people could consider the meeting as a regular meeting of the board.

Commissioners Reardon, Stanton and Barham spoke on the highway work of the commission, as did also Director Kelly, who expressed his appreciation of the kindly cooperation of the board and called attention to the fact that the five members are business men who work for the State without pay and give many hours of their valuable time in behalf of highway matters.

After an opportunity had been given any person to bring any road matters before the meeting, Chairman Hopkins again expressed the appreciation of the commission for the hospitality shown them and particularly thanked the ladies' committee for the beautiful floral decorations of the courtroom.

Upon adjournment of the meeting, the commissioners were most graciously entertained by Mr. and Mrs. Herbert V. Keeling at their beautiful home on the lake shore and later were guests of Dr. W. R. Prather of Adams Springs for dinner.

Governor Merriam Leads First Party Through Yerba Buena Pioneer Bore

GOVERNOR FRANK F. MERRIAM, escorted by Chief Engineer C. H. Purcell on July 24th, led a score of leading California citizens, members of the Financial Advisory Committee of the San Francisco-Oakland Bay Bridge project, through the pioneer drift, which has pierced Yerba Buena Island, the bridge stepping stone in the middle of San Francisco Bay with a hole 12 feet square and 540 feet long.

The Governor and visitors were guests of Admiral Thomas J. Senn at a luncheon in the Admiral's quarters, prior to the inspection of the tunnel.

When the visitors arrived, because of the presence of the Chief Executive of the State of California, they were met by a Marine color guard of 30 men. The Governor's arrival was heralded with a fanfare of bugles and a salute of the regulation "nineteen guns." The same salute marked the Governor's departure.

URGES UNEMPLOYMENT RELIEF

At the east portal of the tunnel Joseph R. Knowland of the Financial Advisory Committee introduced Governor Merriam, chairman of the California Toll Bridge Authority, who said:

"I have been a member of the Toll Bridge Authority since the inception of this project, and I have loaned my efforts to the best interests of the transbay bridge, not alone because it will aid the counties of Alameda and San Francisco, but because it will give work to so many men.

"This bridge will bind together in commercial and spiritual unity the cities of both sides of the bay and, although they may retain their political entities, they will be one great city in spirit and in commerce.

"Now is the time for us to plan for employment in the winter. I want to bring this especially to the attention of those in charge of the work on the San Francisco-Oakland Bay Bridge to the end that the work may be pushed forward as much as possible at this time so that a maximum number of men may be given work this winter.

"Please consider with all seriousness the winter employment problem and plan your

work now so that as large a number of men as possible may be given work at the time when our people in California will need it most.

PLEASED WITH PROGRESS

"I am pleased with the progress that has been made on the bridge, and I trust it will go on without interruption."

Frank C. MacDonald, State labor leader, declared that the bridge was doing incalculable good in supplying jobs for thousands of men.

Admiral Senn spoke for the Navy, and Chief Engineer Purcell pledged the Department of Public Works engineers to the task of speeding up work so that the maximum number of men may be employed during the winter season.

The small pioneer tunnel that the official party passed through is the first of two parallel pilot bores, each 12 by 12 feet, that has been drilled through. Three more of these small tunnels will be driven through the hill and then the five will be broken into one large tunnel 76 feet wide by 58 feet high, which will be the largest bore tunnel in the world.

After inspecting the work on the island, the Governor was taken to Pier W-3, a half mile east of San Francisco, where the Governor guided to position the first base plate upon which Pier W-3 will be erected.

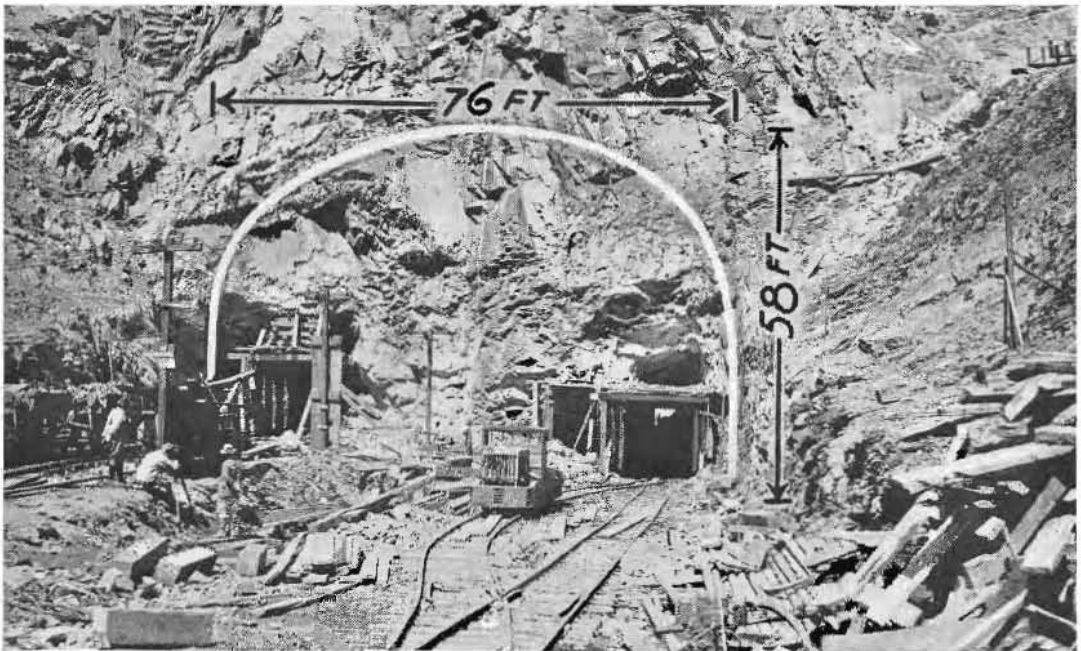
Those accompanying the Governor on the inspection of the bridge work were Harrison S. Robinson, Joseph R. Knowland, Leland W. Cutler, E. B. De Golia, E. Clarence Holmes, Frank C. McDonald, John P. Symes, Charles O. Conrad, R. H. Glassley and James Quinn of the Financial Advisory Committee. In addition there were present W. N. Burkhardt, C. E. Baen, E. J. Schneider, Albert Huber, E. L. Turkington, Justus F. Craemer, secretary to Governor Merriam, Mrs. Justus Craemer and Mrs. Thomas J. Senn.

Hotel Guest—Table ready for a party, eh? But why have you set the plates and tableware five feet apart?

Proprietor—It's an anglers association dinner and we always like to give each guest room to tell his fish stories.



MORE JOBS FOR WORKERS must be provided this winter Governor Merriam told engineering executives of the San Francisco-Oakland Bay bridge, urging them to plan accordingly, as he was greeted by the men employed in boring the first pilot tunnel through Yerba Buena Island.



TWO PILOT TUNNELS each 12 by 12 feet have been bored through Yerba Buena Island, the first of which was completed on July 24th when Governor Merriam led a party through it. Three more small bores will be driven and all broken into one large 58 by 76 foot tunnel.—*Photo courtesy San Francisco Examiner.*

CALIFORNIA HIGHWAYS AND PUBLIC WORKS

Official journal of the Division of Highways of the Department of Public Works, State of California; published for the information of the members of the department and the citizens of California.

Editors of newspapers and others are privileged to use matter contained herein. Cuts will be gladly loaned upon request.

EARL LEE KELLY.....Director
JOHN W. HOWE.....Editor

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

Vol. 16 2 AUGUST, 1934 No. 8

Roads and Prosperity

Some one once said, "The prosperity of a nation is measured by its roads."

That is as true today as it was 1000 years ago, and recognition of this fact was given by President Roosevelt in his signing of the Hayden-Cartwright Act, June 18, authorizing \$522,000,000 for highway construction.

As civilization progresses the extent and variety of the means of transportation grow. In America today, approximately 25,000,000 motor cars and trucks, several million horse drawn vehicles, and a smaller number of tractors and other highway using machines must find roads on which to travel.

Palliative for Employment

Depression or no depression, the need for more and better roads has never been questioned. Whenever unemployment has become a difficult problem—from time immemorial—public works have been resorted to as a means of providing work for the idle, and this work has usually taken the form of public highways. The famous Roman stone roads were built, in part, to take up the slack in employment and at a time when hard surface roads were considered an unnecessary luxury. Long before the automobile came into being the beautiful winding paved highways of western Europe had been built.

It was no wonder then that when the worst economic dislocation in history descended upon the United States, public works were immediately utilized for the purpose of reducing unemployment and stimulate industrial activity. And highways—highways 16 feet wide to super highways 100 feet in width—were advocated as the most necessary contribution to the Nation's needs.—*The United States News.*

Work Put Under Way During Past Month Totalled \$2,729,600

WORK ORDERS issued for construction and maintenance and outstanding advertisements for bids on construction in the total sum of \$2,729,600 indicate the progress made by the Division of Highways in getting work under way during the past month up to July 27th.

The following tabulation sets forth the segregation of the amounts accumulated in this total:

CONSTRUCTION

Contracts Awarded and Pending Award	\$1,773,000
Minor Improvements	62,000
Day Labor Construction	98,000

Subtotal	\$1,933,000
PROJECTS ADVERTISED	86,300

MAINTENANCE

General Maintenance	\$438,000
Specific Maintenance	91,900
Betterments	29,600
Oiling Program	69,800
Miscellaneous Maintenance	81,000

Subtotal	710,300
----------------	---------

Total	\$2,729,600
-------------	-------------

The amount of work which the Division of Highways had under way is represented by the 202 going contracts in force with the Department of Public Works as of July 27th.

Of these contracts 159 were for road construction, oiling and maintenance covering 196.4 miles and 43 for the construction of bridges and grade separations at a total estimated cost of \$1,865,400.

REPORT ON SOUTH COASTAL

BASIN WELLS IN 1933 ISSUED

State Engineer Edward Hyatt announces the release of Bulletin No. 39-B issued by the Division of Water Resources. This is a mimeographed report giving the records of water levels at a large number of wells in the South Coastal Basin for the calendar year 1933 and also precipitation records for the seasonal year 1932-33 in the same area.

Bulletin 39-B is the second supplement to printed Bulletin No. 39 which summarized all records of similar nature prior to the time of its issuance early in 1932. The bulletin contains 144 pages of data, and may be obtained through the Supervisor of Documents, Bureau of State Printing, Sacramento.

Angry Wife: "Now that I have an electric refrigerator, see what you can do about getting a mechanical secretary."—*National Motorist.*

Edward J. Neron is Appointed to the Deputy Directorship of Public Works

EDWARD J. NERON of San Diego, Past Department Commander, Veterans of Foreign Wars, is the new Deputy Director of Public Works, appointed by Governor Merriam upon the recommendation of Director Earl Lee Kelly.

Mr. Neron served throughout the World War as a lieutenant in the United States Navy, resigning at the end of the war to engage in the advertising business in San Francisco.

After a period of three years in business life he was called East by a death in his family and decided to reenter the U. S. Naval service. He spent six more years in that service and upon retiring went to San Diego to take a position in the office of the district attorney of that county, where he handled special investigation work.

FILLED HIGH OFFICE

He has been active in veterans' organizations, including the Veterans of Foreign Wars and the American Legion, for the past ten years. For two years he was commander of the "Commanders' Council" of all veterans organizations in San Diego County, having some fifty-two units, representing some ten thousand veterans and their families.

He later became California and Nevada Commander of the Veterans of Foreign Wars of the U. S. A., representing some forty thousand members in the two States. He resigned from the district attorney's office of San Diego to accept his present office with the Department of Public Works.

Mr. Neron was born and raised in Minnesota, was educated in the public schools and attended St. John's University of Minnesota. Shortly after leaving college, his love for travel and a keen desire to see something of the world before entering business life prompted him to enlist in the United States Navy as an apprentice seaman and he continued in naval service for seven years.

Impecunious Youth (receiving Leap Year proposal)—Honestly, Jean, marriage is out of the question. Why, I couldn't keep a mouse.

Jean (quite determined)—Of course you could, darling. I love them.



EDWARD J. NERON

MOTOR VEHICLE OWNERS PAID

\$309,110,436 U. S. EXCISE TAXES

During the fiscal year ending June 30, 1934, the Federal government collected approximately one-eighth of its entire tax revenue from the variety of excise taxes on motor transportation, according to figures made public by the National Highway Users Conference, of which Alfred P. Sloan, Jr., president of General Motors, is chairman.

The Conference tabulations are based on returns to the Treasury Department for the complete fiscal year and show that the motor vehicle owners of the country paid \$309,110,436 through the excise taxes on gasoline, lubricating oil, passenger cars, trucks, tires and tubes, parts and accessories, and pipe line transportation of oil.

WORK BEGUN ON ALL-AMERICAN CANAL

The first shovelfuls of dirt were turned on the all-American Canal the week of July 23d as a Los Angeles company began preliminary work on its rock excavation contract at Pilot Knob. SERA headquarters in El Centro sent out several engine operators to the job, the first men in a great construction army which will find employment on the canal during the next three and a half years.

State Routes will be Numbered and Marked with Distinctive Bear Signs

By T. H. DENNIS, Maintenance Engineer

THE simplification of highway directional service by the use of route numbers has been demonstrated throughout the country by the U. S. numbered highways. Plans have now been developed to coordinate the main State routes in California in a similar way. To this end, routes have been decided upon, numbers have been assigned, the design of the State route sign adopted, and sign surveys are under way to determine the number and location of the signs required. Routes will be signed as fast as available funds will permit.

Considerable study has been given to the selection of routes and to the system of numbering. In a section of the country where roads run mainly east and west and north and south, the matter is simple. In California, however, with the Coast Range, the Tehachapis and the Sierra Nevada Mountains, the topography and, consequently, the main road locations vary. There is sometimes doubt as to whether a certain road should be classed as north and south or the reverse. Under the system adopted, the routes classed as east and west are given even numbers and the north and south routes the odd numbers. State numbers are not given the U. S. numbered routes as there could be no object in such duplication. Some numbers have been omitted to provide for contingencies due to future developments of the highway system.

NUMBER SYSTEM EXPLAINED

In the selection of numbers, preference in assigning the smaller numbers has been given to the more heavily traveled roads in the vicinity of Los Angeles and San Francisco.

In the combination of sections of roads under a single route number, consideration has been given to established traffic habits, so far as known, to provide the most direct route between important termini. Numbers have not been given to short sections of roads which are more or less local in character, even though such sections are important traffic arteries.

The whole purpose of road signing is to provide information for the stranger or occasional visitor. Naturally, the local traffic is acquainted with and takes full advantage of the routes it prefers.

The design of the sign as adopted has been given a good deal of thought. A large number of designs were worked out and abandoned. It is essential that a sign for this purpose be of distinctive shape, simple, and easily read. The design finally adopted was worked up by the Division of Architecture.

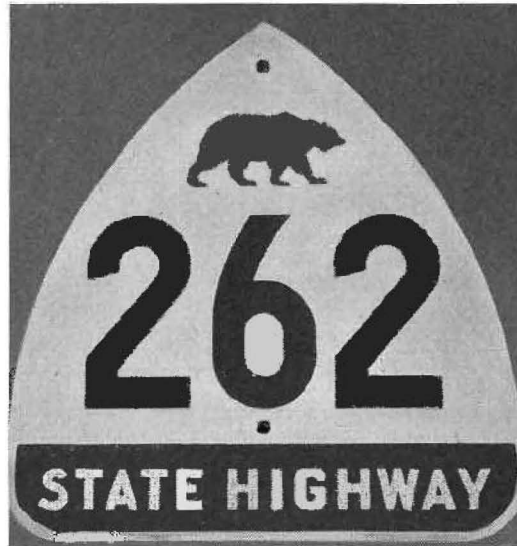
The signs will be black figures on white background. The material will be porcelain enamel on 18-gauge steel.

It is anticipated that three signs per mile will be required on an average and that approximately 2000 will be placed this year.

There follows a list of the numbered routes as shown on map printed on adjoining page:

1. Jct. U. S. 101 at Las Cruces, via Cambria, Santa Cruz, San Francisco, Pt. Reyes and Westport, to U. S. 101 at Fortuna.
2. Santa Monica via Santa Monica Blvd. to Jct. Route 18 at Lake Arrowhead, via Arroyo Seco and Cajon.
3. Jct. U. S. 101 at Serra to Jct. U. S. 101 at El Rio, via Santa Monica.
4. Jct. U. S. 40 at Pinole to Jct. Route 89 near Markleeville, via Stockton.

(Continued on page 32)

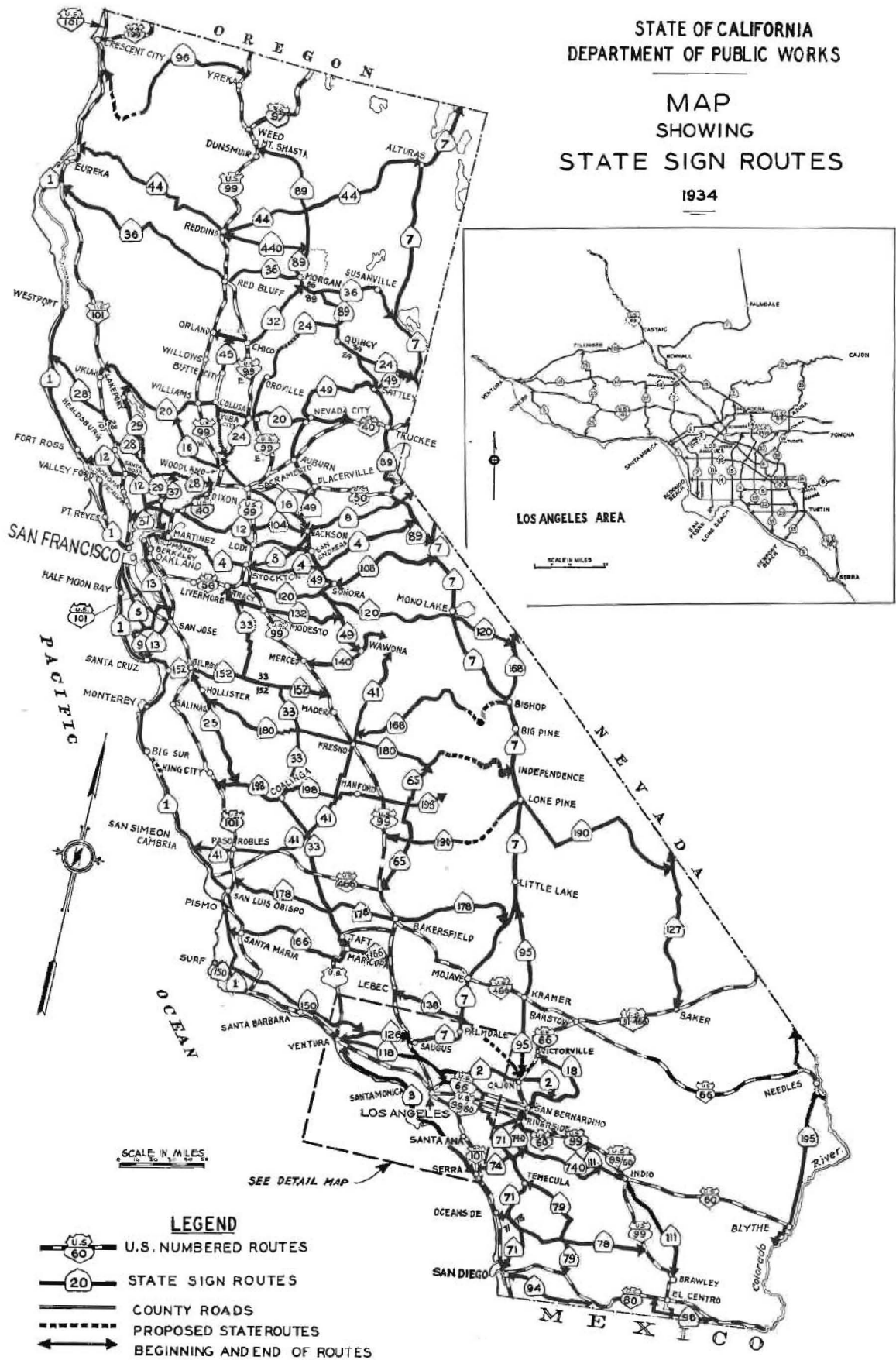







New California State Route Sign

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS

MAP
SHOWING
STATE SIGN ROUTES

1934



- LEGEND**
-  U.S. NUMBERED ROUTES
 -  STATE SIGN ROUTES
 -  COUNTY ROADS
 -  PROPOSED STATE ROUTES
 -  BEGINNING AND END OF ROUTES



SCALE IN MILES

SEE DETAIL MAP

MEXICO

Road Will Traverse Steep Canyon Wall

(Continued from page 2)

a second camp was established near Bidwell about six miles above Oroville. These two organizations have operated continuously, each occupying three different camp sites. Each have operated two one and one-quarter cubic yard power shovels with the necessary supplemental equipment in the way of compressors, trucks, tractors and graders, except that for the last year three shovels have been operated in the lower camp.

Each of these camps is a well organized unit supplied with a well balanced equipment layout for handling hard rock excavation.

Efficiency studies pointed the way for a better balanced equipment layout which is completed and functioning.

BIG ROCK YARDAGE

During the past five months, notwithstanding the fact that excavation was mostly rock, the average production of the two camps was 105,000 cubic yards of excavation. During a period of seventy-three months these two camps have moved a total of about 3,900,000 cubic yards.

During the six-year period eleven contracts have been completed, six of which were for bridges and five for grading.

The four major bridges are the Feather River Bridge, about four miles from Oroville, the West Branch bridge, ten miles farther on, the North Fork Bridge at Pulga and the Spanish Creek Bridge near Keddie. The first two are concrete arch structures. The bridge at Pulga is a deck steel arch and is unique in that it crosses the river directly over the Western Pacific Railroad bridge. The Spanish Creek Bridge is a high structure of the steel viaduct type.

The gross expenditures during this period were \$3,250,000 for work done by the convict camps and \$1,700,000 for contract work. Approximately \$1,000,000 additional will be spent during the current fiscal year, and another million will be required during the next biennium to complete the grading.

COMPLICATED CONSTRUCTION PROBLEM

The problems of location and construction common to all roads are intensified here by the fact that natural difficulties presented by the topography are further complicated by

the existence of a transcontinental railroad, a power plant and three high tension transmission lines.

From the beginning an intensive study has been made of the location through the canyon in order that the required high standards of grade and alignment might be secured with maximum economy, and with minimum disturbance to the existing development.

A third complication is imposed by the regulations of the Federal Power Commission, functioning under the Federal Power Reserve Act regarding future possible although highly improbable development of power by private interests.

TUNNEL THROUGH GRIZZLY DOME

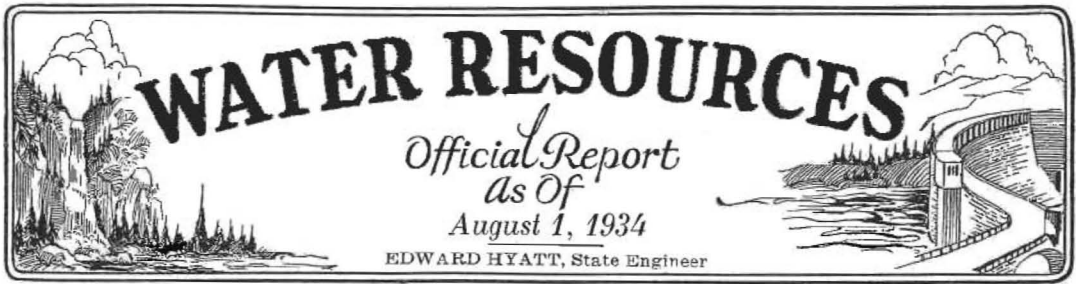
Some of the most difficult work is encountered in the six miles extending westerly from Rock Creek. Two and one-half miles of this distance crosses the bare rock areas designated as Grizzly Dome and Arch Rock. Grizzly Dome is a bare, dome-shaped mass of granite rising precipitously from the water's edge to terminate with gradually flattening slopes in the ridge several thousand feet above. It is separated from the Arch Rock area by Grizzly Creek.

At Grizzly Dome it is necessary to construct at an elevation approximately level with the Western Pacific Railroad to comply with the regulations of the Federal Power Commission regarding future power development in the river.

About four hundred fifty feet of the roadway through the steepest part of the dome will be in tunnel. The remainder will be supported on a ledge cut into the solid face of the rock with some retaining wall construction at critical locations where height of cut or cost of construction would otherwise be excessive.

The Arch Rock area is about 1.75 miles in length and gets its name from an arch-like formation in one of the partly broken surface layers of rock. In general, the road across this area will be built close to high water, supported partly on a niche cut into the solid face and partly on a fill of blocky granite extending into the river channel. Aside from a slight effect on the hydraulic grade of the river, this channel encroachment is not

(Continued on page 31)



The irrigation districts are making good progress in their plans for refinancing outstanding bond obligations under agreement with the Federal Reconstruction Finance Corporation. One district has already received \$1,334,768 from the Federal Government and the District Securities Commission has authorized the voting of bonds, by six other districts, to be issued by the R. F. C. in the total sum of \$931,210.

The flow of the Sacramento River at Sacramento had dropped to 1200 second feet on July 15th and a conservation program has been inaugurated to supervise waste prevention measures throughout the Sacramento Valley. Other activities of the Division of Water Resources relative to flood control, applications for reconstruction of dams and salinity measurements, etc., are given in the monthly report of State Engineer Edward Hyatt as follows:

IRRIGATION DISTRICTS

Inspection was made of the work proposed under the \$311,000 loan and grant to the Turlock Irrigation District by the Federal Emergency Public Works Administration.

South Fork Irrigation District, Modoc County, at an election held on June 25th voted \$165,000 in bonds, which are to be used in support of a Federal loan that has been granted the district for the construction of a storage dam on West Valley Creek, a branch of the South Fork of Pit River.

The La Mesa, Lemon Grove and Spring Valley Irrigation District, San Diego County, has received \$1,334,768, the total amount of the refinancing loan granted by the Federal Reconstruction Finance Corporation, and has called in its original bonds from all holders who have deposited under the refunding plans of the district. This is the first California irrigation district to begin liquidating its outstanding bond obligations under a refinancing agreement with the Federal Government. The La Mesa District has also received aid from the Federal Government in the loan and grant of \$600,000 for the reconstruction of its main conduit.

DISTRICTS SECURITIES COMMISSION

The Commission issued feasibility orders and authorized the voting of bonds to be issued by the Reconstruction Finance Corporation as security for refinancing loans as follows:

Carmichael Irrigation District.....	\$47,500
Citrus Heights Irrigation District.....	77,500
Cordua Irrigation District.....	102,725
Banta Carbona Irrigation District.....	602,500
Fairoaks Irrigation District.....	53,800
Hot Spring Valley Irrigation District.....	47,185
	<hr/>
	\$931,210

Other orders issued by the Commission were:

Palo Verde Irrigation District—Approval of setup of reserve fund as required by Reconstruction Finance Corporation in the district refinancing plans.

Turlock Irrigation District—Authority to call an election on \$240,000 principal amount of bonds to secure a loan and grant of \$311,000 from the Federal Emergency Public Works Administration for concrete lining and other construction works.

Modesto Irrigation District—Authority for change of plans and sale of bonds.

Waterford Irrigation District—Approval of readjustment plan.

Santa Clara Valley Water Conservation District—Certificate of certification, under Chapter 906, Statutes of 1933, for district bonds in the principal amount of \$2,000,000.

FLOOD CONTROL AND RECLAMATION

Maintenance of Sacramento Flood Control Project.

On July 25th, from 60 to 100 men from the Federal Transient camps located in District 1500 and District 1660 started the clearing and grubbing of timber growth in the Tisdale and Sutter By-passes.

Sacramento Flood Control Project—Bank Protection.

Work on the State Federal cooperative program for permanent bank protection has been continued by the U. S. Engineer Office in Sacramento. Recently a Federal allocation of \$100,000 was made available for this work for the fiscal year 1934-35, to which has been added \$50,000 from State funds, making a total of \$150,000 available for the year. The program for the expenditure of this money is now in preparation in cooperation with this office.

(Continued on page 27)

How Highway Development Aids in Increasing Attendance at State Fair

WIDE, smooth highways will be as great an inducement as any of the many entertainment features in attracting exhibitors and visitors to the eightieth annual California State Fair which opens in Sacramento for ten days beginning Saturday, September 1.

On no other single occasion in the year are the people in every county of the State made so conscious of the benefits of a unified highway system which permits easy travel from every section of California right to the gates of the fair grounds.

Under the administration and control of the Division of Highways of the Department of Public Works and the California Highway Commission, the network of highways which focus in Sacramento has been brought to standards compatible with the development of modern motor vehicles.

While the motor car industry has evolved this means of transportation to its present high state of development, engineering practice in highway construction has expanded standards of alignment, grade and width of highway to provide adequate means for the ever increasing volume of traffic.

EXHIBITS ARE INCREASED

These present day standards of road construction, providing wide, well-built pavements, superelevated curves of long radius and grades held to a low minimum, enable modern cars and trucks to safely travel the great distances from the far corners of the State to Sacramento in a relatively short time.

The advantages—and economics—of holding to these road building standards, will be revealed in a hundred different ways both before and during the California State Fair.

Easy transportation of exhibits is bringing a record increase in entries, especially from small individual ranchers and live stock men who can load their prize peaches or carefully groomed Hampshire hogs into a truck and transport them safely and quickly from their door to the exhibit pavilion at the fair grounds.

For every mile that improved highways have penetrated into some of the remoter

rural sections of the State there has been a widening of competition in the hundreds of agricultural and live stock classes which make up the backbone of the fair.

LOW COST TRANSPORTATION

The increase in county displays this year from 26 to 45 has been largely induced by the low costs with which a distant county, using its own truck equipment and building crews, can install its exhibits.

Humboldt and Ventura counties, for instance, were the first two counties to be on the ground to install their displays. With little loss of time in traveling, each brought its men and materials right into the great horticultural building on its own trucks.

Constant freshening of displays with newly-picked fruits and flowers is planned by most of the counties through speedy motor deliveries.

EFFECT ON ATTENDANCE

The most marked effect of highway improvement, however, is in the increase in visitor attendance.

An impressive correlation is shown in the following figures on increase in highway construction for the ten year period 1924-1934 and the increase in fair attendance for the ten year period 1923-1933.

HIGHWAY MILEAGE

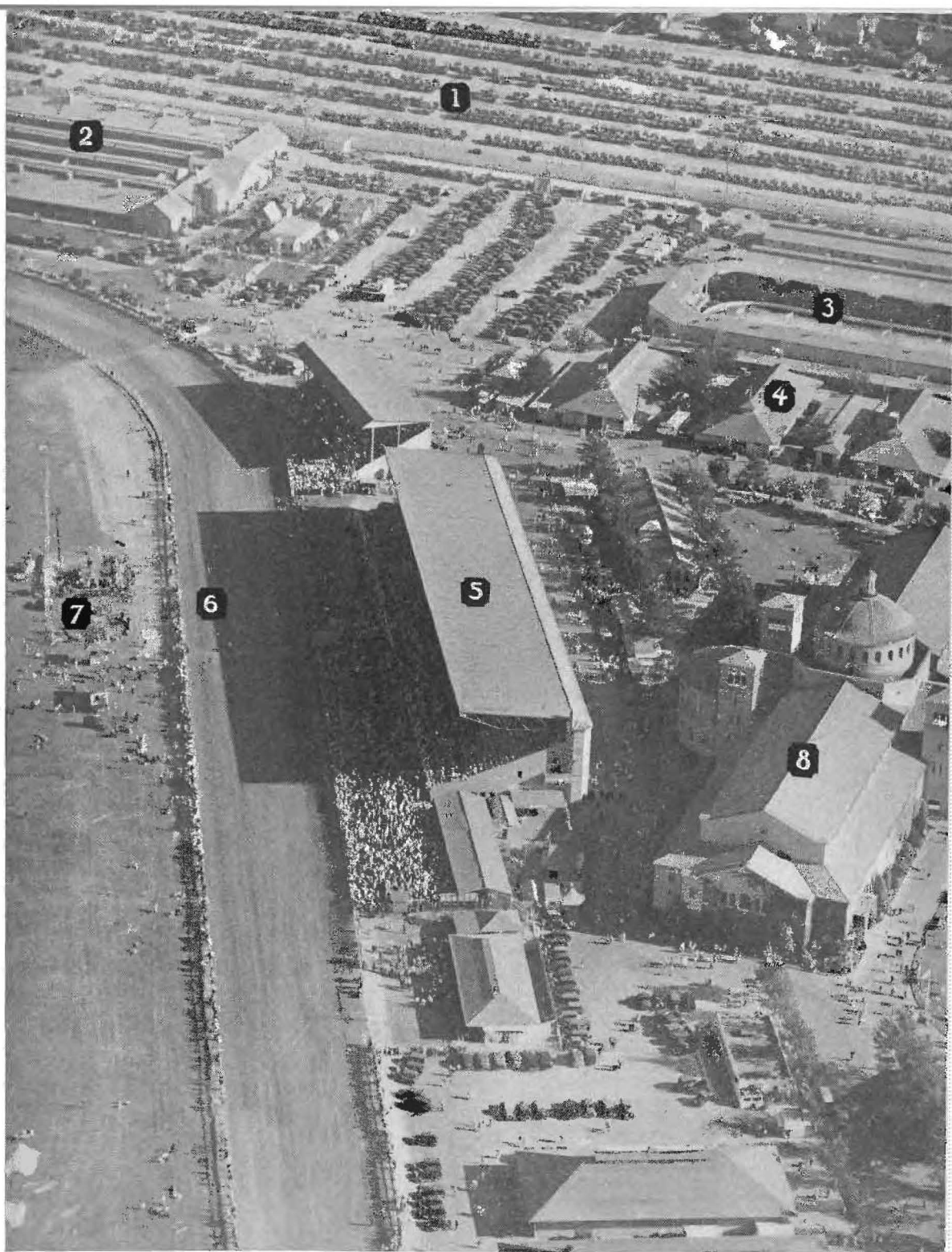
Type	1924	Miles 1934
Earth	1,523	4,056
Untreated rock surface.....	734	390
Bituminous treated rock surface...	346	4,350
Pavement	2,019	4,777
Unimproved	1,778	501
Totals.....	6,400	14,074
Per cent increase.....		45

STATE FAIR ATTENDANCE

1923	138,499
1933	327,069
Per cent increase.....	42

Over a comparable decade, State Fair attendance has grown almost as rapidly as the increase in improved highway mileage, and, according to Secretary-Manager Charles W. Paine of the State Fair, largely as a result of this highway improvement.

(Continued on page 27)



AROUND THE GROUNDS AT THE STATE FAIR—(1) Part of the parking area for 15,000 automobiles. (2) Cattle Pavilion, housing a fortune in blooded stock. (3) Horse Show arena. (4) Show horse barns. (5) Main grandstand, with food and home appliance exposition on ground floor. (6) Mile track, scene of fast running and harness races. (7) Infield, where nightly radio revue and fireworks will be presented. (8) Horticultural Building, housing colorful displays of California counties.

Sausalito Unit and Cloverdale-Hopland Highway Dedicated

(Continued from page 6)

County eliminates the former narrow and twisting stretch from Waldo Point into Sausalito with a four-lane, hard-surfaced standard highway. Interesting figures concerning it are as follows:

Length, 1.55 miles. Average traffic, 500 vehicles daily; considerably more on weekends. Total cost of reconstruction, \$249,085, exclusive of rights of way cost, which exceeded \$100,000 additional. Old road had 22 sharp curves, equaling 2½ complete circle turns. The new highway, with only six long curves would save 460,000 vehicle miles or 46,000 hours of vehicle time per year, a saving of many dollars annually to motorists.

CLOVERDALE-HOPLAND DATA

The Cloverdale-Hopland sector in Sonoma and Mendocino counties is a major relocation on the east shore of the Russian River, eliminating 227 curves and steep grades of the old road. The new sector is a wide, smooth, safe highway 13.9 miles in length. Interesting details of its construction, financed through State and Federal appropriations, are as follows:

Length, 13.9 miles. Total cost, \$1,201,900, in addition to rights of way cost.

The new road is over three miles shorter than the old (18 per cent). It follows the grade of the Russian River, thereby obviating seven summits with a rise and fall of 3500 feet on the old road. Nearly 33 complete circles eliminated.

INCLUDES PARKING AREAS

The new road is wide, high-standard highway, with long tangents connecting up curves of large radius, laid close to the river, and with right of way widened to include many natural beauty spots adjacent to the road and parking areas.

Work on this relocation has been under way since February, 1932. The first contract called for the moving of over 1,400,000 yards of dirt, together with small structures, the total cost exceeding \$672,000. Completed and accepted September, 1933.

Five major bridge structure contracts were then let as follows: (1) Bridge spanning the Russian River at Preston; length 337 feet. (2) Overhead railroad crossing at Preston, consisting of one 63-foot steel girder span over tracks and 14 timber trestle approach spans. (3) Bridge spanning Russian River two miles south of Hopland; length 1136 feet. (4) Overhead railroad crossing near Hopland; length 341 feet, consisting of one 32-foot steel girder span on concrete piers and 15 timber approach spans. (5) Bridge across Feliz Creek at Hopland; length 344 feet. Surfacing, bituminous treated surfacing on gravel subbase.

Santa Monica Link Widened as Outlet for Through Traffic

(Continued from page 12)

A friendly condemnation suit was therefore instituted by the State against the Pacific Electric and Southern Pacific railroads to obtain the necessary right of way for widening this important traffic artery.

Surveys were started in 1933 and plans were completed early in 1934. Bids were opened in March, 1934, and the contract for construction was awarded April 4, 1934.

UNDERPASSES REQUESTED

At this stage of the project request was made by the Los Angeles Chamber of Commerce that pedestrian subways be constructed across the highway at Santa Monica Canyon, and also at the lifeguard station at Center Street so that pedestrians could safely cross this heavily traveled highway access to the beach.

Negotiations were entered into with the contractor to include the construction of these two pedestrian subways.

Under this arrangement the contractor completed the paving of this section before July 4th so that the anticipated heavy crowds of that date could be adequately taken care of by the widened highway. These pedestrian underpasses are 7 by 7 feet with adequate stairways and will form a very convenient outlet to the beach for people on the opposite side of the highway.

The general purpose of the present improvement is to connect the already widened pavement, which extends as far east as Channel Road, with Lincoln Boulevard in the city of Santa Monica, making a satisfactory outlet for through traffic along this boulevard, as well as for local traffic coming to and from the beach.

The dedication ceremonies began with a luncheon at which Director Kelly and Mayor William H. Carter of Santa Monica were the chief speakers and Geoffrey H. Morgan was toastmaster.

Following the luncheon, an automobile parade moved to a barrier at the foot of California Avenue, where, after three Santa Monica bathing girls had welcomed three equestrian girls from Ventura County, Director Kelly unlocked a huge padlock to which was attached a garland barrier and declared the highway open to the public.

Water Users Organize to Stop Waste

(Continued from page 23)

Sacramento Flood Control Project.

In connection with the preparation of right-of-way for the construction of the levee on the right bank of the Sacramento River above Colusa, this division has been requested by the Reclamation Board to raise the Packer warehouse, at an estimated cost of \$3,000.

Mokelumne River.

It is expected that work will commence within the next ten days on an SERA project for clearing the Mokelumne River By-pass between Reclamation District No. 1002 and the McCormack-Williamson tract, involving 4500 man-hours of labor with a crew of 20 men.

WATER RIGHTS

Supervision of Appropriation of Water.

Forty applications to appropriate water were received during the month of June, 13 were denied and 14 approved. During the same period 3 permits were revoked and rights were confirmed under 25 permits by the issuance of license.

Adjudications.

Eagle Creek (Modoc County)—A stipulation for judgment has been signed by about four-fifths of the water users and is now being circulated among the remaining parties.

SACRAMENTO-SAN JOAQUIN WATER SUPERVISOR

The flow of the Sacramento River at Sacramento has dropped from 3000 second-feet on June 15th to about 1200 second-feet on July 15th. The corresponding flow on July 15, 1924, was about 870 second-feet and on July 15, 1931, practically zero. The flow of the San Joaquin River near Vernalis was about 400 second-feet on July 15th. On the corresponding date in 1924 it was also 400 second-feet and in 1931 it was 200 second-feet.

These data show that as far as summer stream flow is concerned the present season is somewhat better than in 1924 or 1931, the previous extremely dry years. However, water supply conditions have been such as to require that every effort be made to conserve water and the Permanent Committee of the Sacramento-San Joaquin River Problems Conference has initiated a conservation campaign throughout the Sacramento Valley. All of the larger projects diverting water from the Sacramento River have appointed conservation officers to supervise the waste prevention measures in their respective districts and to cooperate with the Water Supervisor on all water saving measures. In conjunction with this work the Water Supervisor's office is conducting the regular measurement of all divisions, stream flow, return flow, salinity, etc., as in past years.

The table given below indicates that salinity has advanced well up into the Delta, but the comparison

shown for corresponding salinity in 1924 and 1931 reflects about the same relation between the present season and these previous years as above indicated for stream flow conditions.

Comparison of Salinity at Bay and Delta Stations on July 14, 1924, 1931 and 1934

Station	Salinity in parts of Chlorine per 100,000		
	1924	1931	1934
Point Davis	---	1670	1500
Bullshead	---	1500	1360
Collinsville	796	810	620
Emmaton	464	540	280
Three Mile Slough Bridge	---	430	230
Rio Vista Bridge	302	315	70
Isleton Bridge	114	146	21
Howard Ferry	---	98	14
Antioch	614	710	440
Webb Pump	165	245	78
Central Landing	58	60	25
Mandeville Pump	---	43	17
Middle River Post Office	---	22	11
Williams Bridge	---	15	12

STATE FAIR ATTENDANCE INCREASED BY GOOD HIGHWAYS

(Continued from page 24)

This year improved highways are counted upon to put the fair attendance well over the 400,000 mark. Such special events as American Legion Day on September 2, the Wine Festival on September 5, the Farmers Day on September 7 and the three day Native Sons and Native Daughters Admission Day celebration on September 8, 9, and 10 will draw thousands of visitors who will want to make a quick one-day round trip by automobile.

Convenient highway transportation will also be used as a sales argument for the purchase of reduced-price State Fair scrip books by an army of 18,000 Future Farmers and 4-H Club members throughout the State. For the first time in its history the State Fair will have, through these junior agricultural organizations, advance representatives in every county in the State.

Not until the barriers of narrow, rutted roads, sharp curves, and steep grades had been removed has such a plan been possible.

The state-wide web of highways whose units tap even the most outlying sections, will thus draw a traffic flow to the wide arterials and laterals which traverse the State from Oregon to Mexico that will come to rest in but a few hours time in Sacramento.

Rumsey-Clear Lake Highway Opened With Gala Ceremony and Barbecue

MORE than 2500 interested citizens of a dozen California counties gathered at Rumsey, in western Yolo County, on Saturday, August 4, to enjoy a barbecue and witness the formal acceptance by Governor Frank F. Merriam of the Rumsey-Clear Lake State Highway. This new road, while only 15.3 miles in length, opens up the western end of Yolo County for the first time and affords an outlet to Lake County and the north coast region, connecting with the Tahoe-Clear Lake-Ukiah State Highway at the Bear Creek bridge, 18 miles west of Williams. It shortens the distance between the lower Sacramento Valley and the beautiful Clear Lake area by approximately ten miles and its construction cost the State nearly half a million dollars.

Some twenty years ago citizens of Lake, Colusa and Yolo counties dreamed of a shorter connection between the great recreational area around Clear Lake and the San Joaquin and Lower Sacramento valleys. By enactment on May 18, 1915, the California State Legislature added to the State highway system Route 50, to be known as the "Rumsey-Lower Lake Road."

CONSTRUCTION BEGAN IN 1930

However, no funds were provided for the construction of the route and in the development of the State road system it was some years before the building of this short cut along the precipitous walls of Cache Creek and the more rolling hills of the Bear Creek Valley. In July, 1930, the Division of Highways established a camp along the route and construction of the graded road commenced.

This work was continued until August, 1933, and 8.7 miles of the new route were constructed along Bear Creek from a point 1.4 miles south of the Yolo-Colusa County line to a connection with the Ukiah-Tahoe Highway.

On November 6, 1933, the Director of Public Works awarded a contract for construction of a graded roadbed through Cache Creek Canyon between 2.2 miles north of Rumsey and the southerly end of completed construction. At the same time State forces constructed a temporary steel and timber bridge over Cache Creek and a graveled surface to

Rumsey. The temporary timber bridge will be used only until funds are available for the construction of a suitable permanent structure.

PROVIDES SCENIC ROUTE

The new highway is a wide artery with no grades to negotiate and offers a beautifully scenic route from Woodland west to the junction of the Tahoe-Clear Lake-Ukiah Highway. For the greater length of the road Cache Creek tumbles over a rocky bed alongside the highway. Three bridges cross the stream, as it wends its way through the colorful canyon.

The celebration which marked the completion of the road was staged jointly by the civic and service organizations of Yolo and Lake counties. Jack Rickabaugh, representing the Western Yolo Chamber of Commerce, was general chairman, and Robert G. Alderman, manager of the Woodland Chamber of Commerce, served as general secretary. H. W. McIntire, secretary of the Lake County Information Bureau, was in charge of the Lake County end of the program, which continued on Sunday, August 5.

LARGE OFFICIAL DELEGATION

Among those who attended the event were J. G. Standley, principal assistant engineer of the Department of Public Works; Timothy A. Reardon, State Highway Commissioner; Justus Craemer, secretary to Governor Merriam; Supervisors Frank W. Noel and E. L. Herrick of Lake County; Supervisors W. O. Russell, W. J. Naismith and Frank B. Edson of Yolo County; Supervisor C. J. Westcott of Colusa County; Congressman Frank H. Buck, State Senators Frank L. Gordon and J. M. Inman, Assemblymen J. H. O'Donnell and E. C. Crowley, C. C. Cottrell of the California State Automobile Association, and many hundreds of others, all of whom particularly enjoyed the delicious barbecued beef and "the trimmings." The Preston School of Industry sent its band of 36 pieces to the celebration.

Following the formal dedication of the highway a large caravan of cars traversed the new road and continued on into Lake County for the week end.



A REAL JUBILEE EVENT for the citizens of Yolo, Colusa and Lake counties occurred on August 4th when Governor Merriam officially opened and dedicated the new Rumsey-Clear Lake Highway affording a short cut through the mountains to the great recreational area of the Clear Lake region and the North Coast country. A portion of the scenic highway near Rumsey is shown above with Governor Merriam being assisted in the ribbon cutting by an octette of lovely girls of Yolo and Lake counties. At the left are three Clear Lake yachting girls led by "Queen" Vera Behrens of Kelseyville. At the right is "Queen" Wanda McGrew of Woodland representing Yolo County accompanied by Miss Davis, Miss Knights Landing and Miss Western Yolo County. After the ceremony a caravan of autos traversed the 15 miles of new road into Lake County.

Highway Bids and Awards

FOR JULY

FRESNO COUNTY—At Coalinga, erect maintenance buildings and appurtenances. District VI. R. Hodgson & Sons, Porterville, \$6,690; Thomas C. Irwin, Fresno, \$7,755; Theo. Johanns, San Francisco, \$5,888. Contract awarded to D. A. Loomis, Glendale, \$5,528.

KINGS COUNTY—Two timber bridges 23 and 25 miles south of Fresno. No. 1, 11-19' spans on pile bents. No. 2, 3-19' spans on frame bents. District VI, Route 125, Section E. John T. Bibb, Glendale, \$12,856; J. W. Terrell and M. A. Jenkins, Sacramento, \$12,978; Stroud Bros. & Seabrook, Bakersfield, \$13,987; Bundesen & Lauritzen, and Delta Dredging Co., Pittsburg, \$14,155; Ralph A. Bell, Los Angeles, \$14,585; contract awarded to Robert D. Paterson, Santa Barbara, \$12,745.

INYO AND MONO COUNTIES—Between 6.4 miles north of Bishop to California-Nevada State line, 25.7 miles to be treated with fuel oil at various locations. Dist. IX, Route 76, Sections A and B. Tieslau Bros., Inc., Sacramento, \$8,696; Gilmore Oil Co., Los Angeles, \$7,520; Oilfields Trucking Co., Bakersfield, \$7,335. Contract awarded to Paulsen & March, Inc., Los Angeles, \$6,747.

LOS ANGELES-ORANGE COUNTIES—23.3 miles of roadbed shoulders to be treated with fuel oil, with a bituminous seal coat. Dist. VII, various routes and sections. Geo. Gardner & Sons, Redlands, \$11,877; Gogo and Rados, Los Angeles, \$12,245; Kovacevich & Price, Inc., South Gate, \$12,440; Dimmitt & Taylor, Los Angeles, \$13,509; Kemper Construction Co., Ltd., Los Angeles, \$14,275. Contract awarded to Sunset Decomposed Granite Co., Los Angeles, \$9,882.

LOS ANGELES COUNTY—Bridge across San Gabriel River. 5-19 1/2' R. C. girder spans on concrete piers. 11-19'; 2-15' timber trestle spans bridge across Coyote Creek. 1-42' R. C. girder and 2-19' timber spans. District VII, Route 174, Section B. Geo. Mittrey, Los Angeles, \$71,069; Parish Bros., Los Angeles, \$71,283; Lindgren & Swinerton, Los Angeles, \$82,093; Oscar Oberg, Los Angeles, \$76,472; Clinton Construction Co., Los Angeles, \$89,952; Wm. T. Loesch & Son, Los Angeles, \$85,016; Dimmitt & Taylor, Los Angeles, \$87,920; Bannister Field Co., Los Angeles, \$81,634; Herbert M. Baruch Corp., Los Angeles, \$88,556; Theo. A. Beyer Corp., Los Angeles, \$86,938; C. Bongiovanni Construction, Hollywood, \$86,668; Person & Thiele Co., Los Angeles, \$82,064; Sharp & Fellows Contracting Co., Los Angeles, \$76,512; Bodenhamer Construction Co., Oakland, \$86,966; Kemper Construction Co., Ltd., Los Angeles, \$84,485; David J. Read and Joseph Maiser, Los Angeles, \$81,654; M. B. McGowan, Inc., San Francisco, \$88,604. Contract awarded to B. O. Larsen, San Diego, \$70,961.

LOS ANGELES COUNTY—In Los Angeles County Park, erection and completion of maintenance station buildings. District VII Pacific System Homes, Inc., Los Angeles, \$5,500; J. B. McIntosh, Glendale, \$5,666; Norman Barber, Los Angeles, \$5,886; Willard Lutz, Los Angeles, \$5,900; Charles J. Dorfman, Los Angeles, \$6,462; A. H. Watson, Los Angeles, \$6,599.

MADERA COUNTY—Between 2.9 miles east of Madera and junction of route 125 and the county road to Bates, 16.4 miles oiling. District VI, Routes 126, 125, Sections B, C and B. C. W. Wood, Stockton, \$9,150; Tiffany Construction Co., San Jose, \$9,969; John Jurkovich, Fresno, \$10,200; Stewart & Nuss, Inc., Fresno, \$10,950; Tieslau Bros., Inc., Berkeley, \$12,000. Contract awarded to Granite Construction, Watsonville, \$8,940.

NAPA COUNTY—Furnish and construct crusher run base and bituminous treated surface between Napa and Greenwood Corner about 0.6 miles in length. District IV, Route 8, Section B. Pacific States Construction Co., San Francisco, \$15,583; Lee J. Immel, Berkeley, \$15,936; Tieslau Bros., Inc., Berkeley, \$15,863; Ransome Co., Emeryville, \$16,237. Contract awarded to E. A. Forde, San Anselmo, \$14,577.

ORANGE COUNTY—Between Talbert Avenue and Hill Avenue near Santa Ana River Bridge, about 1.5 miles to be graded. District VII, Route Buaro Road. Gogo and Rados, Los Angeles, \$5,329; Pacific Crane & Rigging, Inc., Los Angeles, \$5,904; A. S. Vinnell, Los Angeles, \$5,904; Kovacevich & Price,

Inc., South Gate, \$6,551; John Oberg, Los Angeles, \$6,902; Martter & Bock, Ltd., Los Angeles, \$7,476; Kuhn Bros., Inc., Manhattan Beach, \$7,975; Post Bros., Santa Ana, \$8,127; C. O. Sparks, Los Angeles, \$8,435; Dimmitt & Taylor, Los Angeles, \$8,665. Contract awarded to Sharp & Fellows Contracting Co., Los Angeles, \$4,908.

SAN BERNARDINO COUNTY—Between Summit Station and Cedar Springs; between the Stables and North Shore Toll Gate at Lake Arrowhead and between Dolly Varden Angling Club and the South Fork of the Santa Ana River—oiling 28.5 miles. District VIII, Routes 59, 188, 190, Sections C, E, A, E, F. George Gardner & Sons, Redlands, \$14,695. Contract awarded to George Herz & Co., San Bernardino, \$13,964.

SAN BERNARDINO COUNTY—Cleaning and painting three coats on Mt. Vernon Avenue viaduct. District VIII, Rt. 9, Section S.Bd. G. C. Hewitt Co., Los Angeles, \$11,900; Contracting Engineers, Los Angeles, \$17,993. Contract awarded to Geo. Hess, Los Angeles, \$11,875.

SAN BERNARDINO COUNTY—Between Fourth Street and State Street in Redlands, 1513 lineal feet of reinforced concrete box storm drains to be constructed. District VIII, Route 26, Section Rld. Match Bros., Elsinore, \$37,079.40; C. F. Robbins and S. P. Immel, Ventura, \$37,717; Bodenhamer Construction Co., Oakland, \$47,658; E. G. Carroll, San Diego, \$46,713; Kovacevich & Price, South Gate, Inc., \$38,987; Oscar Oberg, Los Angeles, \$39,819; George Hess, Los Angeles, \$39,272; Franklin B. Gridley, Pasadena, \$41,729; Sharp & Fellows Construction Co., Los Angeles, \$40,961. Contract awarded to Miracle Co., San Diego, \$36,127.34.

SAN FRANCISCO—Potrero Avenue between Division Street and Army Street, 1.4 mile to be widened with P. C. C. and A. C. District IV, Route 68, Section S. F. The Fay Improvement Co., San Francisco, \$209,036; Eaton & Smith Co., San Francisco, \$177,734; Pacific States Construction Co., San Francisco, \$184,540; A. J. Raisch, San Francisco, \$187,892; Hanrahan Company, San Francisco, \$175,482. Contract awarded to Union Paving Co., San Francisco, \$164,115.

SANTA CRUZ COUNTY—Saratoga Gap Maintenance Station Buildings. District IV. A. Soda & Son, Oakland, \$7,891. Contract awarded to Theo. Johanns, San Francisco, \$6,890.

SISKIYOU COUNTY—Between McCloud and the Junction of Routes 3 and 83. District II, Route 33, Section C. Ransome Company, Emeryville, \$8,183; E. F. Hilliard, Sacramento, \$9,720; Tieslau Brothers, Inc., Berkeley, \$10,459. Contract awarded to Hanrahan Company, San Francisco, \$8,119.

TULARE COUNTY—Between Kern County line and Porterville; and between Tulare Wye and 4 miles west of Lindsay, oiling 29 miles of shoulders. District VI, Routes 129, 134, Sections A, B; B. John Jurkovich, Fresno, \$12,880; Tiffany Construction Co., San Jose, \$14,000; L. A. Brisco, Arroyo Grande, \$15,400. Contract awarded to Stewart & Nuss, Fresno, \$11,340.

YOLO-SACRAMENTO COUNTIES—M Street Bridge, District III, Route 6, Section C. Healy Tibbitts Construction Co., San Francisco, \$912,535; M. B. McGowan and Rocco & Caletti, San Francisco, \$919,989; MacDonald & Kahn Co., Ltd., San Francisco, \$1,025,224; Raymond Concrete Pile Co. and J. H. Pomroy & Co., Inc., San Francisco, \$970,256; J. F. Knapp, Oakland, \$949,476; Barrett & Hilp, San Francisco, \$984,646; Pacific Bridge Co., San Francisco, \$961,688. Contract awarded to George Pollock Co., Sacramento, \$907,365.

YUBA COUNTY—Pier protection to D Street Bridge in Marysville across Yuba River. District III, Route 3, Section B. Holdener Construction Co., Sacramento, \$12,097; M. A. Jenkins, Sacramento, \$12,705; F. H. Nellson, Orland, \$12,454. Contract awarded to Bundesen & Louritzan, Pittsburg, \$8,835.15.

Little Girl: "Mother, I'm afraid baby will have seven years bad luck. He just swallowed a piece of mirror."

Odometers Suggested for all Trucks

(Continued from page 9)

The speaker called attention to the fact that some of the states have completed the seven per cent systems and others have extended them. In the extension, care should be used in the selection of the most important general use roads and consideration given to the expenditure of a certain proportion of the funds on the extension of the system into the urban sections.

OPPOSED TO DIVERSION

At the second day's session, Stanley Abel, western vice president of the American Road Builders Association, spoke of the activities of that organization in consolidating the component parts of the entire highway industry into a working unit to support the highway programs. This association furnishes a clearing house on a national scale.

It was particularly active and very effective in presenting to the membership of Congress the ability of the State highway departments to meet the national emergency quickly and effectively in giving jobs to men on worth-while work in the unemployment emergency. The association has also conducted a concerted drive to prevent further diversion of motor license fees and gasoline taxes from highways—the one thing that will surely wreck the whole highway program if the money of motorists continues to be diverted to other than highway projects, highway maintenance and highway debt service.

James B. True, State Highway Engineer of Wyoming, stated that there has been \$60,000,000 expended in the State of Wyoming during the past twenty years, of which \$40,000,000 has been expended by the State and \$20,000,000 by the counties. All of us who have journeyed over the excellent highways in Wyoming can certify to the wisdom of the expenditure of the \$40,000,000 of State funds. Although a large state in the mountainous section, with many miles of roads, excellent progress has been made.

E. M. Whitworth, Superintendent of the Motor Vehicle Division of the Arizona State Highway Department, read a very interesting paper on the "Taxation of Motor Vehicle Fuel and Motor Carriers in the State of Arizona." He called attention to the growing use of Diesel engines using a low grade fuel oil in motor vehicles, which presents a very important problem in taxation. Inasmuch as most of the State revenues are predicated upon gasoline tax, a change to a low grade fuel would jeopardize the present method of taxation.

Mr. Whitworth recommended that, pending a solution of the problem, vehicles using Diesel fuels be taxed on a flat tax commensurate with the tax paid by the gasoline-driven vehicles. It is a subject that has been given very little consideration, but one, in my opinion, that should receive the careful study of all highway officials and State legislatures.

TRUCK ODOMETERS SUGGESTED

Mr. Whitworth also spoke of the methods of obtaining motor transportation fees either through

ton-mile taxes or gross revenue taxes, both of which have many unsatisfactory phases and necessitate considerable expense in collection. It was Mr. Whitworth's opinion that the ton-mile tax was the most equitable method and he suggested that locked odometers be installed on all trucks and that these be read at regular intervals by those charged with the enforcement of the Motor Transportation Act.

The members of the convention enjoyed the hospitality of the Seattle Chamber of Commerce at a luncheon, at which time an extemporaneous speech was made by Mr. Warden and a prepared paper read by President T. S. O'Connell on "What Federal Aid for Highway Construction Means to the West." He spoke of the giant tourist industry which started in the West some years ago as a little, one-horse concern in Los Angeles, the chief commodities of which were climate and real estate. Inasmuch as these were not shipped to the consumer, the consumer must of necessity go to the source of supply in order to reap the benefit. The tourist crop of the West is a very profitable one and all of the western states have a great deal to sell to the tourist in the way of diversified scenery and climate.

At the business session the following officers were elected for the ensuing year: Preston G. Peterson, president; S. C. Durkee, vice president; R. H. Baldoek, secretary and treasurer.

ROAD WILL TRAVERSE STEEP CANYON WALL

(Continued from page 23)

expected to have any effect since the rocks composing the fill will be too massive to be dislodged by the current.

TWO MORE TUNNELS REQUIRED

Two short tunnels will be required in this area through projecting points where open cutting would require removal of large masses, the disposal of which would fill the river channel.

The road is now completed from Oroville to Jarboe Pass, twenty-one miles, and from Keddie to Belden, another twenty-one miles. Of the intervening twenty-nine miles, six miles near Pulga have been graded, and a contract is soon to be awarded for grading 2.5 miles between Rock Creek and Storrie, and other contracts for three bridges across the North Fork between Tobin and Rock Creek. The remainder of the road is being constructed.

Friend: "What did you do when you found out your husband was leading a double life?"

Wife: "Oh, I redoubled."

List of State Route Sign Numbers

(Continued from page 20)

5. Jct. Rte. 13 near Glenwood to Jct. Rte. 1 at San Francisco.
6. Santa Monica to Jct. Rte. 39 near Fullerton.
7. Jct. Rte. 3 at Torrance to California-Nevada State Line north of Coleville, via Mojave; and from Nevada-California State Line near Reno Jct. to California-Oregon State Line at New Pine Creek, via Alturas.
8. Stockton to California-Nevada State Line near Woodfords, via Jackson.
9. Santa Cruz to Milpitas, via Redwood Park.
10. Jct. Rte. 3 south of Venice to Jct. U. S. 101 at Santa Ana, via Manchester Avenue and Santa Ana Boulevard.
11. San Pedro to Jct. Route 118 near La Canada.
12. Jct. Rte. 1 at Jenner to San Andreas, via Santa Rosa, Rio Vista and Lodi.
13. Santa Cruz to Jct. U. S. 101 at San Rafael, via San Jose, Mt. Eden and Oakland.
14. Hermosa Beach to Jct. Rte. 18 near Olive, via Artesia Avenue.
15. Long Beach to Jct. U. S. 99 near Monterey Park, via Atlantic Blvd.
16. Jct. Rte. 20 near Wilbur Springs to Jackson, via Sacramento.
18. Jct. Rte. 19 near Artesia to Victorville, via San Bernardino and Big Bear Lake.
19. Jct. Rte. 3 near Long Beach to Jct. U. S. 66 near Lamanda Park.
20. Jct. U. S. 101, near Ukiah, to Jct. U. S. 40 near Emigrant Gap, via Marysville and Nevada City.
22. Jct. Rte. 3 north of Seal Beach to Jct. U. S. 101, via Ocean Ave.
23. Jct. Rte. 3 near Aliso Canyon to Fillmore.
24. Woodland at Jct. U. S. 99 to Jct. Route 7 near Reno Junction, via Oroville and Quincy.
25. Jct. Rte. 198 near Priest Valley to Jct. U. S. 101 near Gilroy, via Hollister.
26. Jct. Rte. 3 at Seal Beach to Jct. U. S. 101 near Santa Ana.
27. Jct. Rte. 3 near Topanga Beach to Jct. Rte. 118 at Chatsworth.
28. Jct. Rte. 1 near Albion to Jct. U. S. 40 near Davis, via Sage Canyon.
29. Vallejo to Upper Lake, via Calistoga and Lakeport.
32. Orland at Jct. U. S. 99 to Jct. Rte. 36 near Deer Creek Meadows, via Chico.
33. Maricopa to Jct. U. S. 50 near Tracy, via Coalinga.
35. Jct. Rte. 22 near Seal Beach to Jct. U. S. 99 near West Covina, via Santa Fe Springs.
36. Jct. U. S. 101 near Scotia to Jct. Rte. 7 east of Susanville, via Red Bluff.
37. Jct. U. S. 101 near Ignacio to Jct. Rte. 28 near Monticello, via Napa.
39. Jct. Rte. 3 near Huntington Beach to Jct. Rte. 2 near Valyermo, via Covina.
41. Cambria to Yosemite Park, via Paso Robles and Fresno.
44. Jct. U. S. 101 near Arcata to Alturas, via Redding.
440. Redding to Lassen National Park, via Viola.
45. Jct. Rte. 24 at Knights Landing to Jct. Rte. 32 Hamilton City, via Colusa.
49. Jct. Rte. 140 at Mariposa to Jct. Rte. 24 near Reno Jct., via Sonora, Jackson and Nevada City.
55. Jct. Rte. 3 at Newport Beach to Jct. Rte. 18 near Olive.
65. Jct. U. S. 99 at Famoso to General Grant National Park, via Porterville.
71. Jct. U. S. 80 near San Diego to Jct. U. S. 66 near Claremont, via Elsinore and Temecula.
74. Jct. U. S. 101 at San Juan Capistrano to Jct. Rte. 740 at Perris.
740. Jct. Rte. 111 near Indian Wells to Jct. U. S. 60 near Riverside, via Perris.
78. Jct. U. S. 101 at Oceanside to Jct. U. S. 99 near Kane Springs, via Ramona.
79. Jct. U. S. 80 near Descanso to Temecula, via Aguanga.
89. Jct. Rte. 7 near Coleville to Jct. U. S. 99 near Mt. Shasta, via Truckee, Quincy and Chester.
94. San Diego to Jct. U. S. 80 at White Star, via Jamul and Campo.
95. Jct. U. S. 66 Near Cajon to Jct. Rte. 7 near Little Lake.
96. Jct. U. S. 101 at Klamath to Jct. U. S. 99 near Yreka, via Klamath River.
98. Jct. U. S. 80 at Seeley to Jct. U. S. 80 near Midway Wells, via Calexico.
104. Jct. Rte. 12 near Walnut Grove to Jackson, via Galt.
108. Jct. Rte. 49 at Sonora to Jct. Rte. 7 at Sonora Junction.
111. Jct. U. S. 99 at Brawley to Jct. U. S. 60 at Whitewater, via Mecca, Indio and Palm Springs.
118. Jct. U. S. 101 near El Rio to Jct. U. S. 66 at Pasadena, via San Fernando.
120. Jct. U. S. 99 at Manteca to Jct. Rte. 168 at Benton, via Groveland and through Yosemite National Park.
126. Jct. U. S. 101 near Ventura to Jct. U. S. 99 at Castaic, via Santa Paula.
127. Jct. U. S. 91 at Baker to California-Nevada State Line near Death Valley Junction.
132. Jct. Rte. 33 at Vernalis to Mariposa, via Modesto and Coulterville.
138. Jct. U. S. 99 at Gorman to Jct. U. S. 66 at Cajon, via Lancaster.
140. Merced to Jct. Rte. 120 through Yosemite National Park, via Mariposa.
150. Surf to Jct. Rte. 126 at Santa Paula, via Santa Barbara and Ojai.
152. Jct. Rte. 1 at Watsonville to Jct. U. S. 99 at Califa, via Los Banos.
165. Jct. Rte. 1 at Guadalupe to Jct. U. S. 99 south of Bakersfield, via Maricopa.
168. Jct. Rte. 41 near Fresno to California-Nevada State Line, via Huntington Lake and Bishop.
178. Jct. U. S. 101 at Santa Margarita to Jct. Rte. 7 at Freeman Junction, via Bakersfield.
180. Jct. Rte. 25 at Paicines to Jct. Rte. 7 at Independence, via Fresno.
190. Jct. U. S. 99 at Tipton to Death Valley Junction, via Lone Pine.
195. Palo Verde to California-Nevada State Line, via Blythe and Needles.
198. Jct. U. S. 101 at San Lucas to Sequoia National Park, via Coalinga.

STATE OF CALIFORNIA
Department of Public Works

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

FRANK F. MERRIAM.....Governor

EARL LEE KELLY.....Director

EDWARD J. NERON.....Deputy Director

DIVISION OF HIGHWAYS

CALIFORNIA HIGHWAY COMMISSION

HARRY A. HOPKINS, Chairman, Taft
TIMOTHY A. REARDON, San Francisco
PHILIP A. STANTON, Anaheim
FRANK A. TETLEY, Riverside
DR. W. W. BARHAM, Yreka
C. H. PURCELL, State Highway Engineer, Sacramento
JOHN W. HOWE, Secretary

HEADQUARTERS STAFF, SACRAMENTO

G. T. MccOY, Assistant State Highway Engineer
J. G. STANDLEY, Principal Assistant Engineer
R. H. WILSON, Office Engineer
T. E. STANTON, Materials and Research Engineer
FRED J. GRUMM, Engineer of Surveys and Plans
C. S. POPE, Construction Engineer
T. H. DENNIS, Maintenance Engineer
F. W. PANHORST (Acting), Bridge Engineer
L. V. CAMPBELL, Engineer of City and Cooperative Projects
R. H. STALNAKER, Equipment Engineer
E. R. HIGGINS, Comptroller

DISTRICT ENGINEERS

J. W. VICKREY, District I, Eureka
F. W. HASELWOOD, District II, Redding
CHARLES H. WHITMORE, District III, Marysville
J. H. SKEGGS, District IV, San Francisco
L. H. GIBSON, District V, San Luis Obispo
R. M. GILLIS, District VI, Fresno
S. V. CORTELYOU, District VII, Los Angeles
E. Q. SULLIVAN, District VIII, San Bernardino
S. W. LOWDEN (Acting), District IX, Bishop
R. E. PIERCE, District X, Stockton
E. E. WALLACE, District XI, San Diego
General Headquarters, Public Works Building,
Eleventh and P Streets, Sacramento, California

DIVISION OF WATER RESOURCES

EDWARD HYATT, State Engineer, Chief of Division
J. J. HALEY, Jr., Administrative Assistant
HAROLD CONKLING, Deputy in Charge Water Rights

A. D. EDMONSTON, Deputy in Charge Water Resources Investigation
R. L. JONES, Deputy in Charge Flood Control and Reclamation
GEORGE W. HAWLEY, Deputy in Charge Dams
SPENCER BURROUGHS, Attorney
EVERETT N. BRYAN, Hydraulic Engineer, Water Rights
A. N. BURCH, Irrigation Investigations
H. M. STAFFORD, Sacramento-San Joaquin Water Supervisor
GORDAN ZANDER, Adjudication, Water Distribution

DIVISION OF ARCHITECTURE

GEO. B. McDOUGALL, State Architect, Chief of Division
P. T. POAGE, Assistant Chief
W. K. DANIELS, Administrative Assistant

HEADQUARTERS

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

DIVISION OF CONTRACTS AND RIGHTS OF WAY

C. C. CARLETON, Chief
HUGH K. McKEVITT, Attorney, San Francisco
FRANK B. DURKEE, General Right of Way Agent
C. R. MONTGOMERY, General Right of Way Agent

DIVISION OF PORTS

Port of Eureka—William Clark, Sr., Surveyor
Port of San Jose—Not appointed

