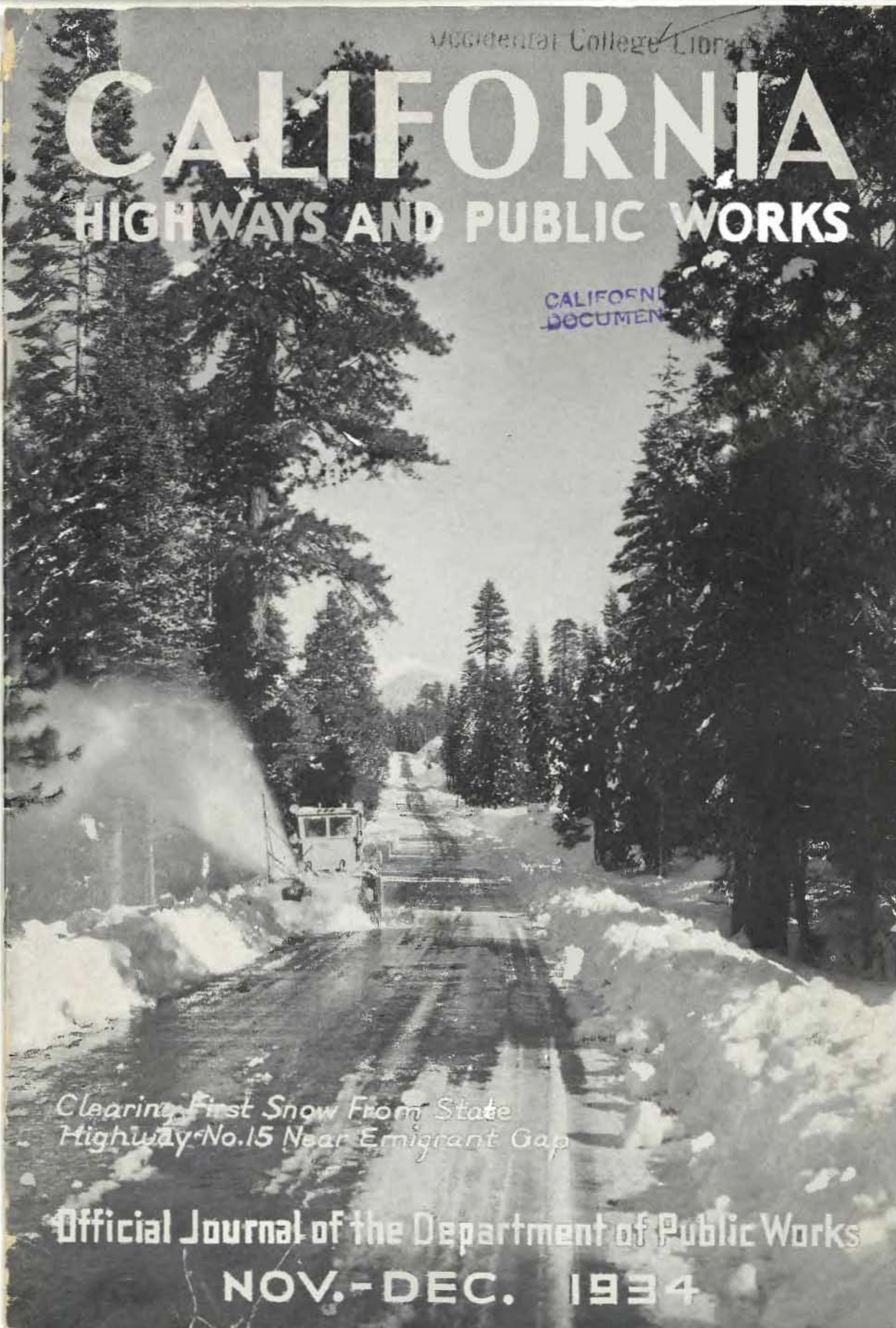


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# CALIFORNIA HIGHWAYS AND PUBLIC WORKS

CALIFORNIA  
DOCUMENT



*Clearing First Snow From State  
Highway No. 15 Near Emigrant Gap*

Official Journal of the Department of Public Works  
NOV.-DEC. 1934



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# Highways Stand to Lose Millions of Available Funds by Gas Tax Diversion

Director Kelly Warns Against Consequences of Proposed Legislation that Will Cause Serious Financial Losses, Curtailing Construction and Increasing Unemployment

By EARL LEE KELLY, Director of Public Works

FACED with the necessity of finding some solution for the State's pressing financial problems, the next Legislature will be confronted with bills aiming to divert gas tax revenues to other than highway purposes, despite the fact that in a like situation two years ago, during the Legislature's interim vacation, the people of the State turned down such a proposition by an overwhelming referendum vote.

As the State officer charged with the duty of maintaining and improving our fine road system, I feel it incumbent upon me to call attention to the highway situation and the consequences of any diversion of revenues that would disrupt our present pay-as-you-go plan of self-liquidating highway investment—a plan that has operated so successfully in extending the economic and recreational advantages of our own citizens while constituting a very large and increasing financial asset to the whole State as a tourist attraction that brings millions of dollars annually to California trade channels.

In presenting this picture I must first call attention to the human factor involved because I consider it of paramount importance in this critical period through which we are passing

when our State and nation are bending every effort to give jobs and pay rolls to a vast army of unemployed.

It is generally conceded and affirmed by the United States Bureau of Roads that no form of unemployment relief is so effective

as highway work in its wide spread of pay roll benefits and returns in value received from the capital investment. The State gasoline tax revenues are today providing jobs for thousands of California citizens, including part-time emergency relief workers, all heads of families supporting some 12,000 dependents who would otherwise be on community charity rolls.

With the present highway financial setup left undisturbed, available revenues from the gas tax, motor vehicle fees, and Federal funds already allotted to California, assure 12,900,000 man-days work on highway construction and maintenance during the next three years.

U. S. OPPOSES DIVERSION

But, if the next Legislature should divert any gas tax moneys from highway purposes, the Federal government has issued the warn-

(Continued on page 12)



EARL LEE KELLY

## Governor Merriam Dedicates Link of Tahoe-Ukiah Lateral in Snow Storm

**S**TANDING bareheaded in a driving snowstorm that raged over the Donner Summit area of the high Sierras on Sunday, November 18, Governor Frank F. Merriam officially opened the last completed sector linking the Tahoe-Ukiah lateral (State Route 15) with State Route 37, the Auburn-Truckee portion of U. S. 40, the Victory Highway.

The dedicatory ceremonies were held near the intersection about 3 miles east of Emigrant Gap where a caravan of some sixty automobiles from Grass Valley and Nevada City deposited State and civic officials, committeemen and enthusiastic celebrants in several feet of snow.

Borrowing a pair of rubbers and with his bare head partly shielded by an umbrella held by Deputy Director of Public Works Edward Neron, Governor Merriam made an address dedicating the highway. Calling it the most unique celebration in which he had ever participated, Governor Merriam said:

### PIONEER SPIRIT SHOWN

"This route is along the trail laboriously traveled to the Golden State by the covered wagons before this highway was dreamed of and we should feel proud that we have the same pioneer spirit left which will bring us here when the elements are against us."

Regarding the storm conditions, Jack Wolff, Chairman of the Arrangements Committee, wrote to the Nevada City Nugget as follows:

"It was an exhibition of real sportsmanship for Governor Merriam, Deputy Director Neron (Department of Public Works), various State and county officials and visitors from Nevada City, Grass Valley, and points as far away as Mendocino County, Sacramento, San Francisco, and southern California, to brave a storm of blizzard proportions."

After the ceremonies a number of the cars were caught on the floor of Bear Valley in a blinding flurry of sleet and snow that obliterated the two-way lane previously made by three snow plows. Many not equipped with

### Opening the Highway

In the wilds of the high Sierras,  
Far from the rain-drenched town,  
They opened the Tahoe-Ukiah  
As the snow came drifting down;  
And every man was a booster,  
For the knocker is out of luck  
When lending a hand to a strenuous task  
That calls for decision and pluck.

They opened the Tahoe-Ukiah  
In a blizzard of snow and rain,  
But with spirits all undaunted  
They will tread that way again;  
For visions of snow-clad mountains  
And great trees swathed in white  
Will alluringly call and beckon,  
"Come back to the ranges of light."

In the wilds of the great Sierras,  
In the teeth of an icy gale,  
They opened the new made highway  
On the old Ukiah trail;  
And perchance a delegation  
From a land beyond our ken  
Watched as they bucked the snowdrifts,  
And shouted, "Good work, my men!"

So here's to O'Brien, the dreamer,  
Our Governor and the rest,  
Who opened the Tahoe-Ukiah  
With the spirit that conquered the West;  
Who taught us that fine achievement  
And romance are born anew  
When the patience and faith of the dreamer  
Are linked with the will to do.

—A. Merriam Conner in Nevada City Nugget.

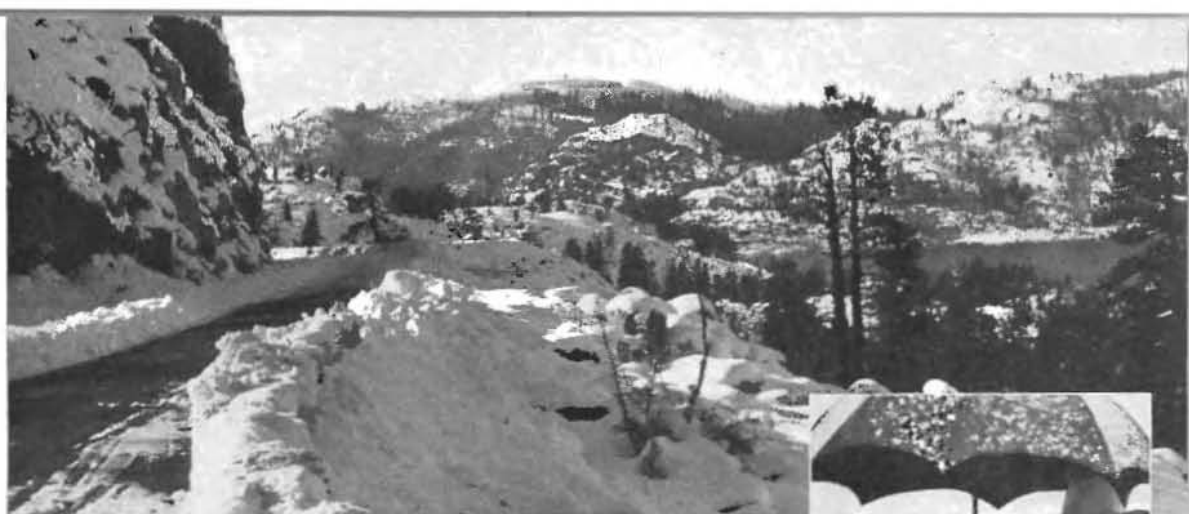
tire chains were unable to climb the grade out of Bear Valley and the State highway snow plows were engaged until long after darkness pulling them out and pushing them over the grade.

### SIXTEEN YEARS TO COMPLETE

Other speakers at the dedication were: James K. O'Brien of Smartville, Yuba County, the master of ceremonies; Edward J. Neron, Deputy Director of Public Works; Arthur B. Foote of Grass Valley, and George L. Jones of Nevada City.

O'Brien, who was introduced as the father of the Tahoe-Ukiah Highway project, said that although he was the first president of

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**STORM KING GREETES ROAD DEDICATORS**—At top is a view of the recently completed link of the Tahoe-Ukiah lateral near its intersection with State Route 37 (U. S. 40) at Emigrant Gap. A portion of Lake Spaulding is seen at the right. The dedication scene in the midst of a snow storm is shown in the center with an inset of Governor Merriam and Deputy Director of Public Works Edward Neron. Below is the group at the barrier with Chairman James K. O'Brien standing next to Governor Merriam.

# 74,450 Pounds of Explosives Fired in Kings River Canyon Highway Blast

By L. D. PACKARD, Resident Engineer.

**I**N WHAT is believed to be the most rugged section of the Sierras of California there is being constructed the Kings River Highway. Designated as State Highway Route 41, it begins at the northerly boundary of General Grant National Park in Fresno County and proceeds in an easterly direction to Cooper Creek, about 38 miles distant, on the South Fork of the Kings River.

Owing to the large percentage of solid rock encountered, the use of explosives is a major part of the construction operations, and without them the construction of this highway would be an almost impossible task.

About eighteen miles east of General Grant Park the South Fork of the river makes a sharp turn to the north, which is known as Horseshoe Bend. A short distance upstream a rugged point of solid rock juts over the river, around which the highway passes about three hundred feet above the stream bed. Owing to the hardness of the rock and the prohibitive cost of drilling, if down holes were employed, and the great amount of yardage involved it was decided the best and most economical method would be to move the entire point with one blast.

## COYOTE TUNNEL DRIVEN

A tunnel, generally designated as a "coyote," was driven along the gutter line as shown on the accompanying map. To facilitate the boring of this tunnel it was opened by the use of adits at three places, this permitting the employment of five and sometimes six drilling crews simultaneously. During construction the material removed from the tunnel was wheeled out in wheelbarrows and wasted from the above mentioned adits. From the main tunnel short stub tunnels were drilled where needed, to provide pockets for the proper distribution of the dynamite. In all a total of 745 feet of tunnel was driven.

The drilling was done with jackhammers equipped with "wet heads" and attached to a tunnel bar to give them stability. Water for the "wet heads" was provided by a 5000-foot gravity pipe line from Redwood Creek, and air was supplied by a battery of three portable compressors, of rated capacities of 310,

310 and 460 C.F.M. of free air, hooked up to operate as a single unit.

The actual air delivered at this elevation (3300 ft.) was 855 C.F.M. The compressed air was delivered to the point of use through 4000 feet of light-weight spiral welded 4-inch pipe, and in order to reach all points, where work was being conducted, it was necessary to lay this line over a ridge about 400 feet above the grade of the highway.

## A 37 TON SHOT

The bulk of the explosives was placed in the pockets of the tunnel as indicated on the map. It will be seen that a portion of it was used in the "gopher" holes and lifters that were drilled at grade along the wide portion of the point. A total of 74,450 pounds of powder was used. Of this amount 4000 pounds was 40 per cent nitro and the balance No. 40 "free flowing."

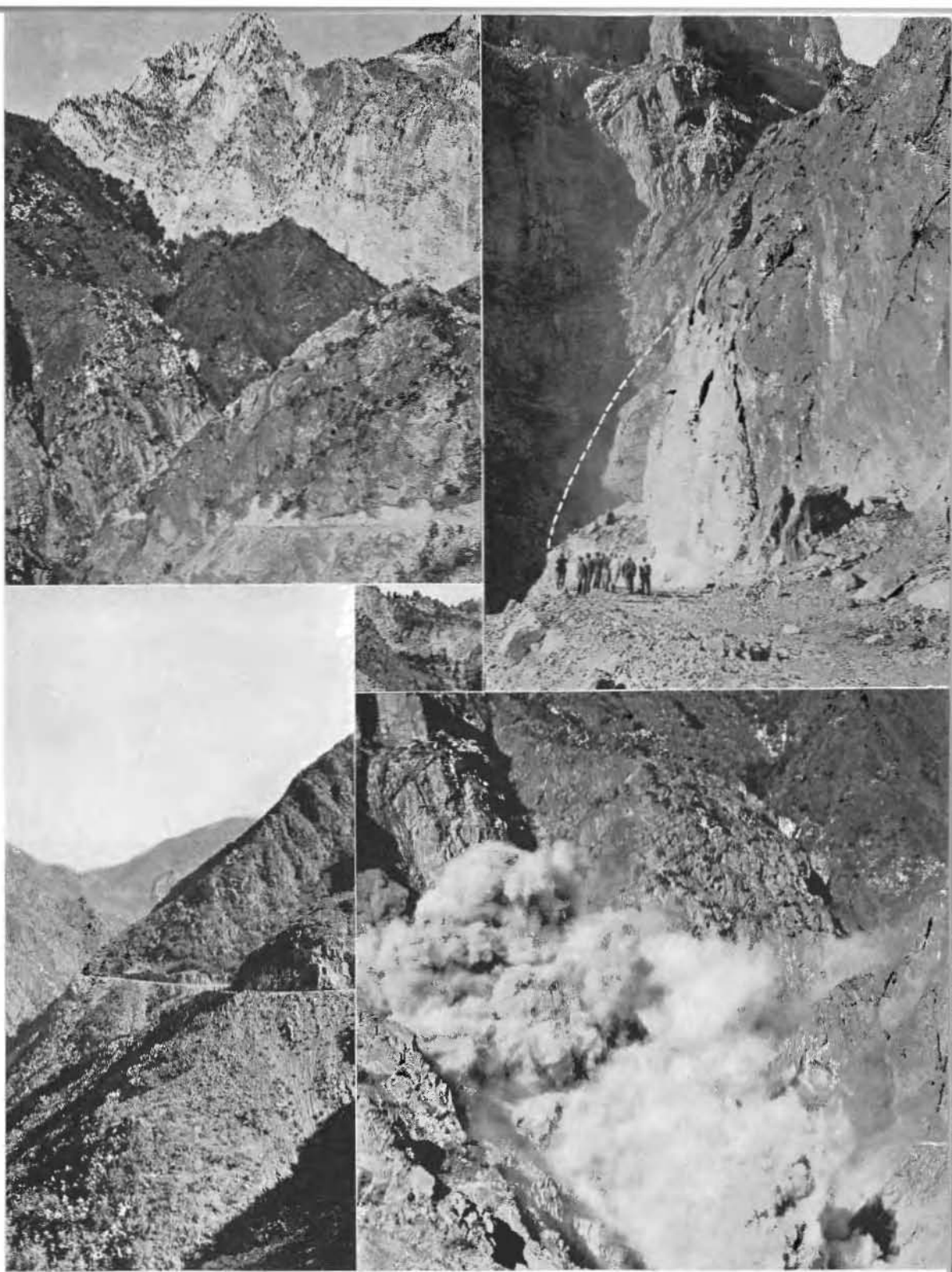
The nitro was in stick form of 1" x 8" dimension and the "free flowing" came in 12.5 pound bags. There are four bags to each box, making a total of 1489 boxes for the entire "shot." The 40 per cent nitro was used for primers. About 25 pounds was placed in contact with the cap at each pocket to insure the balance of the powder being ignited. Number 8 electric blasting caps were used and were connected with 14 gauge, insulated copper wire.

To minimize the possibility of any "missed" pockets that might occur from "shorts" in the wiring or other means, a duplicate system of ignition was employed by using Cordeau, a detonating fuse consisting of a lead tube filled with trinitrotoluene (T.N.T.) of an outside diameter of 0.23 inch. The Cordeau was ignited by an electric cap attached to the wiring for the pockets.

## PACKED WITH GRANITE

After the powder had been placed in the pockets it was packed in with decomposed granite and the remainder of the tunnel was backfilled with earth and rocks, carefully placed, to provide a tight "plug" so that the full effect of the powder would be obtained when the gases formed by its ignition ex-

(Continued on page 24)



**A MOUNTAIN RENT ASUNDER** by the explosion of 75,450 pounds of dynamite was the spectacle beheld by a party of engineers in the Kings River canyon when the big blast moved 50,000 cubic yards of rock barring the progress of the Kings River Highway. Left upper photo shows the mountain spur and pioneer road before the blast and at right is seen the result of the blast. Below are shown a portion of the completed highway and the billowing smoke clouds that filled the canyon.

# Santa Barbara Celebrates Opening of \$700,000 Through Traffic Boulevard

By L. H. GIBSON, District Engineer

**G**RADUALLY through the past few years a serious traffic problem has developed in the city of Santa Barbara. This has been brought about not only because of increased motor registration in Santa Barbara itself but also because of the great increase in volume of traffic passing through the city, which is on the main highway between Los Angeles and San Francisco via the Coast Route. This route, U. S. 101, is particularly popular throughout the year because of its scenic attractiveness, and in addition, the immensely fertile vegetable

Construction of the Santa Barbara through traffic boulevard, which has been under way since last winter, has been completed and a celebration officially opening the new boulevard to traffic was held in November.

The route of the boulevard lies largely over new right of way. It makes possible easy and rapid passage of traffic over smoothly paved wide streets through the city and at the same time it passes very close to the center of the business district.

This is in keeping with the general policy of passing through traffic through a city with



**ANOTHER BARRIER FALLS** as Chairman Harry A. Hopkins of the California Highway Commission severs a silken ribbon stretched across the Montecito Overhead Bridge on the new through traffic boulevard just completed in the city of Santa Barbara. Shirley and Patricia Rogers, two dainty little maids dressed in Spanish costume assist in the ribbon cutting ceremony. At left of Mr. Hopkins is Commissioner F. A. Tetley and at right, Mayor H. T. Nielson of Santa Barbara.

growing areas along the coast have created a large trucking business between the two metropolitan cities of the State.

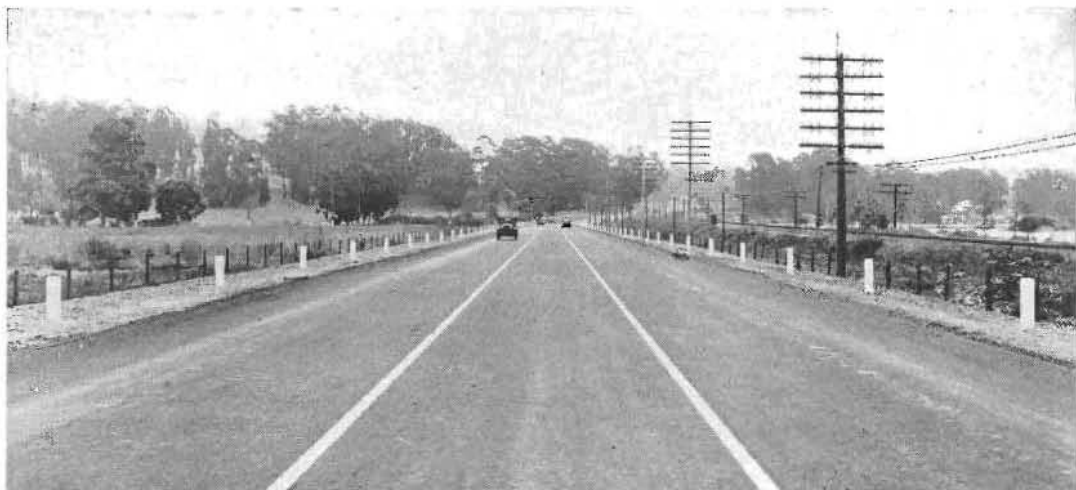
It has heretofore been necessary for traffic passing through Santa Barbara to traverse streets that are almost entirely residential in character, and the rumbling of heavy trucks day and night has brought much complaint to the city officials. The only remedy to eliminate traffic congestion and to take the truck noises away from the harassed residents was to develop an entirely new highway through the Channel City.

the minimum of congestion to local traffic, particularly in the business district. The portion through the city occupies land that is not generally heavily built up, making the cost of right of way relatively low.

Portions of the boulevard along Gutierrez and Milpas streets, which are heavily built up on both sides of the streets, were not included in this construction. The improvement of this remaining section is a matter involving cooperation between the State and the city and the allocation of revenues which may become available in the future.

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**THROUGH TRAFFIC BOULEVARD** recently completed in the city of Santa Barbara is a 3-lane, asphalt concrete highway 5.9 miles relieving the city's congested district of much heavy Coast Route traffic. The upper picture shows a section extending from Carillo Boulevard near the easterly city limits. The Mission Creek bridge sector is seen in the center photo and below a portion of the westerly unit leading to the intersection with the Coast route at Central Avenue.

## States' Highway Officials in Convention Urge Many Constructive Policies

Chairman Harry A. Hopkins of the California Highway Commission represented this State at the recent annual convention of the American Association of State Highway Officials as a member of the important administration and resolutions committees. The recommendations of the convention are accepted as the voice of highway officialdom in State, Federal and congressional circles. Mr. Hopkins describes the proceedings in the following article:

By HARRY A. HOPKINS, Chairman California Highway Commission

THE TWENTIETH annual meeting of the American Association of State Highway Officials was held in the West November 12-15, in the picturesque and oldest city in the United States, Santa Fe, New Mexico, referred to as "The End of the Santa Fe Trail." Forty-five out of the 49 States, counting Hawaii, were represented.

President D. S. Warden, chairman of the Montana Highway Commission, opened the session. So many very fine papers and talks were given it will be impossible to cover them in detail. The address of welcome was made by Governor A. W. Hocken-hull of New Mexico. The sessions were held in the State Capitol Building with the State Highway Department of New Mexico acting as host to the convention.

The opening address before the general assembly was given by Thomas A. MacDonald, chief of the bureau of Public Roads, United States Department of Agriculture, Washington, D. C. Mr. MacDonald gave a report of the activities carried on by the U. S. Bureau of Roads particularly in

relation to the carrying out of the National Industrial Recovery Act and the results of the States' application to highway projects of money received from the Federal appropriations.



HARRY A. HOPKINS

Another outstanding paper before the general assembly was given by Col. A. E. Barbour, of the United States Chamber of Commerce, entitled "The Great Need for Uniformity in Highway Traffic Laws." He stated that uniformity in traffic laws could not be expected to originate in the National government, but should be accomplished through legislation by the States. One point he stressed was that the lack of data from the States made it hard to give authentic statistics covering the many ideas in connection with this subject.

From his investigations he did determine that the accidents in the United States per year reached a figure between one and a half and two and a half billion dollars and equaled the automobile output in this country. He stated that most of the accidents were on rural roads and that those States

# Inter-American Highways Approved

(Continued from preceding page)

that had driver license laws had 30 per cent less accidents.

The slowness with which the several States are adopting the new code of uniform vehicle laws presented by the association is preventing the benefits that would follow to the traveling public. At the present time these codes have been adopted by Delaware, Pennsylvania and California only. Where States have adopted a standard license system they show 32 per cent more efficiency. Accidents are resulting in a greater toll than any other causes and the reduction of accidents will depend upon the will of the authorities and the people.

The group meetings throughout the period of the convention discussed administrative problems, covering future Federal and State policy in the construction of feeder and local roads. Feeder roads provide for the movement of considerable truck traffic leading to markets and necessarily add to the traffic on our main arterials.

Another subject concerning local education for the need of by-passing cities was opened up by A. W. Brandt, Director of Public Works, State of New York. The result of this discussion was a renewal of unanimous sentiment that through traffic is the main consideration of the State. Much criticism directed to State highway departments for going around cities or away from the congested areas is brought about by the use of the word by-pass. If the term alternate route were used instead, many smaller cities might view this necessity in a more favorable manner.

For the legal topics group a paper was prepared by C. C. Carleton, chief of the Division of Contracts and Rights of Way of the State of California, on zoning for control of building along the highways. Due to Mr. Carleton's absence Charles Ross of North Carolina presented this paper. It was considered one of the outstanding papers of the convention and the many quotations from court decisions and the statutes of the different States indicated that the States can feel safe in greater activity in this connection.

#### STANDARD SIGNS ADVOCATED

Traffic control and safety was the subject covered by E. W. James of the U. S. Bureau of Roads in which he stressed the point that the States should adhere to standard signs.

Other subjects in group meetings covered were Uniform Accounting, Bridges and Structures, Materials and Research, Road Design, Road Construction, Maintenance and Roadside Planning and Development, Committee on Roadside Planting and Development, and Cooperation with Contractors.

The executive secretary's annual report covered so much statistical information shown by tabulations, it is impossible to give the details in this article. It was shown, however, that during the past calendar year the States' system mileage was increased in the United States by 10,007 miles. This added mileage was principally in California, Kentucky, Minnesota, Utah and New Jersey. However, one outstanding point brought out was that the increase is but 40 per cent of the increase reported a year ago.

The total mileage on the States' systems the first of this year was 382,668 miles. Only 32 per cent of this is paved and is a gain of only 2 per cent over the year previous. Another point brought out in the secretary's report is that of the \$112,000,000 diverted from highway use in 1933 more than 1/3 of the entire amount was made by the State of New York, and 87 per cent of the remainder came from nine other States. Twenty-one States made no diversion whatever and the tendency indicated less diversion for 1934.

The resolutions committee was very active throughout the convention and just before adjournment presented 15 resolutions, which were adopted by the association. The points stressed in each one of these are as follows:

#### FIFTEEN RESOLUTIONS PASSED

**NO. 1.** The association expressed its appreciation of the assistance supplied by National enactment with executive approval and the association pledged continued allegiance and support in directing rapid expenditure of all road funds now available or that may be provided through legislative procedure.

**NO. 2.** The association expressed its approval of legislation of the second session of the 73d Congress which assured a three year dependable road program. It is a desirable situation when the States are advised in advance what the government intends to do and the knowledge of predetermined revenue and preconstruction engineering give assurance of successful planning and construction of our highways.

#### GAS TAX DIVERSION

**NO. 3.** The last session of Congress provided that any State that diverted gasoline taxes after June, 1934, up to June, 1935, in a larger amount than had been diverted before the passing of the act shall lose 1/3 of the Federal aid coming to that State. The association reaffirmed its position heretofore taken that all motor highway vehicle fuel tax revenues and all motor license and motor registration fees should be spent under the supervision of the State upon a properly selected system of roads and that any other use of these funds may easily undermine an important National enterprise. The association approves of the restricted legislation and after the States have had sufficient time to rectify existent diversion that the Federal government should then extend the penalty to include all diversion from road purposes of these motor revenues whatsoever.

#### U. S. NUMBERED ROUTES

**NO. 4.** The association approved the action of the executive committee in consolidating U. S. numbered routes wherever possible, thus simplifying the same, and only adding mileage to the system through unoccupied territory. The executive committee should continue its studies in consolidating routes, coordinating mileage and carrying out the original intent of the U. S. numbered system by causing numbers of routes to follow in sequence and extend in easterly, westerly, northerly, and southerly directions. Routes that are supposed to run in one direction in many

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# California's Experience in Regulating Advertising Signs Along Highways

By J. M. CALL, Outdoor Advertising Assistant

**T**HE ENACTMENT of the California Outdoor Advertising Act, which became effective August 21, 1933, marked the goal of many years of study and effort on the part of various organizations interested in the protection of scenic attractions of the highways. The passage of this legislation encountered serious difficulties.

The courts would not uphold legislation based upon aesthetic principles alone; therefore, the fact that regulation of outdoor advertising would greatly reduce traffic hazards became a major factor in favor of the measure. In addition to legal difficulties, organized opposition of advertising concerns presented a problem which required patience and perseverance to overcome.

These major obstacles having been met and the law passed, Earl Lee Kelly, Director of the Department of Public Works, in whom was vested the authority to enforce the act, authorized the formulation of an enforcement program. In a short time it was apparent that the difficulties encountered prior to the enactment of the law were no greater than those presented in the enforcement.

## MAJORITY COMPLIED

Provision was made that no actual enforcement should take place until six months after the law was in effect. This period was given over to educating the public at large, as well as those actually engaged in the business, in order that they would be advised as to their liability under the act and arrange to comply.

The larger advertisers and organized advertising concerns complied in most instances without question. This was undoubtedly due to the fact that they appreciated the necessity of such a control measure, knowing well that the elimination of dilapidated, unsightly displays would enhance the value of well-kept, legalized advertising.

Some operators protested on the ground that the act violated both State and Federal constitutions.

Although the law provides that evidence of a property owner's consent to the placing of a display upon his property must be submitted

by an applicant for a display permit in order to protect the property owner, and incidentally assist the enforcement of the trespass law, property owners have repeatedly protested the people's right to preserve the scenic value of the highways.

## CONSTITUTIONALITY CHALLENGED

Upon the expiration of the six months grace period, a suit was filed by an outdoor advertising company, attacking the constitutionality of the act. A restrainer was granted preventing the State from removing and destroying any of the plaintiff's displays. This company had complied with the licensing provision of the act, but stated in their suit that enforcement of the permit provisions allowed double taxation and property removal without observance of due process of law.

Pending a court decision, it was deemed unjust to enforce any of the violation provisions. The decision was rendered in due time. A demurrer filed by the Attorney General in answer to the suit was sustained without leave to the plaintiff to amend and the restraining order was dissolved. Advice was received that the plaintiff would appeal but that nothing prevented administering any section of the act. At the direction of Director Kelly, plans long contemplated were put into effect and actual enforcement was begun.

## FEES REVENUE INADEQUATE

While it was the intent that this function of government should be self-sustaining, it was early seen that the fees for permits were inadequate. The clerical work involved in granting permits is undoubtedly far in excess of what the legislators believed it would be, when permit fees were fixed.

As an example: a display owner requests an application by mail; having obtained it, in many instances another letter is received asking instructions as to how to prepare it. This done, the application is received and, even if properly prepared, a sign fee is enclosed rather than a structure fee, or vice versa. More correspondence finally results in the applicant obtaining the permit, at a cost to the State of possibly 50 per cent in excess of the permit fee.

(Continued on page 14)



**REMOVAL OF SIGNS** that violate the law is proceeding under the Outdoor Advertising act. Upper picture shows a sign illegally placed within 300 feet of an intersection. In the lower picture a sign is being removed for which no permit has been secured and fee paid.



**STORAGE PILES ARE GROWING**—Structures removed are carefully stored in various highway maintenance yards awaiting reclamation by owners.

## Gas Tax Diversion Means Many Jobless

(Continued from page 1)

ing that such diversion will cost California the loss of a large part of the Federal aid allotment for the next biennium. The Federal government issued this warning because it has observed the dire results of gas tax diversion by other States. Hence, to protect the government's investment of many millions of dollars in State highways the last session of Congress enacted in the Hayden-Cartwright Act, the following provision of law.

"Sec. 12. Since it is unfair and unjust to tax motor-vehicle transportation unless the proceeds of such taxation are applied to the construction, improvement, or maintenance of highways, after June 30, 1935, Federal aid for highway construction shall be extended only to those States that use **AT LEAST THE AMOUNTS NOW PROVIDED BY LAW FOR SUCH PURPOSES** in each State from State motor vehicle registration fees, licenses, gasoline taxes, and other special taxes on motor-vehicle owners and operators of all kinds for the construction, improvement, and maintenance of highways and administrative expenses in connection therewith, including the retirement of bonds for the payment of which such revenues have been pledged, **AND FOR NO OTHER PURPOSES**, under such regulations as the Secretary of Agriculture shall promulgate from time to time: Provided, That in no case shall the provisions of this section operate to deprive any State of more than one-third of the amount to which that State would be entitled under any apportionment hereafter made, for the fiscal year for which the apportionment is made."

It is to be noted that the law reads: "at least the amounts now provided by law."

We have received requests for and have furnished to the Secretary of Agriculture a full file of the present State enactments determining the distribution and use of gas taxes, motor vehicle fees and revenues designed for highway purposes. Under the regulations promulgated by him, any diversion or redistribution reducing the amount available for highway purposes as now established by law would immediately incur the loss of one-third of the Federal aid appropriation made by Congress in the Hayden-Cartwright Act for the two fiscal years 1936 and 1937.

MEANS 2,000,000 LOSS

Approximately \$3,000,000 of Federal aid would be lost and this together with the amount of the diversion from State funds would provide jobs for thousands of men. It

is a heavy price to pay for diversion—doubly heavy when it is realized that the taxpayer must eventually provide even a greater amount to take its place in supporting those so thrown out of employment.

**The loss of this amount of Federal aid money alone would mean a reduction of 8½ per cent of the estimated State highway revenues available for construction for the 1935-1937 biennium.**

Such reductions in State highway revenue present a most serious aspect, and will if put into effect undoubtedly result in large economic loss to the State, seriously impairing the vital facilities in which the State and traveling public have invested over \$300,000,000.

### EVERY DOLLAR NEEDED

I want to firmly impress upon the minds of our legislators and citizens that every available road dollar is needed and can be put to work at once. There is no such thing as an idle highway surplus lying around awaiting necessary projects to which it can legally be applied, and there never can be for the next ten years at least. There are always more projects demanding attention than there are funds to pay for them.

For example, when the current biennial budget was being prepared projects totaling more than \$90,000,000 were urged upon the Highway Commission by civic and official delegations from all parts of the State, and the available funds for construction of projects amounted to only \$34,000,000.

**The Commission is now preparing a budget for the next biennium, beginning July 1, 1935, and projects totaling many millions in excess of the estimated available funds have been urged for inclusion.**

Many of these proposed projects are worthy and necessary improvements that must eventually be made for the proper development of our highway system to meet the demands of an ever increasing traffic, and contribute to the economic development of fast growing sections of the State, and every dollar spent on such improvements is a profit paying dollar returning daily dividends to the motorist in savings on mileage, fuel and upkeep costs, time and energy.

## Every Road Dollar Needed to Finance Project Demands

(Continued from preceding page)

More than 6000 miles of county roads were taken into the State system by the last Legislature. A large amount of construction, reconstruction, betterment and maintenance with numerous bridge replacements are necessary to bring these roads up to the standards adequate to properly serve traffic, and no additional revenues have been provided for this work; rather the State highway revenues have been reduced.

Failure to keep roads up to adequate standards works a double injury to the State; first, in depreciation on investment, and second, in loss of revenues from gasoline consumption. States that have diverted gas tax funds have found that vehicular use of their roads has decreased.

Even the most elementary economic consideration leads to the conclusion that the State must protect the large investment it now has in its present State highway system. Maintenance of the roads alone will not offer this protection. It requires in addition a certain amount of reconstruction and rebuilding where the original old roads have failed and where maintenance would be entirely inadequate to restore the facilities and most certainly uneconomical to attempt to keep them serviceable for traffic.

### DOUBLE TAXATION UNFAIR

The road user pays the bill for an improvement which is a benefit to the State as a whole. He is doing this without complaint because he receives adequate compensation for his contribution to which he is certainly entitled. Discussing this phase of the question an eminent authority says:

"Motorists are primarily citizens and taxpayers, they pay property taxes, income taxes, ad valorem taxes, poll taxes, school taxes, water taxes and other levies. As motorists, they pay special additional taxes, such as a gasoline tax for a specific purpose: roads. Is it fair to tax the motorist as a citizen to meet the general expenses of government, then to tax him to build roads, and then, instead of building the roads, to use the money for such general purposes as pensions, salaries, State buildings, State prisons, libraries, fire houses, unemployment relief doles, etc.?"

Is it giving the motorist a fair deal to subject him to this double taxation and then cheat him out of the promised benefits?

### APPRECIATION EXPRESSED FOR HIGHWAY IMPROVEMENT

Gridley Community Club, Gridley, California.  
Mr. T. H. Dennis,  
State Highway Maintenance Engineer,  
Sacramento, California.

Dear Sir: The Gridley Community Club wishes to express its sincere appreciation of the splendid work of improvement and conditioning of State Highway 99-E being carried out in this district under the supervision of your district superintendent, Mr. C. H. Bohrmann.

We wish to commend Mr. Bohrmann for his excellent and diligent service and also desire that the State Highway Department be informed that we realize the value and importance of the general and local program of the highway department as an aid to motor traffic, a contribution to progress and also as to pay roll and other factors.

We offer the cooperation of the Gridley Community Club in any matter it may be of service to the State Highway Department or to Mr. Bohrmann.

Yours very truly,

GRIDLEY COMMUNITY CLUB.  
(Signed) L. G. Van Tongeren, President.

The fine citizens of this great Commonwealth of California answered that question with an emphatic "NO" when it was put to them in the referendum two years ago and there is no reason to believe they have changed their minds.

### KINSMAN BACK AT WORK AFTER CAR FIRE ACCIDENT

J. K. Kinsman, assistant equipment engineer at the Headquarters Shop in Sacramento, has returned to work after six weeks' stay in a hospital as the result of an accident while he was driving from San Francisco to Sacramento on October 3d.

When near Dixon the car caught fire and before Mr. Kinsman was aware of what had happened he found himself enveloped in flames. Only his presence of mind in opening the car door and hurling himself out into the roadway saved his life. He rolled in the ditch, putting out the flames that were burning his clothing, but his arms and legs were seriously burned. Other motorists came to his assistance, rushed him to Dixon for first aid treatment, and he was then removed to a hospital at Sacramento where he was confined until November 14th, suffering from second and third degree burns.

His many friends will rejoice to know that he has made a fine recovery and is able to return to his duties.

## Sign Enforcement Act Covers 76,000 Miles of Highways

(Continued from page 10)

In the issuance of but one or two sign permits, the fee for which is 25 cents each per calendar year, the cost to the State always exceeds the cost to the permittee.

It must be understood that very little reliable data were available at the outset, relative to the actual number of displays that come within the purview of the act, which exercises no control over advertising within the corporate limits of any city, county, or town. Such study as was given the revenue provisions must have been based on the number of displays in the more thickly populated unincorporated areas, since the only survey on record covered but 2582 miles of public highways.

### ORIGINAL SURVEY MISLEADING

This survey also showed that 60 per cent of the displays viewed were located upon the property upon which the goods or merchandise advertised was for sale. This circumstance, as will be shown later, is of vital importance. If a true proportion were maintained, that is, number of signs increased in direct proportion to the increase in mileage, the revenue would probably be sufficient to finance enforcement. Unfortunately, however, approximately 90 per cent of the advertising is located within view of less than 20 per cent of the total mileage.

It follows, then, that some 76,000 miles of highways must be traversed in order to effectively enforce the act with regard to not more than 4000 advertising structures and signs.

The enforcement program, therefore, was put into effect in the areas with the largest number of signs. Thus the main arteries of traffic were first surveyed. The law provides that 10 days written notice be given **THE OWNER OF THE PROPERTY** upon which a nonconforming display is located prior to the entry of the maintenance forces to effect the removal and destruction of a cited structure. In order to avoid confusion, the owner of the display is also accorded this formality, since it is his obligation to rectify the violation should he elect to do so. If no action is taken to legalize the maintenance of the display within the 10 days following receipt of the citation, the maintenance forces are instructed to remove it.

### OWNERS MAY REPOSSESS

This enforcement procedure is in line with section 17 of the act, which provides that nonconforming displays shall be **REMOVED AND DESTROYED**. Temporarily, the displays are being dismantled and stored at the various maintenance yards and the owners may repossess them within 90 days upon payment of all costs incidental to their removal upon presentation at the maintenance yard of their validated copies of applications for a permit to place and maintain them in accordance with the act.

Absence of a permit plate upon a structure or sign constitutes a violation. No structure or sign may be placed unless a permit has first been obtained in accordance with the act. To date, repossession requests have been so few as to ren-

(Continued on page 25)

## State Road Damaged by Farm Machines Paying No Gas Tax

**D**AMAGE to highway surfaces by operation of agricultural machines equipped with field grousers in certain localities is a very difficult matter to combat due to the indifference or acquiescence of the local people.

A case in point occurred on July 16 and 17 when a tractor towing a harvester was operated over the pavement in the vicinity of Esparto in Yolo County. The tractor had sharp grousers without street plates, and the harvester had two sharp flanges on each wheel.

### LARGE AREA DAMAGED

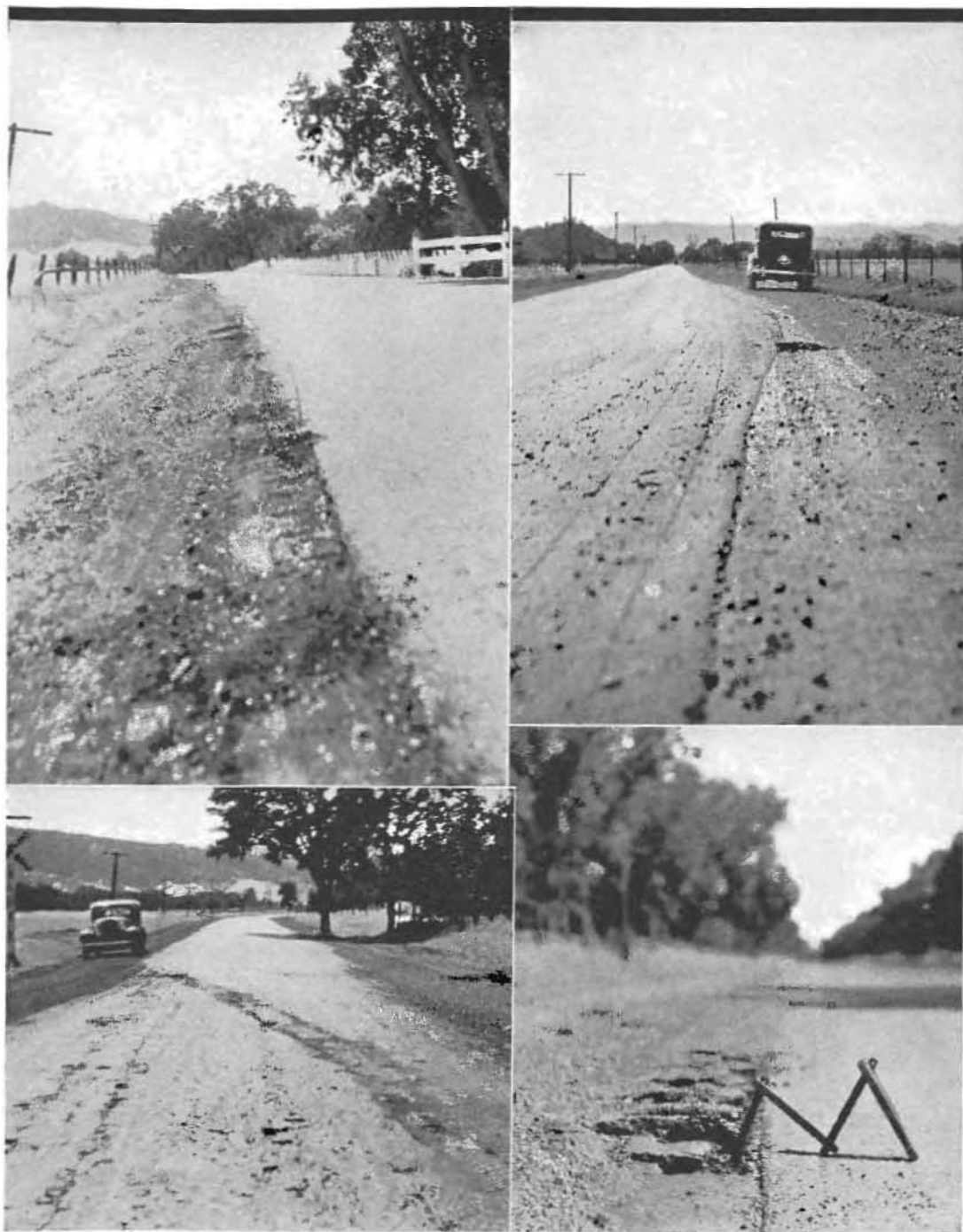
As shown by the photographs reproduced on the adjoining page, the caterpillar tracks pulled out some of the asphaltic concrete surface and the harvester wheels cut into the pavement from  $\frac{1}{2}$ " to  $\frac{3}{4}$ " deep, breaking a layer of the asphalt as thick as the depth of the cut. Damage was particularly severe on the armor top type of surface. The thin coat of bituminous surfacing was broken entirely from the base.

The district attorney's office swore out a warrant for the arrest of the operator of the equipment. A jury trial was held at Capay on September 25, and the defendant was acquitted.

When it is considered that the fuel burned in farm tractors and harvesters is exempt from the gas tax and consequently that such equipment operated on State highways produces no revenue to repair the damage, the following comparison showing total highway expenditures by the State in Yolo county as against income accrued in the county should prove food for thought:

Expenditures from State highway and Federal funds from July 1, 1933, to June 30, 1934.....	\$382,676 26
County's proportion of receipts from motor bus and truck tax, gasoline tax and license fees expended on county roads .....	86,192 93
<b>Total .....</b>	<b>\$468,869 19</b>
Receipts from motor bus and truck tax, gas tax and license fees—	
State (based on county allocation) .....	\$158,277 12
County .....	86,192 93
	<b>244,470 05</b>
<b>Excess expenditure .....</b>	<b>\$213,399 14</b>





**RAVAGES OF A TRACTOR.** Upper left—Route 50 between Madison and Brooks, Yolo County. Caterpillar tractor and flanged heavy wheels have torn out and loosened edge of oil mixed pavement. Upper right—Route 50, between Madison and Brooks showing deep cut caused by flange of heavy wheel in bituminous macadam pavement. Lower left—Route 50, between Madison and Brooks where tractor and harvester pulled diagonally across at railroad crossing West of Capay leaving ravelled out track about 14 inches wide. Lower right—Route 50, Yolo County, armor type or bituminous pavement between Brooks and Codannassa approximately  $1\frac{1}{2}$  inches thick where sharp flange of harvester wheel cut off edge of pavement.

# U.S. and Western State Engineers Hold Conference on Road Building Material

By THOMAS E. STANTON, JR., Materials and Research Engineer

ONE of the most important conferences relating to road building materials was held at the Materials and Research Laboratory of the California Division of Highways on November 7th and 8th when over one hundred representatives from the eleven Western State Highway Departments, the U. S. Bureau of Public Roads, the Asphalt Association and California Division of Highways, gathered to discuss the standardization of specifications for the road oils and cutback asphalts used in low cost bituminous surfacing construction.

The meeting was the fourth of a series of meetings started at the instigation of the U. S. Bureau of Public Roads and the Asphalt Association in February, 1931. Two of the three previous meetings were held in Salt Lake City, Utah, as being more centrally located for the States concerned and one meeting was held in San Francisco in January, 1932.

The meeting just concluded was one of this series of regional meetings through which agreement has been reached covering a number of points, with the result that specifications for bituminous materials have been simplified and the products standardized to such an extent as to reduce the cost to the producer and to the consumer.

#### IN SUBSTANTIAL AGREEMENT

Previous meetings were directed primarily at securing as great a degree of acceptance on the part of the different States as possible, of the new specifications recommended by the Bureau of Public Roads and the Asphalt Institute. The last meeting was for the purpose of considering such revisions as experience has shown to be desirable and was under the direction of the States participating in the conference as distinguished from previous meetings conducted under the direction of the Bureau of Public Roads and the Asphalt Institute.

The meeting developed the fact that except for a few minor differences, all the Western States are in substantial agreement, and that the program decided upon at pre-

vious conferences is proving generally satisfactory.

Additional lines of study directed towards further improvements were discussed and an investigational program agreed upon which it is expected will develop information making it possible to still further improve specifications and methods of use of the materials under discussion.

A dinner meeting, presided over by C. S. Pope, Construction Engineer of the California Division of Highways, was held at the Senator Hotel, Wednesday night, November 7th, at which C. H. Purcell, State Highway Engineer of California, addressed the delegates.

The sessions of the conference were attended by six representatives from the U. S. Bureau of Public Roads, twelve State representatives from the Western States outside of California, twenty-three representatives of the Asphalt Institute and other asphalt and road oil producers, and seventy-one from the California Division of Highways. Following is a complete list of those in attendance:

#### BUREAU OF PUBLIC ROADS

A. H. Benedict, Materials and Oiling Engineer, District 1, Oregon; K. S. Chamberlain, Materials Engineer, District 12, Utah; B. W. Matteson, Regional Office, B.P.R., California; J. T. Pauls, U. S. Senior Highway Engineer, Washington, D. C.; Roderic Pearson, Materials Engineer, California; Worth D. Ross, Materials Engineer, Colorado.

#### WESTERN STATES GROUP

J. W. Powers, Engineer of Materials, Arizona; Thos. E. Stanton, Jr., Materials and Research Engineer, California; K. C. Vail, Materials Engineer, and John P. Donovan, Maintenance Engineer of Colorado; Arthur C. Waller, Materials Engineer, Idaho; Seward Mason, Testing Engineer, Montana; L. W. Little, Assistant Testing Engineer, and F. H. Morrison, Testing Engineer of Nevada; N. M. Finkbiner, Engineer of Materials, Oregon; Levi Muir, Materials Engineer, Utah; Jack Davis, Constructing Engineer, and Bailey Tremper, Materials Engineer of Washington; I. E. Russell, Materials Engineer, Wyoming.

(Continued on page 28)



**ENGINEERING EXECUTIVES** of the United States Bureau of Public Roads and of the eleven Western States in attendance at the meeting shown in the above group are: Bottom row, left to right, Seward Mason, Materials Engineer, Montana; B. W. Matteson, Reg. Office B.P.R., San Francisco; A. H. Benedict, Materials Engineer, Dist. 1, B.P.R., Oregon; Thos. E. Stanton, Jr., Materials and Research Engineer, California, and Levi Muir, J. W. Powers, I. E. Russell, L. W. Little, Materials Engineers, respectively, of Utah, Arizona, Wyoming and Nevada.

Top row, left to right, J. T. Pauls, Senior Highway Engineer, B.P.R., Washington; K. S. Chamberlain, Materials Engineer, District 12, B.P.R., Utah; John P. Donovan, Maintenance Engineer, Colorado; Worth D. Ross, Materials Engineer, B.P.R., Colorado; K. C. Vail, Materials Engineer, Colorado; A. C. Waller, Materials Engineer, Idaho; N. M. Finkbiner, Materials Engineer, Oregon; F. H. Morrison, Materials Engineer, Nevada.



**CALIFORNIA STATE MAINTENANCE ENGINEERS**—Back row, left to right—J. F. Taylor, Assistant District Maintenance Engineer, District I; C. E. Bovey, District Maintenance Engineer, District X; J. E. Stanton, District Maintenance Engineer, District VIII; R. L. Thomas, District Maintenance Engineer, District I; L. E. McDougal, District Maintenance Engineer, District V; E. E. Sorenson, District Maintenance Engineer, District XI. Front row, left to right, E. Evens, District Maintenance Engineer, District VI; R. P. Duffy, District Maintenance Engineer, District IV; M. Fosgate, District Maintenance Engineer, District I; W. A. Smith, Assistant Maintenance Engineer, Central Office; G. F. Helleson, Assistant Maintenance Engineer, Central Office; I. S. Voorhees, District Maintenance Engineer, District VII.

## 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. 12 NOV.-DEC., 1934 Nos. 11, 12

### SQUARE DEAL IN HIGHWAYS

**M**OTORISTS traveling over the highways of Alpine County must admit that the smallest county within California is getting a square deal from the Highway Commission of that State.

Mountain passes in Alpine County are primarily tourists highways and can not be classed as all-the-year roads. For four or five months of the year the three interstate highways, including the Kit Carson route, the Grass Lake road to Lake Tahoe and Ebbett's Pass, are closed to traffic by winter storms. However, during the summer months, these Sierra routes open up one of the most desirable vacation centers in the entire west. Marvelous vistas of mountain scenery, lakes and streams, flanked with green meadows, are all that anyone could wish for.

The amount of taxable property within Alpine County could not possibly stand the burden of highway construction. However, the officials of California rightfully recognize that in contributing money with which to build mountain highways, they are opening up vast regions for vacation purposes and adding to the stability of the more sparsely settled districts.

At this time some \$250,000 is being expended in construction of a standard highway from Markleeville to Centerville, a distance of six miles. Flanking the Carson River the route is no less scenic than that of the Truckee River Canyon. To observe power shovels and other heavy equipment tearing through mountains to straighten the highway is to realize to just what ends engineers will go to give motorists perfect roads through the Sierras.—*Gardnerville (Nevada) Record-Courier.*

## Federal Road Building In Last Fiscal Year Exceeded all Records

**T**HE road construction supervised by the Bureau of Public Roads in the fiscal year ending June 30, 1934, far exceeded the construction in any previous year, states Thos. H. MacDonald, chief of that bureau of the U. S. Department of Agriculture, in his annual report.

"This increase was due primarily to grants for road construction under the National Industrial Recovery Act," says the report. "The roads built have been sections of the Federal aid highway system, extensions of the system into and through cities, important secondary or feeder roads, and sections of main highway through the National forests, parks, and public lands."

#### PEAK EMPLOYMENT IN JUNE

The peak in employment with 336,414 at work on Federal and Federal aid highway construction came in June, 1934, when the new public works program was well advanced. This figure represents direct employment on the roads only and does not include the indirect employment, conservatively estimated at 1.4 times the direct, provided in the production and transportation of materials and equipment used in road construction.

The report shows that Federal and Federal aid construction employment supervised by the Bureau of Public Roads has constituted an increasing proportion of Federal and State highway employment. Federal work was a fourth of the program in 1932 and nearly one-half in 1934.

#### 14,780 MILES COMPLETED

Public works highway funds assigned to the various States amounted to \$394,000,000.

A total of 14,780 miles of Federal aid roads was completed in the year, bringing the total mileage completed since 1916 to 119,712 more than half of the Federal aid system designated. The active public works highway program for the fiscal year 1934 totaled 22,378 miles. By the end of June, 6,986 miles were completed, 13,674 miles were in various stages of construction, and 1,718 miles were approved for construction.

"Jack was the goal of my ambition," she sighed, "but alas!"

"What happened, dear?"

"Father kicked the goal."—*Boston Evening Transcript.*

# Diesel Fuel Tax Reform Advocated

(Continued from page 9)

cases make abrupt turns and run for several hundred miles in a direction that does not indicate the number it should follow.

## INTER-AMERICAN HIGHWAYS

**NO. 5.** The Congress of the United States in 1930 provided funds for a survey of inter-American highways. The survey has been completed between the Canal Zone and the United States border at Laredo, Texas. The 73d Congress made further appropriations for continuing reconnaissance and instrument surveys as well as undertaking construction in cooperation with countries through which these surveys have been made. The association expresses its support of this action in the interests of trade and amicable relations with these countries. It was recommended that funds be made available for an extension of reconnaissance southward from the United States border and from Panama into South America. If the Congress would act on this suggestion it would mean three or four inter-American highways.

## MOTOR VEHICLE ADMINISTRATION

**NO. 6.** Provision was made that a committee of three members of the American Association of State Highway Officials be appointed to work continuously with the corresponding committee of the American Association of Motor Vehicle Administration.

## TRAFFIC CONTROL DEVICES

**NO. 7.** The association has adopted the revised manual on highway traffic controlled devices and the same is being printed for the use of State highway departments. It is urged that all the States adopt this manual as the standard for all traffic control, signs, signals, markings and other control devices therein presented and to cause the actual installation of such standards by a process of replacement as quickly as possible. This is a forward movement in the interests of highway users and should be received with the greatest favor.

## FEDERAL AID MILEAGE

**NO. 8.** The Federal government, through an act passed June 18, 1934, provided that any State may expend not to exceed 1½ per cent of its Federal aid allotment for advanced planning. This referred to additional mileage beyond the 7 per cent eligible to receive Federal aid funds. The selection of such additional mileage should cover an intense and intelligent study. It is urged that the State highway departments devote a liberal part of the permissible funds to traffic study and that the U. S. Bureau of Roads be requested to enter into an agreement to conduct surveys that will disclose roads not now in the Federal aid system that should next be added and further data adequate to make a complete classification of all public roads.

California has completed its Federal aid system and we should know at the earliest possible moment that this is recognized by the U. S. Bureau, because it will be necessary to have additional Federal aid mileage on which to apply our portion of the Federal aid money appropriated for the years 1936 and 1937.

## RAILROAD GRADE CROSSINGS

**NO. 9.** Because of the financial condition of the railroads the Federal government has signified an intention to provide money for elimination of railroad grade crossings and the association is in accord with this move. There is not only a necessity for railroad elimination, but also elimination of highway intersections and the construction of bridges. The loss of life on both types of crossings is tremendous and the association assures the Congress that any appropriation of public works money for the purposes mentioned will be a contribution to the public safety and the general welfare of the Nation.

California has better than 15,000 railroad grade crossings and if all of them were eliminated it would cost about half of what has been mentioned as an appropriation from Congress for the whole country.

## SECONDARY OR FEEDER ROADS

**NO. 10.** In view of the Federal government having appropriated funds for the improvement of secondary or feeder roads not necessarily included in the States' systems or the Federal aid system of highways, the association recognizes that such road work coordinates with our primary highways and has increased employment through the expenditures of funds on such roads. Continuing this policy such feeder roads would adequately connect with shipping points of the Federal system and the association feels that it is highly desirable to expend on secondary or feeder roads through the facilities of the members of the association appropriations of public works money, and the association would offer all the facilities of the States in cooperation that such plan could be carried out.

## AGGREGATES INDUSTRY CODE

**NO. 11.** Contractors of highways who produce their own aggregates for their own use and not for commercial purposes should not come within the purview of Code 109 of the crushed stone, sand or gravel, and slag industries. The association feels that they should come under the regulations of the Secretary of Agriculture through the U. S. Bureau of Roads and divorced from the conditions controlling sand, gravel and broken stone for commercial purposes.

## FORTY-HOUR WEEK

**NO. 12.** Contractors working under the National Recovery Act and controlled by a maximum of 30 hours a week for common labor on out-door work find that these conditions place an unnecessary burden on them due to loss of time and a continuous shifting of forces. They also find that the 30-hour week does not provide on the present wage scale, especially due to loss of time, an adequate compensation for common labor. The regulations covering the classification of labor are that skilled and intermediate classes of labor must come from the county within which the project is located.

The association feels that 40 hours should be the maximum hours per week covering contracts on highway work and that skilled and intermediate labor should be secured from any place within the State.

(Continued on page 22)

# Foothill Boulevard Cutoff Relieves Traffic Congestion in San Fernando

By S. V. CORTELYOU, District Engineer

WITH the completion on October 31st of the cutoff between Olive View and Tunnel Station in Los Angeles County, the Foothill Boulevard route from Pasadena, which has formerly connected with the main central California highway between Los Angeles and Sacramento at San Fernando, is extended from the end of Foothill Boulevard in a diagonal line to connect with the main route at Tunnel Station.

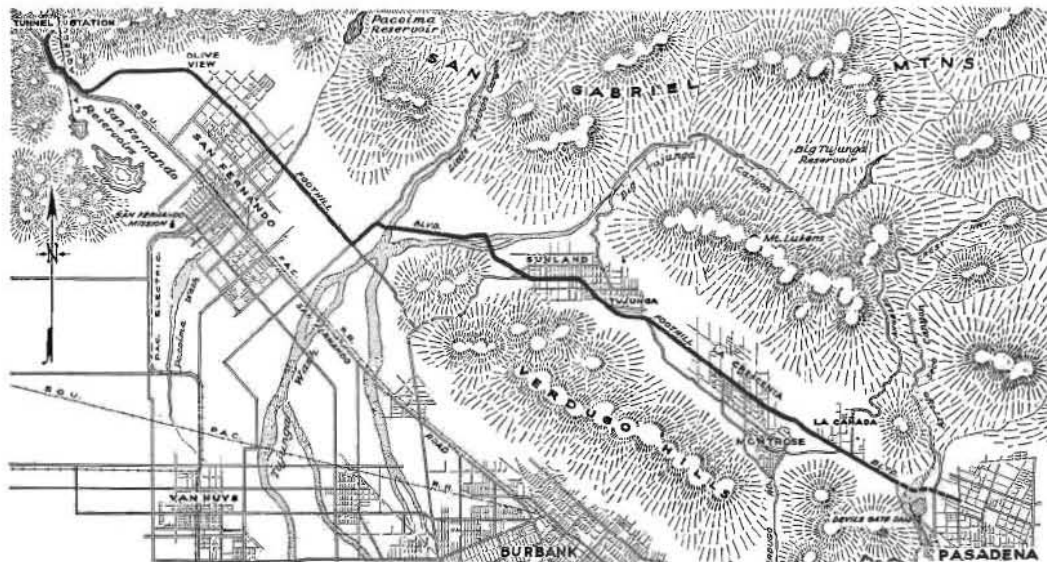
Connection between Foothill Boulevard and the main highway (San Fernando Road) was formerly made via Roxford Avenue, which

way Commission caused the Weldon Canyon cutoff, to which the present project connects at Tunnel Station, to be constructed some six years ago.

SURVEYED IN 1928

Surveys were begun by Los Angeles City at that time and it was not then considered within the realm of possibility that the State would adopt this new route as a State highway. Right of way was secured by the city, but the actual construction work was let under a State contract in December, 1933.

This project extends from Olive View Sani-



Map Showing Foothill Boulevard Improvement Near City of San Fernando

joins San Fernando Road at one of the busiest intersections in San Fernando. This cutoff has the important effect of eliminating the congested traffic district through the city of San Fernando from this route.

Located entirely within the city limits of Los Angeles, surveys for this project were made and plans prepared by the city engineering department of Los Angeles. Construction of this cutoff with the improvement of the overhead bridge across the Southern Pacific Railroad at Tunnel Station was one of the considerations under which the State High-

tarium, where Foothill Boulevard formerly terminated, along the edge of the foothills, keeping on the opposite side of the main line of the Southern Pacific Railroad from the old highway until Tunnel Station is reached, where the railroad is crossed on an existing overhead bridge which the city shortly intends to widen to accommodate the new route.

The improvement is 3.53 miles in length and consists of a 50-foot graded roadbed and a 20-foot concrete pavement with wide oiled shoulders, in addition to the many necessary drainage structures and other appurtenances.

(Continued on page 27)



**NEW CUT-OFF HIGHWAY** for traffic to and from the Foothill Boulevard to Pasadena and State Route No. 4 near San Fernando has been completed and opened to the public. The upper picture shows the cut-off highway at the left connecting with the Newcastle-Saugus route and by means of the bridge with the State Route No. 4 on the right. The latter connects through Weldon Canyon with the Ridge Alternate at Castaic or with the Coast Route via Santa Clara Valley. The lower pictures show the 50-foot graded roadbed and wide oiled shoulders of the new highway winding through orchards and along the foothills.

## States Feel Loss of Fuel Revenue from Diesel Equipment

(Continued from page 19)

NO. 13. Modern inventions have caused a great development in construction of highways and in the building of equipment used on highways and in highway construction. The revenue of the States in connection with tax on gasoline applies also to other motor vehicle fuels, but in planning by State highway departments for the expenditure of funds over a two-year period it has been based almost entirely upon the revenue received on tax from gasoline. It has been demonstrated that Diesel operated equipment and the use of similar heavy fuels affords this kind of equipment a greater mileage than gasoline fuel where the same amount of money is involved.

Many States are feeling the loss of revenue because of this condition. Diesel operated equipment is making rapid advancement and unless some action is taken by the States to maintain an equality between tax receipts and highway expenditures when greater expenditures are found necessary as time goes on some thought must be given to maintaining the same amount of revenue as would accrue were all equipment operated by gasoline. The association recommends that the respective State highway departments cause a study to be made of this situation that an equitable State tax be placed on users of Diesel fuels in motor transport.

### NAVIGABLE STREAM SURVEY

NO. 14. Many of the States have found it difficult to get an interpretation from the War Department as to when a stream is navigable. Many drawbridges have had to be built across existing waterways whereas the water itself was not deep enough to permit other than small boats to use them. Considerable money could be saved if closed structures could be built and bridge construction was not controlled by conditions calling for excessive heights and widths.

The association requests the War Department to make a determination in each case that a stream is or is not navigable and that usage to a large extent should determine this. The committee on standards of this association is asked to collect information as to the height, width and length of vessels using navigable streams that the information may be had in discussing with the War Department permits for bridges over streams navigable in fact. California is affected by this condition in several places in the northern part of the State.

### RESOLUTION OF THANKS

NO. 15. It is the proper and usual procedure at the adjournment of each convention of this association to express proper appreciation to those in whose State the convention is held. The following resolution was passed:

"WHEREAS, The American Association of State Highway officials is concluding its annual sessions after a most beneficial meeting made successful to a great extent by the untiring efforts of our president, secretary, other officials and the people of Santa Fe, the New Mexico State Highway Department, and the citizens of New Mexico in general; therefore, be it

## MAINTENANCE CREW DRAG STALLED AUTOS THROUGH HEAVY SNOW TO SAFETY

Grass Valley, California,  
November 24, 1934.

Mr. John W. Howe, Editor,  
Department of Public Works Bulletin.

Dear Sir: As you know, the opening of the Tahoe-Ukiah Highway three miles east of Emigrant Gap took place in a driving snow-storm. It might well be of interest to the readers of your magazine to have a picture of the work done by State Division of Highway forces.

For several days previous to the opening ceremonies the snow had been falling at the upper elevations of the Sierra Nevada. All night Saturday the Nevada City unit, under the direction of Fred Garrison, Maintenance Superintendent, had kept the Tahoe-Ukiah open to the junction with U. S. 40 near Cisco. After the dedication a caravan of perhaps 45 cars started back toward Nevada City and Grass Valley. When they reached the steep grade along the old section of road climbing out of Bear Valley many of the cars became stuck. Even with chains it was nearly impossible to make the climb and many had no chains.

Garrison took charge of the situation and right after darkness settled down, amid the heavily falling and drifting snow, with the aid of his willing and skilled State employees and their plows, the last of the stalled cars was hauled to the top of the grade and sent down the long Washington Ridge into Nevada City. Among the last cars to reach the top, and therefore in grave danger of being snowed in for the night, was that of Deputy Director of Public Works Edward J. Neron. Governor Merriam's car had been pushed to the top of the grade by a snow plow earlier in the afternoon.

We, who live in the high Sierra, recognize this as the type of work performed by the mountain divisions of our State's maintenance forces throughout each winter.

Very sincerely,

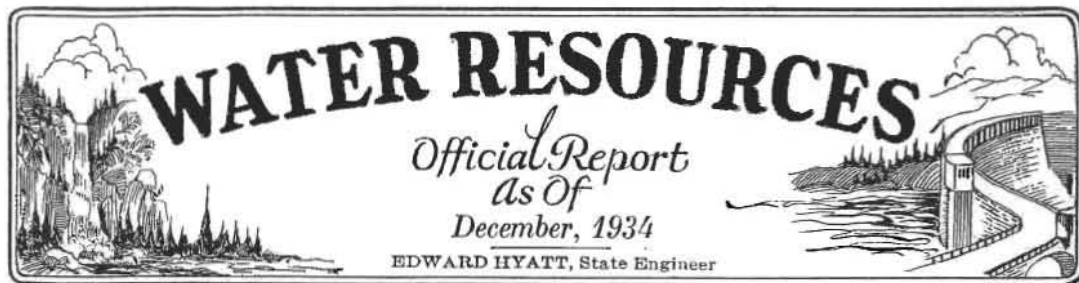
J. L. WOLFF,  
Chairman Committee on Arrangements.

### SLIDES MENACE NEW ROADS

Due to danger of slides, it has been necessary to close the uppermost four-mile link of Angeles Crest Highway in Los Angeles County. The five-mile link from the end of this road at Red Box to Mount Wilson will also remain closed until late February at least because of weather conditions, which might cause slides, and heavy construction work still in progress under direction of the United States Bureau of Public Roads.

*Resolved*, That this association express our hearty appreciation of the manner in which the various features of this annual convention have been carried out to His Excellency, A. W. Hockenull, Governor of New Mexico, the New Mexico State Highway Commission, the State Highway Engineer, and all those who assisted them in making this convention a success.





Governor Merriam has sent the State Engineer to Washington to confer with Federal officials concerning the early financing of the Central Valley water project. The Districts Securities Commission approved plans of a number of districts for refunding outstanding bonds through R. F. C. loans. A total of 71,391 man-hours of S.E.R.A. relief labor is reported to date on flood control projects. Dam applications and approvals, flood measurements and other activities of the Division are detailed in the monthly report of the State Engineer as follows:

**IRRIGATION DISTRICTS**

The regular semiannual meeting of the Irrigation Districts Association was held in Lindsay, California, October 12-13, 1934. Among the topics under discussion were the progress of refinancing irrigation districts, the redemption of tax sales, and the power problem.

*Districts Securities Commission.*

The matters coming before the Commission at its regular monthly meeting, held November 9th, were as follows:

**Corcoran Irrigation District.**—Approval granted of plan to refund its outstanding bonds through a loan from R.F.C.

**West Side Irrigation District.**—Request for approval of an expenditure of \$7,267.65 for lining with concrete certain district ditches, was referred to the State Engineer for report.

**Merced Irrigation District.**—Approval of expenditure of \$5,819 for installation of two drainage wells was granted.

**Jacinto Irrigation District.**—Plan to refund outstanding indebtedness through a loan from R.F.C. was given favorable consideration.

**Glenn-Colusa Irrigation District.**—Refunding plan approved through loan from the R.F.C.

**Cordua Irrigation District.**—Letter from bond counsel requesting action be taken rescinding certification of unsold bonds of the district's Second and Refunding issues. Favorable action taken to facilitate R.F.C. loan.

**Princeton-Codora-Glenn Irrigation District.**—Plan approved for refunding outstanding indebtedness through loan from the R.F.C.

**Paradise Irrigation District.**—Petition for approval of refunding bonds for certification was favorably acted upon.

**FLOOD CONTROL AND RECLAMATION**

*Maintenance of Sacramento Flood Control Project.*

During this period routine maintenance work has been carried on with a small force on the flood control project. The rains during the past week have brought some water into the Sutter By-pass and boards have been removed from all weirs. Repairs have been made to several of the by-pass structures and gates, and preparations are being made to blade certain portions of the roads on the levees. Work of protecting the west wing of Parks dam in the Sutter By-pass, near the southwest corner of District No. 1660, has been completed with the exception of placing the cobble revetment.

*Sacramento Flood Control Project.*

The recent rise in the Sacramento River has made it necessary for contractors to discontinue work on the Butte Slough outfall structure, and it is possible that work can not be resumed until spring.

*S.E.R.A. Relief Work.*

This office has been directing the activities of several S.E.R.A. projects sponsored by the State Reclamation Board and this Division, for clearing timber and brush from flood channels. Supervision, tools and, in some cases, transportation are furnished. During this period a total of 19,900 man-hours of relief labor has been utilized, an average of 186 men having been employed.

The total man-hours of S.E.R.A. relief labor worked to date is as follows:

	Man- hours
Federal Transient Service, upper Sutter By-pass .....	4,506
Federal Transient Service, Tisdale By-pass .....	564
Federal Transient Service, lower Sutter By-pass .....	13,620
S.E.R.A. Project No. 35-B14-27, American River .....	27,214
S.E.R.A. Project No. 58-B14-15, Feather River .....	18,053
S.E.R.A. Project No. 57-B14-4, Sacramento By-pass .....	1,602
S.E.R.A. Project No. 35-B14-40, Mokelumne River .....	5,832
<b>Total</b> .....	<b>71,391</b>

# 50,500 Cubic Yards Moved by Blast

(Continued from page 4)

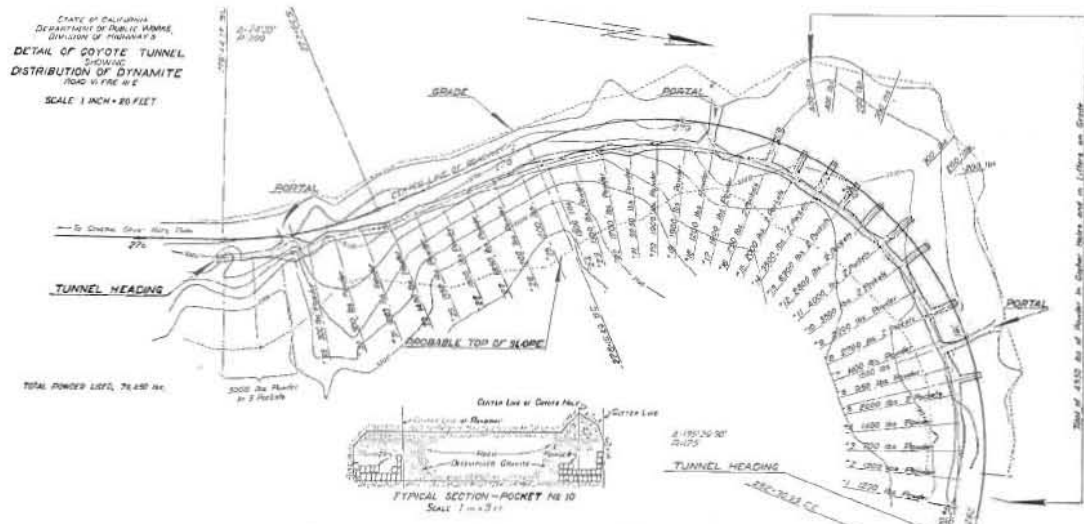
panded, providing the force required to move this large volume of solid rock. This backfill material was all transported by wheelbarrow into the tunnel from the west portal, the maximum distance being about 800 feet. During the time this work was in progress three shifts, of eight hours each, kept it going continuously.

Because of the large number of caps to be exploded, 78 in all, it was not considered advisable to use the regular hand operated blasting machine. A 1500-watt, 110-volt, direct-current, gasoline-driven electric generator was available, which was used for supplying the electric energy needed. The caps were wired in a graded parallel-series of 16-26-36

tion after the blast it was found that the westerly 200 feet had broken to a seam that was nearly vertical and it is expected when the cut is measured, it will be found that the material moved does not greatly exceed that of the planned section.

Owing to the nature and position of the terrain of this point considerable difficulty was experienced by the engineering party in making the surveys. A portion of the center line fell on a sheer vertical wall which made it impossible to run in the line or take cross-sections in the usual manner.

A traverse line was run over the point and below the roadway, and points were established where it was found possible. From



Dynamite Distribution Is Shown in this Coyote Tunnel Plan

which accounts for the entire 78 caps of the shot.

## 50,500 CUBIC YARDS MOVED

The distance covered by the shot, along the center line of the roadway, was between engineer stations 276+44 and 282+12 making a length of 570 lineal feet. The roadbed is 24 feet with standard widening on the curve and cut slopes of  $\frac{1}{2}$  to 1. The material in the planned section between these stations amounted to 50,500 cubic yards.

It was anticipated that there might be considerable overbreak, possibly bringing the total to 75,000 cubic yards. Upon examina-

tion these points the elevations and distances were secured by the most convenient method of triangulation, stadia or slope measurement. Nearly 1000 of these were necessary to work to the accuracy that was desired.

With the data obtained in this manner a map of 5-foot contour interval was prepared on a 10 feet to the inch scale and from this the cross-sections were platted, making it possible to compute the volume of the material to be moved.

Hubby—"The bank has returned that check."  
Wife—"Isn't that splendid! What can we buy with it this time?"—Answers (London).

## Tahoe-Ukiah Lateral Links Scenic Coast and Mountain Areas

(Continued from page 2)

the project's organization, Foote conceived the idea of the cross-state route which took sixteen years to complete.

This highway runs between Emigrant Gap, connecting with the main San Francisco-Reno Highway, and Ukiah on the Redwood Highway, bisecting the east and west side Pacific Highways at Marysville and Williams, and circling Clear Lake and Blue Lakes in Lake County.

The new highway unit just completed lies between Bear Valley and Emigrant Gap in Nevada County. It is 4.2 miles in length and the traveled way consists of a 20-foot width of asphalt—mixed rock. The project cost approximately \$238,000. Since 1916 the State has expended more than \$3,000,000 in grading, realigning and surfacing approximately 160 miles of the Tahoe-Ukiah lateral. There remains some mileage in Yuba and Nevada counties that requires widening, realigning and surfacing.

### THROUGH HISTORIC COUNTRY

In Lake County there remains a short sector of 2.5 miles near Upper Lake which is soon to be regraded and surfaced at the cost of \$95,000. Allocation of funds for this work already has been made as part of the \$7,932,206 Federal road funds granted California.

On the completed sections of the highway the road from shoulder is 24 feet wide and for the greater part of its length is surfaced to a width of 20 feet with bituminous crushed rock or oil sealed gravel. On the floor of the Sacramento Valley the paving is principally of concrete and of the same width.

Entering the new highway at its junction with Victor Highway, the motorist is confronted with a magnificent view of Lake Spaulding and from then on is afforded a galaxy of magnificent mountain scenery.

Nevada City and Grass Valley, through which the highway passes, are both imbued with romantic and historic interest which can not fail to lure the tourist. Proceeding westward the highway goes through the old ghost town, Rough and Ready, famed as a mining camp in California's early days. Next it passes through Smartville, another historic mining camp and then through the site of Timbuctoo, made famous by Bret

### RUBBER, IRON, SANDSTONE BLOCKS TRIED FOR PAVING

Information from Automotive-Aeronautics Trade Division, Bureau of Foreign and Domestic Commerce, Washington, D. C., states that Milan, Italy, is experimenting with a number of types of pavement, among them being rubber, cast iron and sandstone.

The rubber tiles or blocks have been laid in a section 100 feet long on a street with heavy vehicular and pedestrian traffic. The blocks are rubber composition, about 8 by 11 inches, and 8/10 of an inch thick, with dovetailed edges. They are laid on a thin asphalt cushion on a concrete base eight inches thick.

The cast iron blocks have been placed on a section 180 feet long and 40 feet wide. The base is concrete eight inches thick. The blocks are equilateral triangles with 8-inch sides, about 1½ inch thick at the edges. The under side is hollowed out and the top surface is roughened by small knobs. A block weighs about five pounds. The blocks are laid on a thin layer of cold powdered asphalt and hot tar is applied along the joints between blocks. A light covering of sand is placed on the surface.

On the same street with the cast iron blocks, a section was laid using blocks of hard sandstone (gritstone). The blocks are about 8 by four by 2 1/3 inches with a projecting lower edge which holds them about one-half inch apart. The joints are filled with asphalt filler. The appearance of the blocks is similar to glazed yellow brick.

Harte. All that remains of this romantic old mining community is the stone general store and Wells Fargo office, from which millions of dollars in gold dust were shipped in the early days.

### THROUGH COAST RANGE

Continuing west the highway passes through Marysville and Yuba City and across the floor of the Sacramento Valley through the fertile rice fields of Yuba, Sutter and Colusa counties, passing through the towns of Sutter, Colusa and Williams.

From Williams the highway again enters a mountainous section continuing through the Coast Range and over a summit from whence it drops to the level of beautiful Clear Lake.

At this point a junction permits the motorist either to continue over the Ukiah-Clear Lake-Tahoe Highway, which skirts the north shore of Clear Lake and the shores of Blue Lake en route to Ukiah, or to follow the highway to Lower Lake, which connects with the routing leading to Lakeport and the mountain resort section of Lake County, or with the Silverado Highway over Mt. St. Helena to the Napa Valley.

## Court to Clarify Sign Act Provision

(Continued from page 14)

der this procedure expensive to the State, since the cost of storing the signs and the clerical work involved is more costly than the actual removal work.

The survey, it will be observed, serves a double purpose. Not only does it provide for the legal enforcement of the law as it concerns nonconforming displays, but, upon its completion, reliable statistics will be on record, upon which to base estimates of revenue.

### MANY EXEMPTIONS CLAIMED

As previously mentioned, about 60 per cent of the advertising displays in the unincorporated areas are located upon the premises upon which the goods advertised are for sale. The law provides exemption for such displays. Many of the industrial advertisers, such as oil companies, tire companies and beverage distributors, have taken refuge in this provision, holding that advertising in the vicinity of a service station, road house or auto camp is therefore exempt. Loss of the regulation of such advertising automatically renders the act about 40 per cent effective.

Legal proceedings are now pending which will clarify this provision and it is possible that the greater portion of this advertising may be ruled to be "general advertising," subject to the permit provisions. Certainly these displays come within the act in all other respects except the "on premise" provision.

With this in view, the inspectors are recording every display which MAY come within the purview of the act and are also preparing violation citations for all which do not conform thereto. Upon the court's decision being made known relative to "on premise" displays, the interested parties will be advised to make compliance through the service of such citations as apply, if this course is indicated.

### AWAITING COURT'S DECISION

Mass submission of applications for permits by these larger concerns will finance the completion of the removal of nonconforming displays campaign now under way, which will otherwise be halted due to lack of funds. It is known that some of these companies have hundreds of applications prepared and are only awaiting the court's decision on the friendly suit relative to "on premise" displays before submitting them.

This survey will, of course, cover every public highway in the unincorporated area of the State. Thus a comprehensive census of advertising will be available and an efficient policing program may be maintained.

Fairly satisfactory results have been obtained during the first year of operation under the act considering the opposition encountered, the actual time during which strict enforcement has been possible, and the limited means at the disposal of the administrative body.

More than 10,000 applications for structure permits are on file and some 5600 for sign permits. Over 200 operators have obtained licenses to engage

in the business of outdoor advertising as defined by the act.

These figures will of course be augmented as the present campaign of enforcement progresses. Its effect is already noticeable in the increasing volume of applications for permits since its inauguration.

### PROGRESS OF SURVEY

The following tabulation shows the progress of the survey of all advertising displays which come within the scope of the act thus far:

State	U. S.	Route	From	To	Miles
3	99-E		Sacramento	Red Bluff	139
7	99-W		Sacramento	Red Bluff	134
7	99-50		Sacramento	Los Angeles	406
7	40		Oakland	Davis	85
5	50		Stockton	Hayward	70
2	101-W		San Francisco	San Jose	50
69	101-E		Oakland	San Jose	54
2	101		San Jose	Mexican Border	510
1	101		Sausalito	Ukiah	117
51	---		Santa Rosa	Jenner	30
8	---		Napa	Napa "V"	6
60	---		Ventura	Serra	120
79	---		Ventura	Castaic	40
68	---		San Francisco	San Jose (Bayshore)	50
55	---		San Francisco	Santa Cruz (Skyline)	80
56	---		San Francisco	Santa Cruz (Coast)	90
56	---		Santa Cruz	Carmel	50
117	---		Monterey	Salinas	18
118	---		Salinas	Castroville	9
12	80		San Diego	El Centro	127
Total mileage covered					2,185

Approximately 10,000 displays have been recorded. This includes possibly 2500 structures and signs which have already been permitted, since the survey only covers the areas over which traffic is heaviest and advertising most evident. About 40 per cent of the total have been cited as violations.

The cost of inspection is about 25 cents per display. The average cost of removals is \$2.

### INNUMERABLE VIOLATIONS FOUND

The maintenance forces have effected sign removals on some 400 miles of highway. This does not include the innumerable nonpermitted political announcements, tobacco and quack medicine advertisements, that have been removed and destroyed.

The pictures which illustrate this article were taken during removal operations. The owner of the structure shown in a gore caused by the realigning of the highway at a curve near the entrance to a town protested its removal, contending that discrimination was made, since several other advertising structures were unmolested in that vicinity. Fortunately, the photographer chose this structure, inadvertently supplying conclusive testimony in behalf of the State. This structure, it will be observed, is clearly a violation of the 300 foot prohibition provision of the act as it applies to intersections of right of way lines.

Thousands of dollars have been spent during road construction to preserve the scenery made accessible by our highways. A considerable sum is devoted each year to planting trees and shrubbery and general maintenance of the highway system to maintain a satisfactory appearance. Enforcement of the Outdoor Advertising Act provides the means of protecting this investment.

## Traffic Increase Forced Wider Road

(Continued from page 20)

In this connection mention should be made of a new bridge on this route across the spur railroad track leading to the Hercules Powder Company's magazine. This overhead bridge, which is now being completed, was constructed under a separate contract handled by the State Highway Bridge Department.

TOTAL COST \$281,000

The curvature on the new cutoff project, although somewhat sharper than present State highway standards for primary routes, is well superelevated to safely permit the passage of high speed traffic. A wide oiled shoulder was constructed on each side, making a traveled way 36 feet wide for the entire distance.

The highway project will cost approximately \$230,000 and the bridge over the spur railroad track to the Hercules Powder Company's plant will cost about \$51,000, or a total cost of \$281,000. This is being financed from the allocation of \$275,000 for incorporated cities on the Federal aid system in the budget of the 85th-86th fiscal years, augmented by an allocation of \$7,000 of State highway funds.

This project is the latest to be completed of a series of highway improvements on the Foothill Boulevard route between Pasadena and the Los Angeles-Sacramento route, officially designated as Route 4. One of the original State highway routes when the State Highway Department was formed in 1912, this road has steadily grown in importance since that date.

### MORE DIRECT ROUTE

The comparatively small amount of traffic in 1912 was carried over a series of connecting county roads which also served the local traffic of San Fernando, Tujunga, La Canada and neighboring communities.

When this route was incorporated in the original State highway system it was with the object of providing a more direct route to central California from Yuma, Imperial Valley, San Bernardino, Riverside, Redlands and all cities along Foothill Boulevard and in the San Gabriel Valley. Connection with Route 4 was made at that time in the business district of San Fernando.

The first step in the development of this route was the construction of a 15-foot concrete pavement from Tujunga to La Canada in 1915-17. During 1917-18 the same type of construction was carried on to San Fernando.

Bridges were constructed across the north and south branches of Big Tujunga River in 1921 so that by 1922 there was a 15-foot concrete pavement from San Fernando to La Canada with satisfactory bridge facilities. The alignment of existing county roads was improved at several locations under these contracts. The route followed an entirely new location from Sunland across Big and Little Tujunga rivers.

### TRAFFIC RAPIDLY INCREASED

Traffic on this route increased to such an extent that by 1925 it was necessary to widen the existing 15-foot pavement with a 2½-foot concrete shoulder on each side from San Fernando to La Canada. In the meantime the communities of Sunland, Tujunga, La Crescenta and La Canada grew into thriving towns, which caused a marked increase in local traffic between Sunland and La Canada.

Local traffic in La Crescenta was so dense that by 1927 a full width pavement of 62 feet between curbs was constructed through that town. This work was done under an assessment district. In 1929 a full width pavement was constructed through Tujunga on account of increased local traffic. This was handled as a cooperative improvement toward which the State contributed \$10,000.

By 1931 traffic on the more congested portions from Sunland to La Canada had become too heavy to be adequately handled by the existing 20-foot pavement.

Obviously the next logical step in the development of the route was to widen both roadbed and pavement between Sunland and La Canada, which was the most congested portion of the road. In the latter part of 1932 a contract was awarded for widening and improving of alignment from Verdugo Road at La Canada to Tujunga.

"How was it you broke your engagement with Evelyn?"

"Well, I only did to the engagement what it did to me!"—*Earth Mover*.

## \$700,000 Total Cost for Santa Barbara Cooperative Project

(Continued from page 6)

This project has involved several features, including two highway grade separations, two bridges over Mission Creek, a channel change of Mission Creek about 1100 feet long, and a large arch culvert at San Roque Creek.

### INVOLVED GRADE SEPARATION

In designing the route, which was chosen after careful consideration by both the highway engineers and officials of the city of Santa Barbara, special attention was given to the eliminating of traffic congestion, particularly at the Montecito grade separation at the east city limits and the intersection of the new route with the present route at the westerly end of the improvement, the latter being known as the Hollister Avenue braided traffic intersection.

The Montecito grade separation was made a part of this improvement, whereas the Hollister Avenue braided intersection remains for future development when traffic requirements demand such construction. However, right of way for the intersection was obtained as a part of the project.

A feature of the detailed construction was the use of Carpinteria asphaltic sand incorporated into the asphaltic concrete surface. By the production of such material locally it was possible to use more local labor on the project. This material is a sand heavily impregnated with a natural asphalt, particularly adapted to asphaltic pavement construction.

TOTAL COST \$700,000

The length of the project is 5.9 miles, of which nearly all is over new right of way. In obtaining the right of way it was necessary to move several buildings, relocate railroad service tracks and move one large lumber yard. The total cost of the project is approximately \$700,000.

The project has been financed through State highway funds, including the  $\frac{1}{4}$  cent gas tax fund, the State cooperative fund, and money obtained through the National Recovery Act.

Neighbor—"Where is your brother, Freddie?"

Freddie—"He's in the house playing a duet, I finished first."—*Arcanum Bulletin*.

## Large Delegation of California Engineers Attend Conference

(Continued from page 16)

### ASPHALT INSTITUTE AND ASPHALT AND ROAD OIL PRODUCERS

Don Bourne, Asphalt Institute, Washington; L. Mittelman, Chief Chemist, and Ted Johnston, Asphalt Salesman, Associated Oil Co. of California; J. M. Hartong, American Bitumuls Co., California.

Albert E. Clark, Insp. Chemist, Gen. Pet. Corp., California; R. O. Steck, Sales Engr., Richfield Oil Co., California.

Representing the Shell Oil Company of California were: P. A. Hahm, Chem. Engr.; Raymond Harsch, Asst. Mgr., Asph. Dept.; C. V. Kiefer; J. F. McSwan, Mgr. Asph. Dept.; Hector J. Pratt, R. S. Russell and L. T. Snyder.

Representatives of the Standard Oil Company of California included: J. A. Blood, Mgr. Asphalt Dept.; Geo. D. Easter, W. N. Morse and C. F. Ramey.

Union Oil Company of California representatives were: C. F. Adam, Supt. Lub. and Asph. Div.; L. B. Beckwith, I. R. Laidlaw and F. P. Smith, Jr., of the Sales Department.

Clint Fulmer, Mgr. Asph. and Road Oil Dept., and G. I. Kirby, Chief Chemist, represented the Utah Oil Refining Co. of Utah.

### CALIFORNIA DIVISION OF HIGHWAYS

The delegation from headquarters offices in Sacramento included N. R. Bangert, Asst. Mtce. Engr.; T. A. Bedford, Asst. Eng. Surveys and Plans; H. G. Bennett, Asst. Phys. Testing Engineer; Wm. Bock, Asst. Office Engr.; L. V. Campbell, Engr. City and Coop. Projects; F. H. Cushman, Asst. Office Engr.; R. W. Gillies, Sr. Lab. Aid; F. J. Grumm, Engr. Surveys and Plans; Geo. Hellesoe, Asst. Maint. Engr.; F. N. Hveem, Assoc. Testing Engineer; Wm. J. Hoskin, Jr. Phys. Testing Engineer; J. M. Kane, Asst. Office Engineer; F. T. Maddocks, Sr. Phys. Testing Engineer; Stewart Mitchell, Const. Engr. Bridges; N. W. Pratt, Asst. Engr. City and Coop. Projects; J. H. Obermuller Asst. Engr. Surveys and Plans; C. S. Pope, Constr. Engineer; O. J. Porter, Assoc. Phys. Testing Engineer; R. F. Reynolds, Asst. Office Engr., Central Office; R. L. Richardson, Materials and Research Laboratory; E. J. Saldine, Asst. Office Engineer; W. A. Smith, Asst. Maint. Engineer; J. G. Standley, Prin. Asst. Engr.; T. E. Stanton, Materials and Research Engineer; G. A. Tilton, Jr., Asst. Constr. Engr.; R. H. Wilson, Office Engineer; Geo. R. Winslow, Asst. Const. Engr.; E. Withycomb, Asst. Constr. Engr., and C. F. Woodin, Asst. Maintenance Engineer of Sacramento.

Division of Highways representatives from out of town included R. S. Badger, Dist. Constr. Engr.,



**CALIFORNIA OFFICE ENGINEERS**—Back row, left to right—J. M. Kane, A. D. Griffin, H. L. Cooper, B. W. Booker, A. Coonrod, William Bock, R. F. Reynolds, E. J. Saldine, F. H. Cushman. Front row, E. J. Bassett, Ira G. Thomas, Guy McKinney, C. F. Waite, C. J. Temby, C. P. Sweet, J. C. More, R. H. Wilson, Headquarters Office Engineer.



**CALIFORNIA CONSTRUCTION ENGINEERS**—Front row, left to right—G. A. Tilton, G. R. Winslow, H. M. Hansen, C. M. Butts, C. S. Pope, E. Withycombe, A. N. George, E. R. Green. Rear row—C. Cleman, E. G. Poss, J. B. Hodges, P. R. Lowden, E. M. Cameron, R. L. Beuthel, R. S. Badger, J. M. Lackey.

E. Evers, Dist. Maint. Engr., and C. F. Waite, Dist. Office Engineer, from Dist. VI, Fresno; E. J. Bassett, Dist. Office Engr., M. C. Fosgate, Dist. Maint. Engr., J. B. Hodges, Dist. Const. Engr., and P. R. Lowden, Convict Camp Engr., from Dist. II, Redding.

From District VII, Los Angeles, came W. S. Bennett, Jr., Testing Engineer; A. N. George, Dist. Const. Engr.; A. D. Griffin, Asst. Dist. Office Engr.; J. M. Lackey, Asst. Dist. Const. Engr.; S. C. McCulloch, Asst. Test. Engr.; J. C. More, Dist. Office Engineer; E. S. Gripper, Res. Engr.; Fred A. Read, State P.W.C. Engineer, and I. S. Voorhees, Dist. Maint. Engr.

San Diego, District XI, was represented by R. L. Beuthel, Dist. Const. Engr.; Earl E. Sorenson, Dist. Maint. Engr., and Ira G. Thomas, Office Engineer.

B. W. Booker, Dist. Office Engr.; C. E. Bovey, Dist. Maint. Engr., and C. M. Butts, Dist. Constr. Engr., represented Dist. X, Stockton.

E. M. Cameron, Const. Engr.; Ches. P. Sweet, Dist. Office Engr.; J. F. Taylor, Maint. Engr., and R. L. Thomas, Dist. Maintenance Engr., came from Dist. I, Eureka.

C. Clemon, Dist. Const. Engr.; J. L. Piper, Dist. Maint. Engr., and C. J. Temby, Dist. Office Engr., from Dist. III, Marysville.

A. Coonrod, Office Engineer, and Jos. E. Stanton, Dist. Maint. Engr., Dist. VIII, San Bernardino.

L. E. McDougal, Dist. Maint. Engr.; H. L. Cooper, Acting Office Engineer, and E. R. Green, Dist. Const. Engr., Dist. V., of San Luis Obispo.

Guy McKinney, Acting Dist. Office Engineer, and H. M. Hanson, Act. Dist. Const. Engr., Dist. IX, Bishop.

District IV, San Francisco, was represented by R. P. Duffy, Dist. Maint. Engr., Don Miller, Mgn. Engineer; John F. Nelson, Junior Engineer-General Const. and E. J. Ross, Dist. Const. Engineer, and E. R. Hoffman, Asst. Phys. Test. Engr.

# River Project for S. E. R. A. Labor

(Continued from page 23)

An S.E.R.A. project, sponsored by the State Reclamation Board, has been approved for clearing the Feather River overflow in Yuba County, providing for 45,920 man-hours. This work will complete clearing of the channel on the east side of the Feather River from Bear River to the upper side of Starr Bend.

## Flood Measurements and Gages.

Preparations are complete for the operation of the gages maintained during the winter season by this office. Last summer the Bristol gage installation at West Butte was destroyed by fire, and in its stead a new installation consisting of a pipe well and Stevens Type "E" recorder is being placed on the concrete abutment of the Mawson bridge in the Butte Slough By-pass.

## WATER RIGHTS

Thirty-three applications to appropriate were received during October; 12 were denied and 16 were approved. In the same period 6 permits were revoked and 12 licenses were issued.

## ADJUDICATIONS

*South Fork Pit River (Modoc County)*—The Superior Court of Modoc County entered a decree on October 30, 1934, in the case of W. E. Armstrong, et ux. vs. Frank McArthur, et al. There are 181 divisions serving 20,400 acres of irrigated land on 37 ranches involved in this proceeding. The aggregate of the adjudicated rights is 260.8 cubic feet per second. The decree was based upon a stipulation for judgment.

## SACRAMENTO-SAN JOAQUIN WATER SUPERVISOR

During the past month, practically all Sacramento River irrigation diversions were finished for the season and the flow of the river at Sacramento has varied from 5000 to more than 7000 second-feet, the latter resulting from the rainfall early in November. At the same time the flow of the San Joaquin River near Vernalis increased to about 1500 second-feet.

Due to the increased river flow there has been a considerable recession of the salinity in the Delta so that the sampling at a number of upper stations was discontinued. Lower stations will be maintained until the salinity has dropped to normal winter conditions and sixteen key stations on the upper bays and in the Delta are maintained permanently. The following tabulation compares the salinity at Bay and Delta stations on November 10th, 1924, 1931, and 1934:

## Comparison of Salinity at Bay and Delta Stations on November 10, 1924, 1931 and 1934

	Salinity in parts of chlorine per 100,000		
	1924	1931	1934
Point Orient .....		1785	1740
Bullshead Point .....		1360	1240
Bay Point .....		1155	1060
O and A Ferry.....	456	780	520
Collinsville .....	206	590	480
Emmaton .....	26	289	136
Rio Vista Bridge.....	6	132	12
Liberty Ferry .....	9	39	8
Reclamation District 2068			
Intake .....		127	44
Antioch .....	176	560	180
Jersey .....	98	300	210
Ward Landing .....		163	60
King Island Pump.....	82	167	60
Rindge Pump .....	48	107	28
Middle River P.O.....	136	212	38

## DAMS

During the past month the following applications have been filed:

1. Application for approval of the plans and specifications for the construction of the Patterson dam, a collapsible timber structure in the San Joaquin River near Patterson, San Joaquin County. The dam is to have a height of 11 feet, storing 1783 acre-feet and costing \$14,000.

2. Application for approval of plans and specifications for the enlargement of the Hall Canyon dam, an earthfill structure located in Ventura County. The work consists of a raise in crest elevation of approximately 5 feet, the construction of a new concrete spillway and a concrete diversion channel from a diversion dam above. The work is estimated to cost \$15,000.

3. Repair application for the raising of the crest and enlargement of the spillway of the Duncan earthfill dam in Modoc County.

4. Repair application for refacing and strengthening the upstream cribs and bulkheads of the Gerig crib and earth dam, located on the Pit River in Lassen County.

Applications approved during the past month are as follows:

1. November 7, 1934, construction application of the Almaden dam of the Santa Clara Water Conservation District, located on Almaden Creek in Santa Clara County. This will be an earthfill structure 97 feet high, storing 2000 acre-feet and costing \$210,000.

2. November 17, 1934, construction application of the Stevens Creek dam of the Santa Clara Valley Water Conservation District located on Stevens Creek in Santa Clara County. This will be an earthfill dam 110 feet high storing 4000 acre-feet and costing \$320,000.

3. November 14, 1934, enlargement of the Hall Canyon dam described above.

(Continued on page 32)





*Photo Courtesy of Los Angeles Times*

**NEW CUT-OFF TO SEA**—P. A. Stanton, State Highway Commissioner representing Governor Merriam, is shown cutting ribbon, at dedication exercises conducted on the new bridge spanning Santa Ana River. The new bridge and the new Harbor Boulevard were formally opened. Left to right: John C. Mitchell, Supervisor Second District; Miss Jewel Cawthon as Miss Anaheim; Commissioner Stanton; Miss Mary Jean Mason as Miss Newport and George Jeffrey, Supervisor Fifth District.

## *Stanton Dedicates Bridge and Road*

Harbor Boulevard, newest addition to the State's highway system in Orange County and the new concrete Buaro Bridge which spans the Santa Ana River, about five miles southwest of the city of Santa Ana were officially dedicated recently when State, county and city officials and private citizens united in ceremonies on the bridge.

Residents of the citrus and oil districts are thus brought three miles closer to the people of the harbor district of Newport Bay.

### STANTON CUTS RIBBON

P. A. Stanton, State Highway Commissioner, spoke for Governor Merriam in dedicating the new projects. The highway was opened when he cut a ribbon and two beautiful maidens joined hands in a bond of friendship.

Miss Jewel Cawthon of the Anaheim Union High School, representing the north, was

introduced by Secretary George Reid of the Anaheim Chamber of Commerce. Miss Mary Jean Mason of the Newport Harbor Union High School, representing the south, was introduced by Secretary Harry Welch of the Newport Harbor Chamber of Commerce.

Supervisor George Jeffrey christened the project with water from the Pacific Ocean and Supervisor John Mitchell christened with a bottle of water from the Santa Ana River.

The bridge is located on a feeder highway in Orange County between Anaheim on State Route 2 and Newport Beach on State Route 60. It has a total length of 376 feet with eight 47-foot spans. It is a steel beam structure with a 30-foot roadway and one 4-foot sidewalk. The total cost was \$42,848.

The bridge with about one and one-half miles of new road closes a gap in a through route for farm trucking and recreational traffic to harbor and beaches.

## Highway Bids and Contract Awards Made in October

**LOS ANGELES COUNTY**—Between west city limits and Beverly Blvd., Los Angeles, 6.6 of a mile grading, paving with asphalt concrete. District VII, Route 69, Section E. J. McClain, Redondo Beach, \$80,379; Southern California Roads Co., Los Angeles, \$86,026; C. O. Sparks, Los Angeles, \$86,394; Oswald Bros., Los Angeles, \$86,795; Griffith Co., Los Angeles, \$91,515. Contract awarded to Los Angeles Paving Co., Inc., Los Angeles, \$77,246.50.

**LOS ANGELES COUNTY**—Between Loma Ave. and Hathaway Ave., about 9.5 mile, to be graded and paved with Portland cement concrete. District VII, Rt. 60, Sec. L. Beh. Griffith Co., Los Angeles, \$55,882; J. L. McClain, Los Angeles, \$60,648; Geo. R. Curtis Pav. Co., Los Angeles, \$68,934; B. G. Carroll, San Diego, \$61,028; Basich Bros., Los Angeles, \$61,897; Match Bros., Elsinore, \$65,788; Byerts & Dunn, Los Angeles, \$66,814; C. O. Sparks, Los Angeles, \$68,952. Contract awarded to Sully-Miller Construction Co., Long Beach, \$54,293.50.

**LOS ANGELES AND SAN BERNARDINO COUNTIES**—Between 5½ miles east of Llano and Camp Cajon, 6.6 miles grade and treat with fuel oil and bituminous surface treatment. District VIII, Route 59, Secs. G and A. Sharp & Fellows Constr. Co., Los Angeles, \$28,063; C. O. Sparks, Los Angeles, \$30,739; United Concrete Pipe Corporation, Los Angeles, \$32,590. Contract awarded to Geo. Herz & Co., San Bernardino, \$24,779.60.

**MARIN COUNTY**—Between Greenbrae and Alto, about 0.3 mile. Slides to be removed. District IV, Route 1, Sec. C. A. Teichert & Son, Inc., Sacramento, \$46,250; Healy-Tibbitts Construction Co., San Francisco, \$44,450; Young & Son Company, Ltd., Berkeley, \$49,250; Peninsula Paving Company, San Francisco, \$39,500; D. McDonald, Sacramento, \$30,000; Hanrahan-Wilcox Corporation, San Francisco, \$29,750; Rocca & Caletti, San Rafael, \$44,250; Larsen Bros., Sacramento, \$58,250; Piombo Bros. & Co., San Francisco, \$39,875; F. J. Main, Fairfax, \$61,750; Granfield, Farrar & Carlin, San Francisco, \$32,750. Contract awarded to Union Paving Co., San Francisco, \$29,750.

**PLACER COUNTY**—In Roseville from Church St. to northerly city limits, 0.6 mile to be surfaced with bituminous treated crushed gravel or stone. District III, Route 3, Sec. Rsv. Claude C. Wood, Stockton, \$7,844; Pacific States Construction Co., San Francisco, \$10,733; R. R. Carlson, Vallejo, \$3,303; Hemstreet & Bell, Marysville, \$9,222; A. Teichert & Son, Inc., Sacramento, \$8,062; Lee J. Immel, \$9,894. Contract awarded to T. M. Morgan Paving Co., Loomis, \$7,316.20.

**PLUMAS COUNTY**—Between Rock Creek and Storrie, about 2.5 miles to be graded. District II, Route 21, Sec. A. Young & Son Company, Berkeley, \$158,184; Granfield, Farrar & Carlin, San Francisco, \$166,319; D. McDonald, Poulos & McEwen, Sacramento, \$168,242; A. Teichert & Son, Inc., Sacramento, \$168,769. Contract awarded to Peninsula Paving Co., San Francisco, \$152,625.80.

**SAN DIEGO COUNTY**—Approaches to Escondido Creek bridge, about 0.6 mile to be graded and surfaced with bituminous treated crushed gravel or stone. District XI, Route 2, Sec. A. Geo. J. Bock & Son, Los Angeles, \$47,673; Wm. C. Horn Co., Pomona, \$51,236; Griffith Corp., Los Angeles, \$53,689; C. O. Sparks, Los Angeles, \$55,281; Y. R. Dennis Construction Co., San Diego, \$56,005; Daley Corp., San Diego, \$57,581; Walter Trepte, San Diego, \$58,161. Contract awarded to Sharp & Fellows Constr. Co., Los Angeles, \$42,807.75.

**SONOMA COUNTY**—Furnish and apply fuel oil to existing road bed, between Jenner and Mendocino County line, about 39.4 miles. District IV, Route 56, Secs. C, D, E. C. F. Frederickson & Sons, Lower Lake, \$4,421; Hayward Building Materials Co., Hayward, \$5,994; Chas. Kuppinger, Lakeport, \$4,329; E. A. Forde, San Anselmo, \$5,272. Contract awarded to Helwig Construction Co., Sebastopol, \$1,236.50.

I paid a hundred dollars for that dog. He's part collie and part bull.

Which part is bull?

That part about the hundred dollars.

### CLUB SENDS THANKS FOR EFFICIENT SAFETY WORK

Stinson Beach, Cal., Nov. 21, 1934.

Mr. T. H. Dennis,  
State Maintenance Engineer,  
Sacramento, California.

Dear Sir: Some months ago, we expressed, for this club and our community, appreciation for the white "traffic line" placed on the highway to Stinson Beach.

We made no audible comment later, when some of the natural barriers along the road—tree trunks, rock faces, culvert basins—were painted white to define the edges, but each time we drove in a fog, we registered, mentally, a prayer of thanks.

Now that white posts are being placed along the most dangerous curves, we write again that you may know we are grateful.

We would also commend the efficiency of the "road crew." Wednesday's rain brought down from the cliffs considerable dirt and rock but it was all cleared Thursday. Sundays much heavier rain brought down tons of rocks, making the inside lane impassable for some distance, along several miles. They were all cleared away Monday.

Again we say, "Thank You."

THE PROGRESSIVE CLUB OF  
STINSON BEACH.

(Signed) W. B. Marble, President.

### WATER RESOURCES

(Continued from page 30)

4. October 30, 1934, repair application of the Gerig dam, described above.

### WATER RESOURCES

#### South Coastal Basin Investigation.

The text of Bulletin 45, the subject of which is the alluvial geology and underground basin capacity of this area, has been completed and is now in the hands of the State Printer for publication. Other work on the South Coastal Basin investigation is continuing along routine lines.

#### Central Valley Project.

Additional data are being prepared upon the financial and economical aspects of the project for presentation to the Federal Public Works Administration in connection with the application made by the Water Project Authority of California for a loan and grant for the construction of the project. This matter has received the serious consideration of Governor Merriam and the Director of Public Works and only recently the State Engineer was authorized to proceed to Washington as soon as possible for conferences with United States officials concerning the early Federal financing of the project.

Respectfully submitted.

EDWARD HYATT,  
State Engineer.

# 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

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 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

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 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

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 J. H. SKEGGS, District IV, San Francisco  
 L. H. GIBSON, District V, San Luis Obispo  
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 E. Q. SULLIVAN, District VIII, San Bernardino  
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 E. E. WALLACE, District XI, San Diego  
 General Headquarters, Public Works Building,  
 Eleventh and P Streets, Sacramento, California

### DIVISION OF WATER RESOURCES

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 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  
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 CLARENCE W. MORRIS, Attorney, San Francisco  
 FRANK B. DURKEE, General Right of Way Agent  
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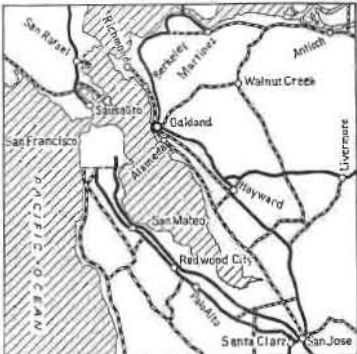
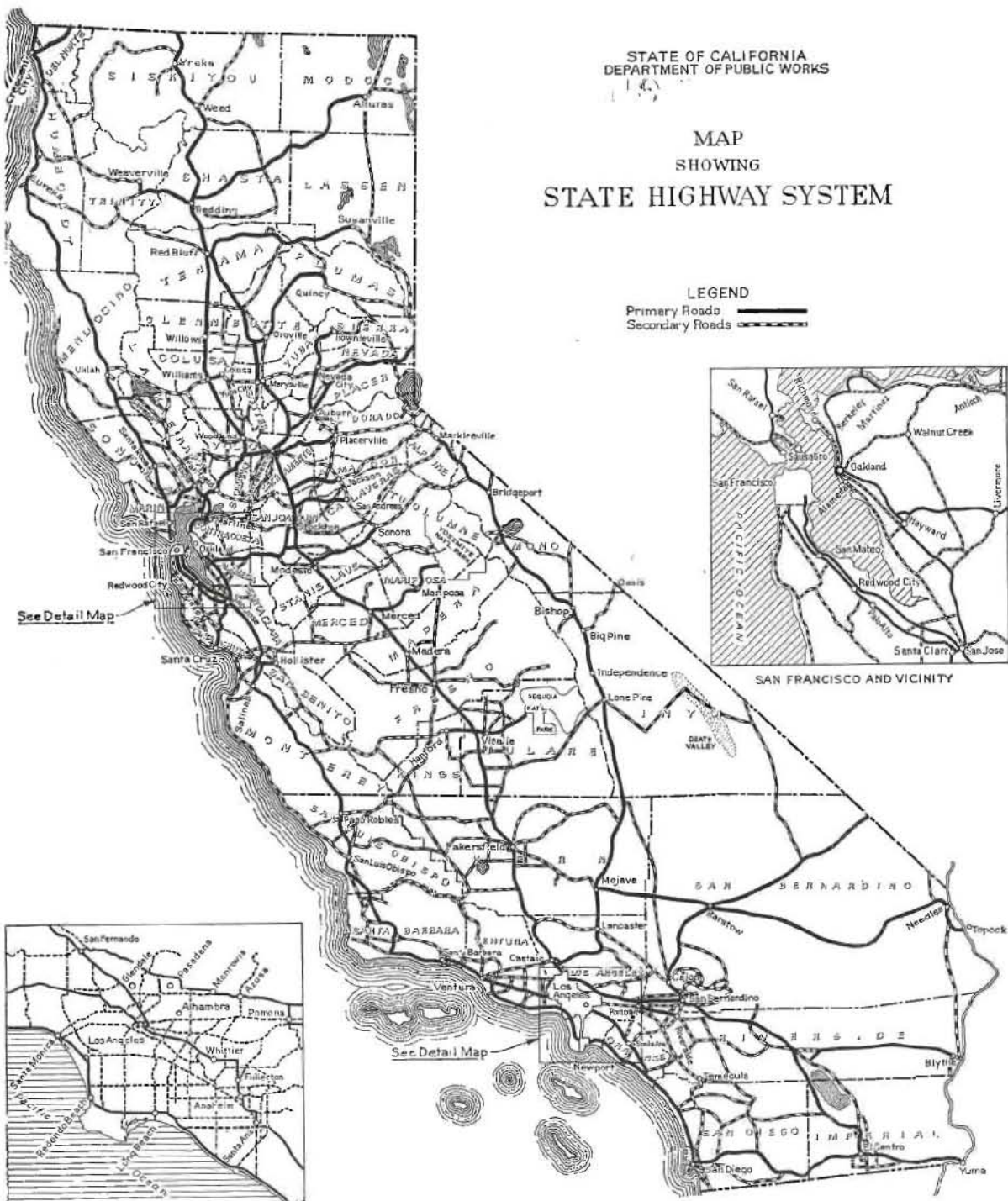
### DIVISION OF PORTS

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

STATE OF CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS

MAP  
SHOWING  
STATE HIGHWAY SYSTEM

LEGEND  
Primary Roads —————  
Secondary Roads - - - - -



SAN FRANCISCO AND VICINITY



LOS ANGELES AND VICINITY

See Detail Map

See Detail Map