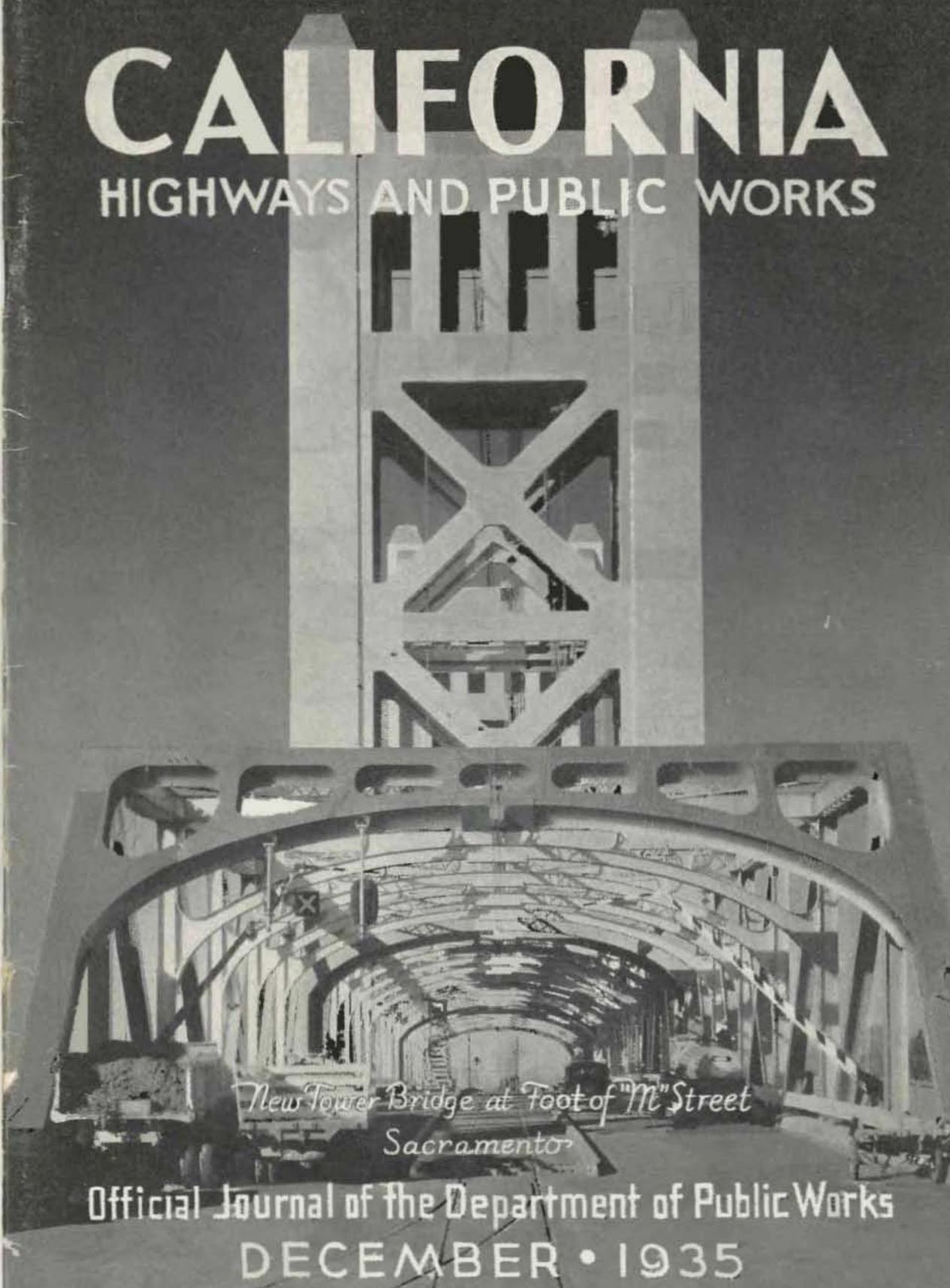


CALIFORNIA

HIGHWAYS AND PUBLIC WORKS



*New Tower Bridge at Foot of "M" Street
Sacramento*

Official Journal of the Department of Public Works
DECEMBER • 1935



Table of Contents

	PAGE
8,000,000 Man-Hours Work Provided by 99 Highway Projects Put Under Way in Month.....	1
<i>By Earl Lee Kelly, Director of Public Works</i>	
Half Moon Bay Relocation Reduces Curves and Distance.....	2
<i>By A. W. McCurdy, District Office Engineer</i>	
Views of Old and New Half Moon Bay Highway.....	3
State Snow Fighters Keeping 4000 Miles of Highway Open.....	4
<i>By T. H. Dennis, Maintenance Engineer</i>	
Pictures of State Snow Removal Equipment.....	5
Charter Way Grade Separation at Stockton a \$400,000 Project.....	6
Illustration of Charter Way Under Pass.....	7
Transportation Must Look Forward in Cooperation.....	8
<i>By T. H. MacDonald, Chief, U. S. Bureau of Public Roads</i>	
Vacaville-Fairfield Relocation Abolishes 17 Curves.....	10
<i>By R. E. Pierce, District Engineer</i>	
Pictures of Existing Vacaville-Fairfield Highway.....	11
Group Picture at Bid Opening and Map of Projects.....	13
Roadside Landscaping Program for 1936.....	14
<i>By H. Dana Bowers, Landscape Engineer</i>	
Pictures of Completed Roadside Beautification Projects.....	15
Building Bridges and Tunnels on Feather River Highway.....	20
<i>By F. W. Haselwood, District Engineer</i>	
Illustrations of Feather River Highway Construction Operations.....	21
Highway Moving Day—A Poem— Illustrated.....	23
<i>By Gladys Craig Potter</i>	
Monthly Water Resources Report of State Engineer.....	24, 25
Yerba Buena Tunnel Core Completely Removed.....	26
Illustrations of Yerba Buena Tunnel and Core Removal.....	27
Old Timers' Card Competition.....	29
Highway Bids and Awards for November.....	31



8,000,000 Man Hours Work

Provided for Californians this Winter

On 99 Highway Projects

Put Under Way During Past Month

By EARL LEE KELLY, Director of Public Works

THE past month has seen the accomplishment of the largest task ever undertaken by the Division of Highways in putting under way in California the two Federal relief programs designed to provide employment through highway construction and improvement.

From the Federal Emergency Relief funds authorized by Congress, allocations to California under the WPA for these two programs amounted to approximately \$15,234,300, of which \$7,747,900 was for U. S. Works Program Highway projects and \$7,486,400 for U. S. Works Program Grade Separation projects.

Required approval by the various Federal agencies of the projects included in these two programs was obtained about the first of October. At this time, the Division of Highways set about immediate preparation of plans and specifications of approved projects prior to the publishing of advertisements calling for bids.

Through the sustained and loyal efforts of the entire State highway organization, the work of advancing projects has progressed so rapidly, that since November 1, 99 construction projects estimated to cost about \$13,561,800 have been awarded, are now pending award or are advertised for bids.

These 99 projects include 45 U. S. Works Program Highway projects, 35 U. S. Works Program Grade Separation projects and 19 projects from the regular budget of the Division of Highways for the current biennium.

It is estimated that the 45 Federal relief highway projects will provide employment to the extent of 3,402,000 man hours, the 35 grade separation projects will provide 3,085,000 man hours, and the 19 projects being financed under the regular State highway budget will provide 1,504,000 additional man hours making a total of nearly eight million man hours of work just opening for California labor. Were this figure reduced to jobs of an average of six months duration, it would mean work for over 9,000 men for that period.

Never before in the history of highway construction in California has such a volume of work been placed under way

within so short a space of time.

EMPLOYMENT FOR THOUSANDS

With this construction drive under way, it is anticipated that the unemployment relief rolls of most of California's counties will be reduced to a minimum and the coming months will see the return of a degree of

(Continued on page 12)



EARL LEE KELLY

Relocation of Half Moon Bay Highway Reduces Grades, Curves and Distance

By A. W. McCURDY, District Office Engineer

HUNDREDS of years ago, the Indians of the valley now called the Santa Clara Valley trekked through a low saddle of the Coast Range of mountains to their fishing grounds on the Pacific Ocean.

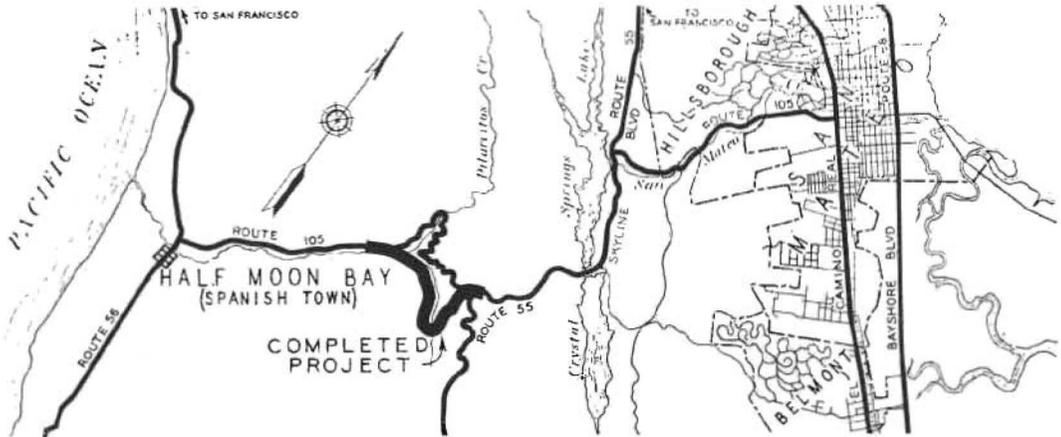
Later, the padres, after establishing their churches in the towns of San Jose, San Mateo and San Francisco, cut across by way of the Indian trails to the west, and established still another church in a fertile little valley overlooking the mighty waters of the ocean. This town was then known as Spanish Town, but was later named Half Moon Bay, after the shape of the beautiful bay upon which it looks.

The trail proved a popular one, gradually

pressed into less than one-half of the distance.

So steep was the hill section of the old road that when the stage from Half Moon Bay arrived at the foot of the hill, the able-bodied passengers were invited to get off and walk for about one-third of a mile across the north branch of the Pilarcitas Creek and up the steep hillside to meet the stage again after it had slowly traveled almost two miles around the various gulches, thus giving the horses some relief.

As the demands of traffic increased, the road became an important lateral between the El Camino Real, Skyline Boulevard and the highway adjacent to the ocean, and was improved



assuming importance both for transportation of crops which grew so luxuriantly in the Half Moon Bay Valley, and as a short cut to the bay where small vessels could approach close to the shore.

But in those days no thought was taken of the future, and the automobile had not even been dreamed of; so the easiest passage was adopted, and the trail from the saddle of the mountains westerly followed the northerly side of the Pilarcitas Creek Canyon.

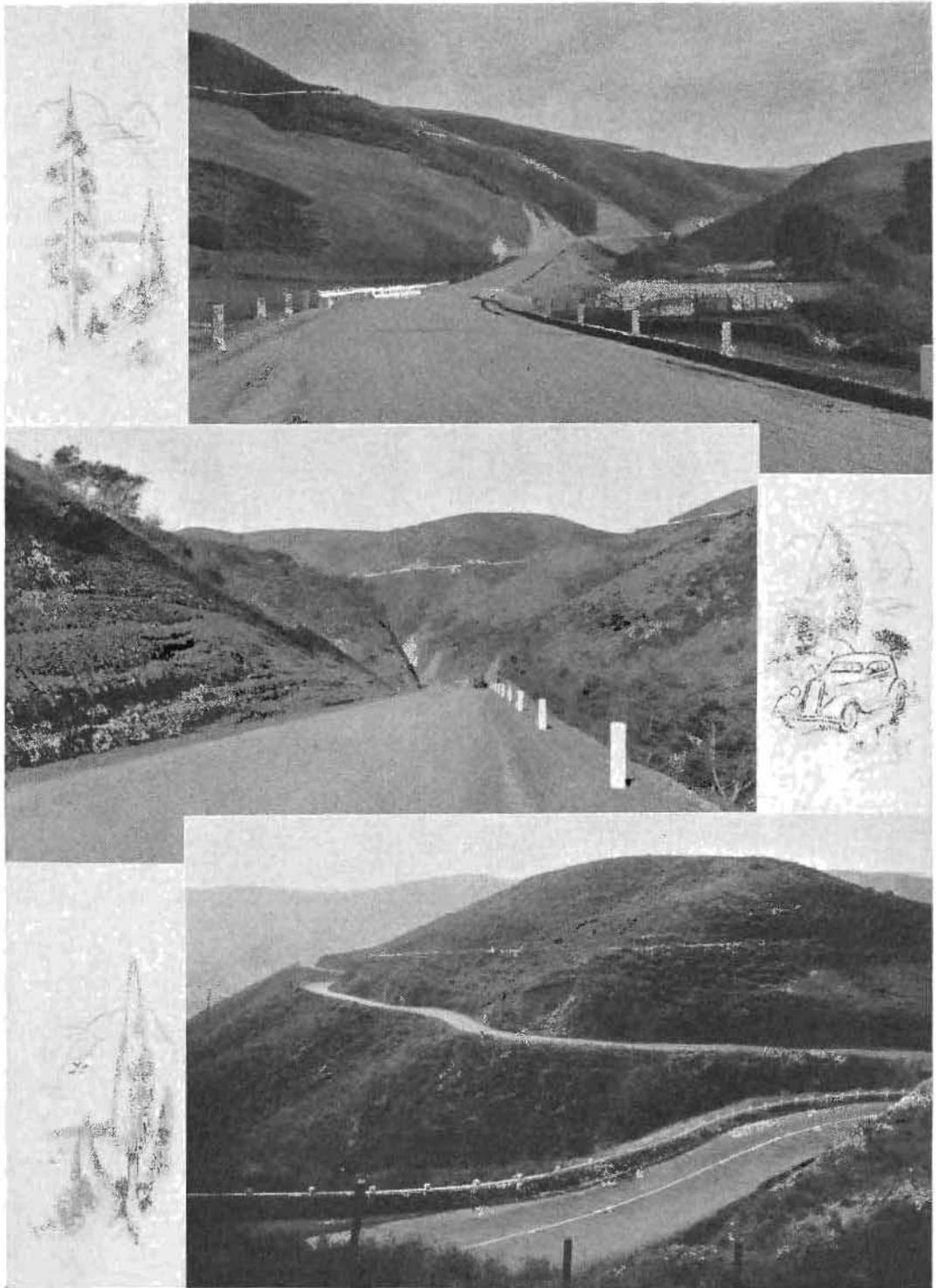
This side of the canyon was cut up by a number of deep and long gorges, but allowed a quick drop to the head of the valley, and being on the sunny side, was dryer and warmer for travel. The result was that almost the entire climb from the valley was com-

pleted by local authorities as far as possible. On account of the roughness of the easterly section adjacent to the saddle, it was soon found that in order to obtain good alignment and grades, very expensive highway work was required.

San Mateo County then paved this section from Half Moon Bay to the foot of the hill with portland cement concrete, but left the remainder as a macadam road until finances would allow improvement.

During the year 1933 the legislature incorporated into the State Highway System this road from San Mateo to Half Moon Bay. The apportionment of Federal funds for highway work in 1935, together with State Highway funds, provided the desired opportunity

(Continued on page 18)



THROUGH THE HILLS to Half Moon Bay goes the new State highway instead of around the sides of steep gorges on stiff grades. The two upper pictures show the new highway and glimpses of the old line. At bottom is a view of the winding dangerous old road of many curves.

State Snow Fighters Will Keep Open 4,000 Miles of Highway in 42 Counties

By T. H. DENNIS, State Maintenance Engineer

DURING a normal winter season in California, snow is removed on 3,000 miles of state highways. This mileage is distributed over forty-two of the state's fifty-eight counties. Unusual storms may, however, expand this mileage to 4,000 miles, and leave in their wake some 11,000,000 cubic yards of snow which must be removed without interrupting the traffic. It is apparent that such general distribution and magnitude of snowfall requires efficient organized effort for its removal and the Division of Highways is prepared to do a thorough job this winter.

Snow removal is usually limited to main traffic routes, important interstate connections, and recreational roads, where the traffic developed justifies the added expense.

TRAFFIC CONTROL MEASURES

Snow removal work carries with it a very definite responsibility for the proper protection of traffic. It is the view of those in charge that if an open road is advertised, it must be as safe as conditions will permit. With this in mind, arrangements are made for the placing of hazardous sections of road under control. This phase of the work is handled in cooperation with the California Highway Patrol.

Whenever there are icy conditions, motorists are not permitted to enter the control area unless the vehicles are equipped with skid chains. Likewise, during periods when snow is falling heavily or there is a strong wind, with consequent low visibility and danger of temporary blockade, traffic is held up entirely until conditions are favorable for safe passage.

This control is a part of the routine work on the Donner Summit section of U. S. 40 and between Bishop and Bridgeport on State Route 23. Controls are placed in operation at other points as the need arises.

One of the greatest problems in recreational areas where snow sports are held is the lack of parking space. As a result, when sudden storms occur, snow equipment is often blocked by locked cars parked along the roadway. This condition might easily

jeopardize the safety of all motorists using this particular road. It is our feeling that providing this parking space is the distinct problem of those promoting such snow sports; and their responsibility is indeed a real one.

Snow removal is effectively reduced at certain sections by central measures. In many cases, during construction it is possible to raise the grade of the road so that the fill portions will be kept clear by wind action. Likewise, the ditch section is widened and the slopes flattened in

cuts to provide storage space for the snow. In other areas, clearing of brush and trimming lower branches of trees will reduce the eddying action of the wind and consequently lessen the deposit of snow at such points.

SNOW FENCE EFFECTIVE

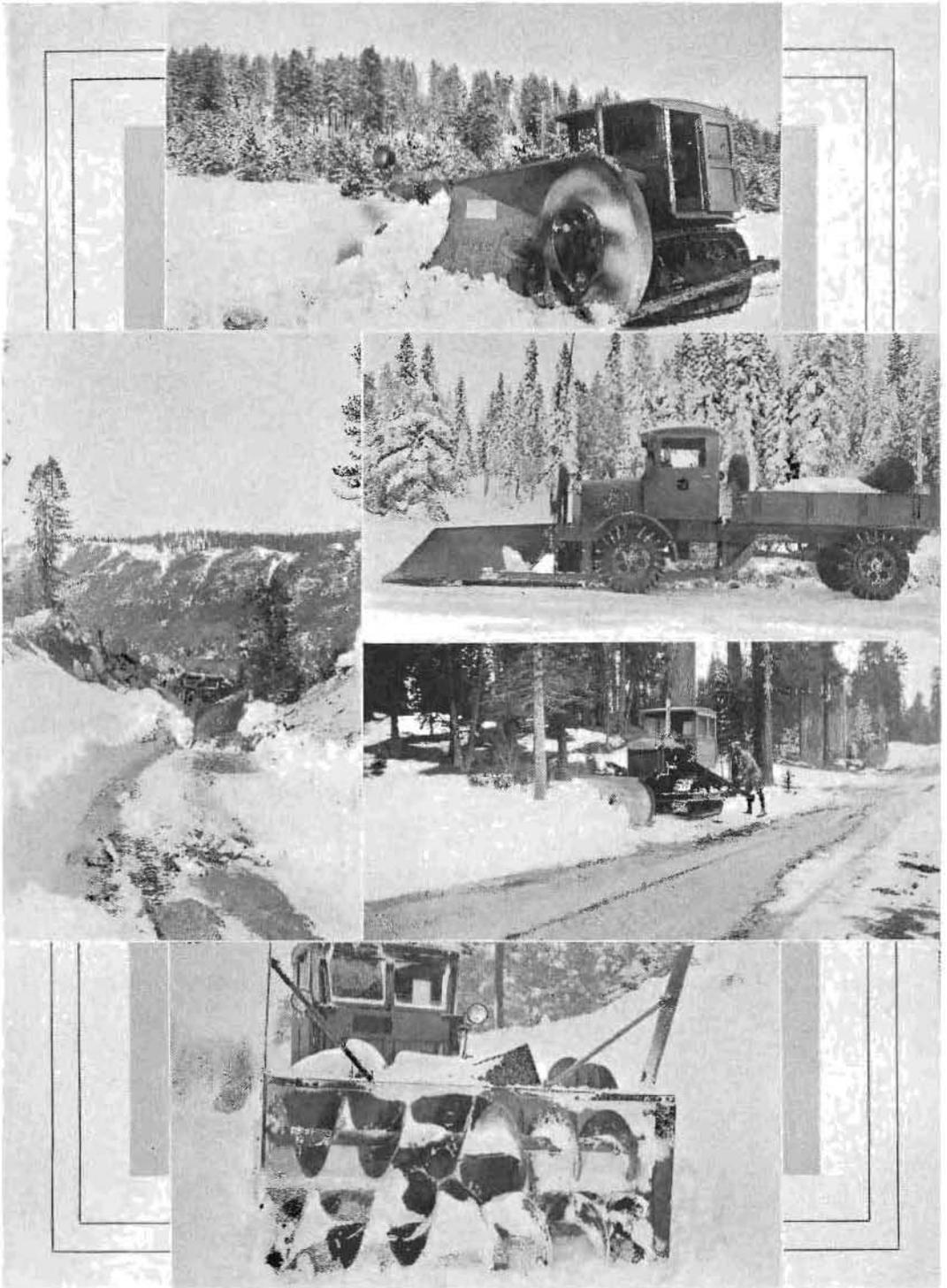
In open areas, snow fence made of lath pickets is installed on the windward side at sufficient distance from the road to insure formation of the drift at the desired point off the road. In some cases, planting of trees and shrubbery serves the same purpose. At the present time the state has some twenty miles of snow fence in place.

Efforts toward ice prevention and removal are confined principally to sanding frosty or icy sections of pavement to insure traction for motor vehicles. Sand mixed with salt, in the proportion of about one hundred pounds of salt to each cubic yard, is stock-piled in shelters at convenient locations prior to the winter season. During the present season \$20,000 has been allotted for this purpose.

(Continued on page 22)



T. H. DENNIS



SNOW REMOVAL EQUIPMENT keeping California State highways open this winter numbers 168 units of various types some of which are pictured above. At top, a tractor type rotary, the business end consisting of a V-plow with a rotary on each side. Below, right, are speed type and tractor push plows. At left, a large V-type push plow and at bottom an auger blower type rotary.

Charter Way Grade Separation in Stockton a \$400,000 W.P.A. Project

THE SECOND largest project in the extensive program of thirty-nine grade separations being put under way by the Division of Highways throughout California with Federal and State funds is the Charter Way underpass in Stockton for which bids were opened December 10th in Sacramento.

This project provides for the separation of the street grade and the grades of the Western Pacific and Southern Pacific Railroads where the latter cross State Route No. 5 which is the main highway arterial from Oakland and the Bay region via Hayward, Livermore and Dublin Canyon into the city of Stockton.

The estimated construction cost of the project for which Federal WPA funds are available is \$400,000. Purchase of necessary rights of way involve an additional estimated \$80,000 for which Director Earl Lee Kelly of the Department of Public Works has approved an allocation of \$68,500 from gas tax funds apportioned for expenditure upon State highways within cities. The city of Stockton is providing the remaining \$11,500.

\$160,000 DIRECTLY TO LABOR

According to the engineers, construction of the project will afford employment to approximately forty men for a period of nine months. This figure is given for unskilled labor only and does not include employment under the classification of skilled labor. As the funds to be used for construction are Federal funds of the Federal Emergency Relief Appropriation Act of 1935, it is understood that approximately 80 per cent of the labor will be obtained from the local Federal employment bureau.

Director Kelly's office has calculated that about forty per cent or approximately \$160,000 of the project's cost will be paid directly to labor. It is expected that construction of the project will relieve the local relief roll as preference will be given to persons on the roll for employment.

Plans for the subway, considered one of the major improvements being undertaken by the State to eliminate grade crossings, were prepared in cooperation with City Engineer Lyle

Payton. The plans show the structure will be similar in general design to the existing Miner Avenue underpass beneath the same railroads but a most prominent variation will be apparent in the roadway dimensions.

FOUR TRAFFIC LANES

Four lanes of traffic will be accommodated by a roadway forty-seven feet wide, divided along the center by a concrete curb three feet wide. Like the Miner Avenue Subway, the structure will be uncovered where passing directly below the railroad tracks.

Drainage of storm waters is given full attention by the inclusion of a large sump to be relieved by a pumping plant which will automatically discharge to a predetermined level and will maintain the roadway free of ponded water.

The underpass proper is designed to extend from the west property line of Pilgrim Street to the east property line of Aurora Street, a length of approximately 1,072.5 feet. The entire improvement, including the street level approaches, will extend from a point opposite Sharps Lane to a point approximately 230 feet west of Aurora Street, and will occupy a right of way 110 feet wide.

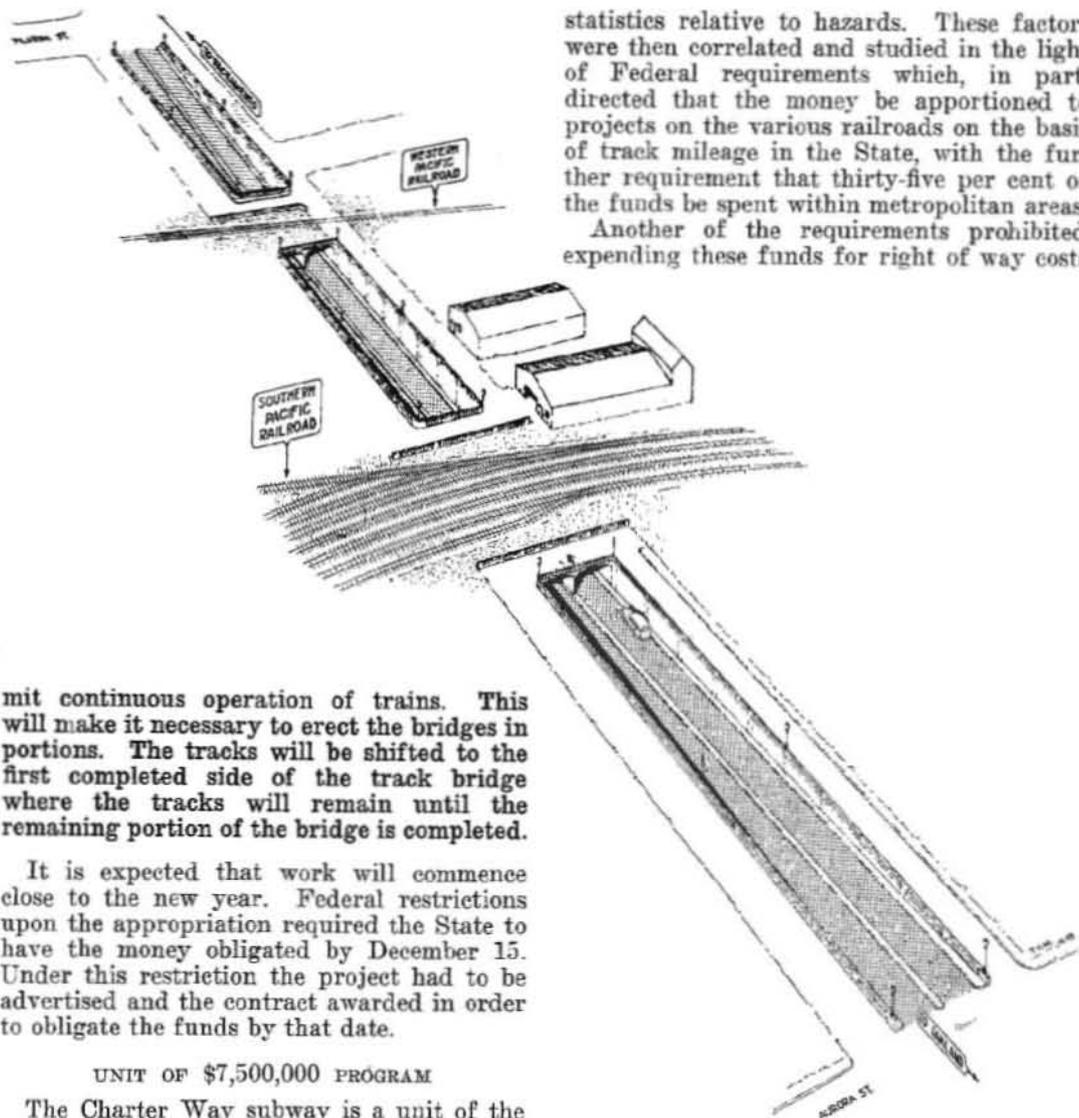
An additional fifty-five feet of right of way was required in order to provide ground level streets paralleling the structure on each side. These streets will be graded and paved to a width of twenty-five feet to provide a passage to adjacent properties.

Vehicular bridges will be constructed on a level with the streets for crossing the subway at three locations.

NO INTERRUPTION OF TRAINS

In order to provide the parallel ground level streets, it was necessary to shift the structure north to where the longitudinal center line will be contiguous with the north curb line of Charter Way. This shift compelled a transition and deflection in the roadway and widths between the present street and the subway lanes.

The railroad bridges over the underpass will be constructed in two operations to pre-



mit continuous operation of trains. This will make it necessary to erect the bridges in portions. The tracks will be shifted to the first completed side of the track bridge where the tracks will remain until the remaining portion of the bridge is completed.

It is expected that work will commence close to the new year. Federal restrictions upon the appropriation required the State to have the money obligated by December 15. Under this restriction the project had to be advertised and the contract awarded in order to obligate the funds by that date.

UNIT OF \$7,500,000 PROGRAM

The Charter Way subway is a unit of the most ambitious program of railroad crossing eliminations ever undertaken in the Nation and in the State. Embracing the elimination of thirty-nine grade crossings in California, it is estimated that an expenditure of approximately \$7,500,000 will be involved.

In order to meet the restrictions imposed by the Federal Government upon the expenditure of these funds, the California Highway Commission was confronted with the task of selecting a program of projects that would qualify for Federal approval. From a State-wide survey of all crossings both on and off the State highway system, hundreds of locations were studied by engineers of the Division of Highways.

The studies considered physical conditions at the location, traffic conditions and vital

statistics relative to hazards. These factors were then correlated and studied in the light of Federal requirements which, in part, directed that the money be apportioned to projects on the various railroads on the basis of track mileage in the State, with the further requirement that thirty-five per cent of the funds be spent within metropolitan areas.

Another of the requirements prohibited expending these funds for right of way costs

CHARTER WAY undergrade structure through which highway will pass beneath two railroads.

and property damage. As the State's funds for highway construction have been seriously depressed in recent years, this restriction compelled the State to place the obligation of acquiring the necessary right of way upon the municipalities when the project was located within the corporate limits of a city.

Generally, such costs are considerable in metropolitan and developed areas, placing the project beyond the community's resources. In many locations the State found it necessary to abandon worthy and much-needed projects because of this condition.

A bird at the wheel is worth two in the ambulance.

Transportation Must Look Forward in Spirit of Cooperation, Says MacDonald

In a recent radio broadcast under the auspices of the National Municipal League, Thomas H. MacDonald, Chief of the U. S. Bureau of Public Roads, discussing the topic "A National System of Transportation," said there can be no cessation of transportation progress and the industry must look forward in an increasing spirit of cooperation to new developments including a master national highway plan for which surveys are under way in the various states.

By THOMAS H. MACDONALD, Chief of U. S. Bureau of Public Roads

A FRIENDLY but keen observer from another country, who was making a critical examination of one of our major industries, at a dinner tendered him on the eve of his departure, made what seems to me a very intelligent comment. In this particular line he is outstanding, and the whole purpose of his trip had been to advance the competitive position of himself, his associates, and his country by gaining worth while information. When his turn came to speak he said:

"After a most interesting experience, in which I have been taken up into the high places by my friends of this industry, I am left with a warm feeling of appreciation for your many courtesies, and a profound respect for your accomplishments; but in a purely friendly way, while I would not go so far as to say that I see the handwriting on the wall, I must in all honesty say I do see the wall upon which it is possible to write."

With so big a subject a very large wall would not suffice for even a small portion in any detail. With so profound a subject, one must needs forget too much of the past to suggest any straight and narrow path which we are to follow in the future. No handwriting on the wall, nor the remembering of such a ponderous title, makes me forget the story of transportation.

Not all the heavy dissertations of experts quoting experts can paint out the picture shining through, of the hazards dared and the

romance lived in transportation achievement which vividly outlines the past. The clipper ships, the pony express, the Conestoga wagons, the National Pike, the Oregon Trail, and overlying these the gasoline juggy, the streamlined train, air service to the Orient—all the fascinating story of the daring, pioneering, individualistic progress in transportation which is the heritage of this country itself, in comparison with the old world is relatively new.

Don't Be Silly

"It is silly to make plans for the future predicated upon current transportation requirements or upon any assumption that existing facilities must be preserved. The story of transportation is a repetition of replacing old facilities and forms with new."

—Thomas H. MacDonald

So in talking of planning, I wish modestly to speak of certain trends without intending to intimate, and certainly without believing, that there will be a stop to transportation progress. Neither is there any confidence in the willingness of the public to regiment transportation in the sense of undesirable or drastic governmental control. Nothing with the strength of achievement that has been written into

the development of transportation in this country can be so controlled that it becomes static. Like measles it breaks out in many places.

PRODUCT OF DEPRESSION

Nearly everyone speaks of coordination of transportation as the solution of our transportation troubles. Findings are made by many bodies that we are overstocked with transportation facilities. Such a conclusion is the product of the depression, and it should be pointed out that we find ourselves over-

Supply and Demand Yardstick Suggested for Transportation

(Continued from preceding page)

stocked with everything except employment. It is silly to make plans for the future predicated upon current transportation requirements or upon any assumption that existing facilities must be preserved. The story of transportation is a repetition of replacing old facilities and forms with new.

Curtailment is being urged now with the same enthusiasm that enlarged facilities will be urged as business gets back to a more normal tempo. Economists recognize two great fundamentals—supply and demand. Why transportation in a country three thousand miles long and one thousand miles wide is not given greater weight is to me incomprehensible.

It is not sufficient to plan the future upon the basis of these two factors—supply and demand—without giving major weight to transportation. The depression has made us take stock, and has supplied us with both the motive and the leisure to study our whole transportation system.

CHANGE AND PROGRESS

There is no need to introduce in this short talk controversial questions. Suffice it to say, that much more has been gained than lost by the development of the newer types of air and highway transport which recently have been added to the older types of rail and water. In the aggregate the public is the gainer. So the problem is to fit together the jigsaw puzzle that is the picture *now*, not what *was* the picture some time in the past.

There seems to be a most naive conception of our transportation problem—that by hook or crook we can turn back the pages of time and restore through legislation and regulation the situation as it was at some particular time in the past. Only a casual look around indicates the fallacy of such reasoning, and the most reliable prophet for the future is he who predicts constant change and constant progress.

I have faith in the trend toward a more generous, more intelligent cooperation. Here are two examples—the motor industry has turned its house upside down, has advanced its presentation of new models by three months in the hope of making better conditions for labor. How simple this sounds but what a pioneer advance in cooperation between this industry and labor.

GRADE CROSSING CAMPAIGN

Again, through cooperation between the railways, the state highway departments and the federal government, we are now engaged upon a program that will wipe out of existence more than two thousand of the most dangerous railway crossings in the nation.

If we look critically at our existing major types of transportation, we find the oldest of all, the waterways, restricted in operation to those watercourses which have been developed and are maintained for navigation. Leaving out of consideration seaports, which are of major importance to the transportation facilities of the country, but cannot by any stretch of the imagination be considered competitive, except between themselves, we have inland waterways to the extent of 27,000 miles.

JUST LIVING UP TO THE BEST TRADITIONS OF THE STATE HIGHWAY SERVICE

THE MANOR GARDENS

Office
202 Ballymore Road
Springfield, Penn.

Nov. 25, 1935.

State Highway Department,
Sacramento, California.

Gentlemen:

I want to call your attention to the fine treatment three of us received from two of your state men last summer.

If I recall correctly it was the afternoon of Saturday, July 20, when these two men found our abandoned car in the mountains west of Death Valley, searched until they found two of us in an old shack—the other chap had gone for help, gave us sadly needed water, found the third chap, and brought us in to Darwin.

More courteous men cannot be found in any organization, and I want to congratulate the State Highway Department in having such noble fellows in its force.

Very truly yours,

S. D. GREEN (Signed)

The development of inland waterways may be largely a by-product of stream control. The public attitude toward the control of floods and the checking of soil erosion, indicates the probability that stream control will be extended, and thus inland waterway facilities may be available to the extent they are found to be practicable for transportation uses.

There are approximately 246,000 miles of steam railways in the United States. There has been concern expressed because of some decrease in this mileage. The Bureau of Public Roads has studied every recent abandonment or proposed abandonment and there is no cause for concern. Rather, the future will see a very much larger curtailment of unprofitable rail mileage.

ROAD MILEAGE 3,099,000

There are now American operated air transport routes, classified as domestic, 29,000 miles; foreign, 22,000 miles—a total of 52,000 miles.

In the federal-aid system of highways there are 227,000 miles, but the total public road mileage in the country is 3,099,000 miles.

Each type of transportation is supreme in certain characteristics—each type has its definite handicaps. The only sane motive is to plan transportation based on these favorable and unfavorable characteristics.

The Coordinator of Transportation, Mr. Eastman, has in a short time, under extreme pressure, and without much essential data, produced a remarkable series of sound recommendations upon transportation coordination. The National Resources Committee has been giving attention, among other things, through the state planning boards, to the planning of transportation.

(Continued on page 18)

Vacaville-Fairfield Line Change Will Abolish 17 Curves in Span of 4 Miles

By R. E. PIERCE, District Engineer

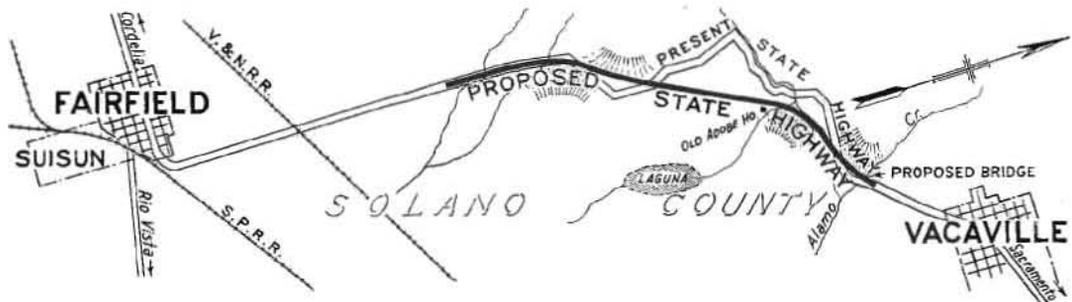
AFTER a delay of two years due to an injunction and a test case in the courts, occasioned by the "Alternate Bid Act," the so-called "Orchard Line Change" between Vacaville and Fairfield is now under construction.

This change will replace the highway, as built through the orchards south of Vacaville during 1913, which, following closely the old county road, has several miles of poor alignment. This poor alignment was largely due to the reluctance of the county authorities, on whom at that time fell the burden of securing rights of way, to agree to any radical departure from the county road as it then existed.

the present highway, they were hidden by the orchards and their existence was known to but few.

It was the writer's pleasure to have the opportunity of meeting and talking with Mrs. Maria Dolores Vaca Pena Lyon, a woman in her eighties—born in an adobe in this area—a direct descendant of the Vacas and Penas, owners of a grant of land containing 48,000 acres, and founders of the present town of Vacaville in 1851.

Mrs. Lyon in spite of her age has a very alert, active mind, and her memory seems unimpaired. She informed me that one of the buildings, an adobe (well preserved due to being entirely enclosed in a wooden frame),



This stretch of road with its winding curves through the orchards and along wooded stream banks makes a very attractive scenic and recreational drive, but as the bulk of traffic on this important artery between the San Francisco Bay metropolitan area and the Sacramento Valley, a sector of the main transcontinental road leading from the central part of the State, is on business bent or hurrying to arrive at points beyond, this stretch of winding road with restricted sight distance is a serious handicap.

A relocation has been under consideration here for some years, and surveys were made, but much needed work elsewhere deferred this improvement.

During the resurveying of the new location recently, two old buildings were observed, and found, upon inquiry, to have an interesting and romantic history. Though these buildings were only a few hundred feet from

had been built by Senor Pena, her paternal grandfather, in 1842 and was occupied by the Pena family and descendants for over sixty years.

The other building, a wooden structure, was built some time later by her uncle, also a Pena; but is now in ruins and about to be torn down. For many years it was the home of the Buckingham family, some of whom still own and farm adjacent property.

BUILT BY MISSION INDIANS

Mrs. Lyon was born in another adobe built by her maternal grandfather, Senor Vaca, a little east of the one now standing. The latter adobe was constructed by Indian laborers brought from Santa Barbara.

Originally the roof, now shingled, was covered by tiles locally made and formed by shaping over the Indians' thighs. None of these tiles remain. According to Mrs. Lyon,

(Continued on page 17)



WINDING THROUGH ORCHARDS of the old Vaca rancho, the existing highway between Vacaville and Fairfield was built in 1913 and boasts 23 curves in one 4 mile stretch shown in top and bottom views. In center, old Pena adobe built in 1842 and narrow old bridge to be replaced.

\$13,561,000 Put to Work in Six Weeks

(Continued from page 1)

prosperity to thousands of California families whose living for the past few years has been of a very precarious nature.

While this unprecedented volume of highway construction is anticipated to do much for the relief of unemployment among California labor, it also will add materially to the improvement and safety of California highways.

The amounts making up the total of \$13,561,800 for the 99 construction projects are as follows for each of the three funds:

Works Program Highway Funds.....	\$5,130,800
Works Program Grade Separation Fund	6,084,600
State Highway Fund and Regular Federal Aid	2,346,400
Total.....	\$13,561,800

Under these 99 projects which have been started since November 1, improvements will be made to over 250 miles of road and construction of 37 grade separations and bridges will be accomplished.

A STAGGERING TASK

The accompanying tabulation lists the mileage and amount to be expended for the various types of construction from the three sources of funds under which this large volume of work is to be accomplished.

During the present period when govern-

mental appropriations for relief reach staggering figures, it is difficult to visualize the size of the task involved in plans, specifications and contracts for this form of unemployment relief which has been begun by the Division of Highways.

Monthly reports submitted by the Division of Highways show that the normal number of construction projects placed under way during the first ten months of the year amounted to \$11,700,000 in comparison to the \$13,500,000 in projects which have been started since November 1, clearly indicating the effort which has been put forward in making immediately available to the citizens of California the Federal relief funds allocated to this State.

The week of December 8th was one of the greatest activity in the opening of bids on the WPA program by the Department of Public Works. On four days of that week proposals were opened for 30 construction projects that were estimated to cost over \$4,000,000.

Approximately 150 proposals were submitted for these 30 projects indicating keen competition upon the part of contractors and showing that even with the emergency Federal labor requirements governing the work State highway construction may be carried on by the contract method.

WORK AWARDED, PENDING AWARD AND ADVERTISED NOVEMBER 1 TO DECEMBER 15, 1935

Type	State Highway Fund and Regular Federal Aid		Works Program Highway Projects		Works Program Grade Separation Projects		Totals	
	Miles	Amount	Miles	Amount	Number	Amount	Miles	Amount
Pavement	30	\$1,801,000	4.8	\$103,200			35.4	\$1,904,200
Bituminous Treated Crushed Rock Surface	10.1	248,600	132.1	2,634,400			142.2	2,883,000
Untreated Crushed Rock Surface.....			2.6	329,500			2.6	329,500
Graded Roadbed.....	0.6	36,500	72.4	2,063,700			73.0	2,100,200
Bridges and Grade Separations.....	(2)	202,800			(35)	\$6,084,600	(37)	6,287,400
Oil Treatment	1.3	7,900					1.3	7,900
Miscellaneous Contracts.....		49,600						49,600
Totals.....		\$2,346,400		\$5,130,800		\$6,084,600		\$13,561,800

Johnny—Mother, I'm lonesome. I haven't got anybody to play with.

Mother—Well, go out and play with Dick.

Johnny—Oh, I played with him this morning and I don't believe he'll be well enough to come out yet.

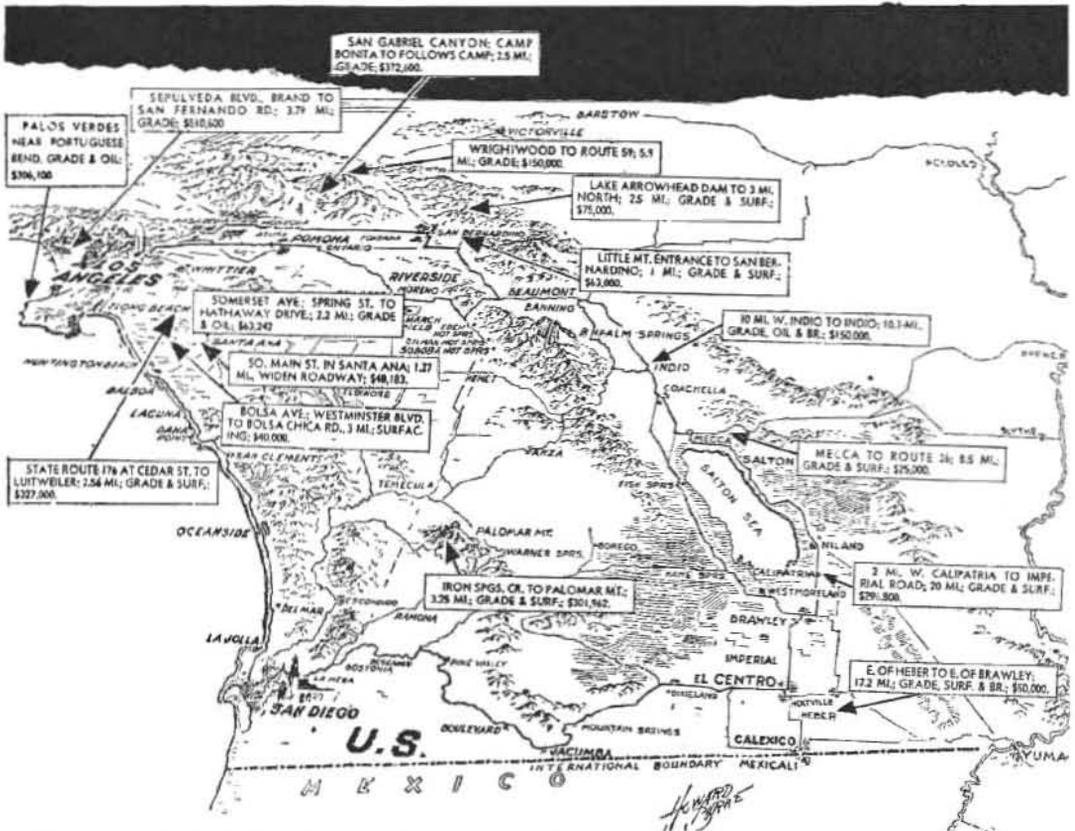
Chris—Now, then hurry up.

Bill—All right, boss. But Rome wasn't built in a day.

Chris—Maybe not. But I wasn't foreman on that job.



MILLION DOLLAR BID DAY at Sacramento headquarters December 10, 1935, when low bids on 9 highway projects totaled \$1,366,000. Officials standing, right to left: Assistant Office Engineer Wm. Bock; Acting Bridge Engineer F. W. Panhorst; Senior Highway Engineer J. D. Shaw, U. S. Bureau of Roads. Seated, right to left: Principal Assistant Engineer J. G. Standley; Office Engineer R. H. Wilson and Deputy Director of Public Works E. J. Neron.



SOME SOUTHERN CALIFORNIA PROJECTS in WPA program. Map courtesy Los Angeles Examiner.

Roadside Landscaping Plans for 1936 Include Some Large Planting Projects

By H. DANA BOWERS, Landscape Engineer

THE roadside development or landscaping program for 1936, for which plans are now being formulated by the landscape section of the Division of Highways Maintenance Department, will entail an expenditure from federal and state funds of \$159,496. Approximately \$110,000 will have been spent upon completion of the sixteen roadside landscaping projects comprising the 1935 program.

In addition to these amounts, there is expended yearly some \$100,000 for the maintenance of roadside trees and landscaped areas and various other improvement projects. The maintenance of the trees constitutes the major portion of this amount.

This yearly cost of some \$260,000 may appear to be a large amount to spend on the appearance alone of our highways but, in 1934, 272,182, or over a quarter million, tourists visited California seeking recreation and new scenes and left a great deal of money in this state. They came because we have excellent roads and because California has something that no other place has to offer—the mammoth redwoods, the Yosemite National Park, the rugged coast line of northern California, the sunny beaches of southern California, the deserts and the mountains—all these and more, distributed over the state from one end to the other.

NOW FEDERAL REQUIREMENT

The attraction of tourist travel alone would justify the expenditure of large sums in order that our roadsides should present a pleasing appearance, but in addition to this factor, the United States Government requires that a certain amount of federal funds allotted for state highway improvements be set aside for roadside beautification.

In the construction of good roads, the scarring of the landscape is sometimes unavoidable and these scars if not softened or obscured produce a discordant note in an otherwise peaceful and pleasing landscape. They are also subject to erosion until Nature lays down a protective blanket of grass and shrubs, which is often a very slow procedure by reason of the difficulty natural seeds find in lodging on the smooth, steep slopes.

Proper treatment of these slopes, depending upon the locality, can save many thousands of dollars in removal of eroded material and slides, which work must be done after each severe rainfall and in many cases increases year after year. With an expanse of territory embracing over fourteen thousand miles, coupled with the semiarid climatic condition of the major portion of the state, it is obvious that a more practical view must be taken of the improvement of roadsides.

APPROPRIATE DEVELOPMENT.

Roadside beautification is, in many cases, erroneously interpreted as meaning the planting of trees and shrubs, grass and flowers. This type of landscaping, which is appropriate for home or park or even many eastern states with their summer rains, is seldom in order along our highways. In order to accommodate the recreational needs of the traveler, advantage must be taken of existing conditions, and the making of improvements that require a minimum of maintenance.

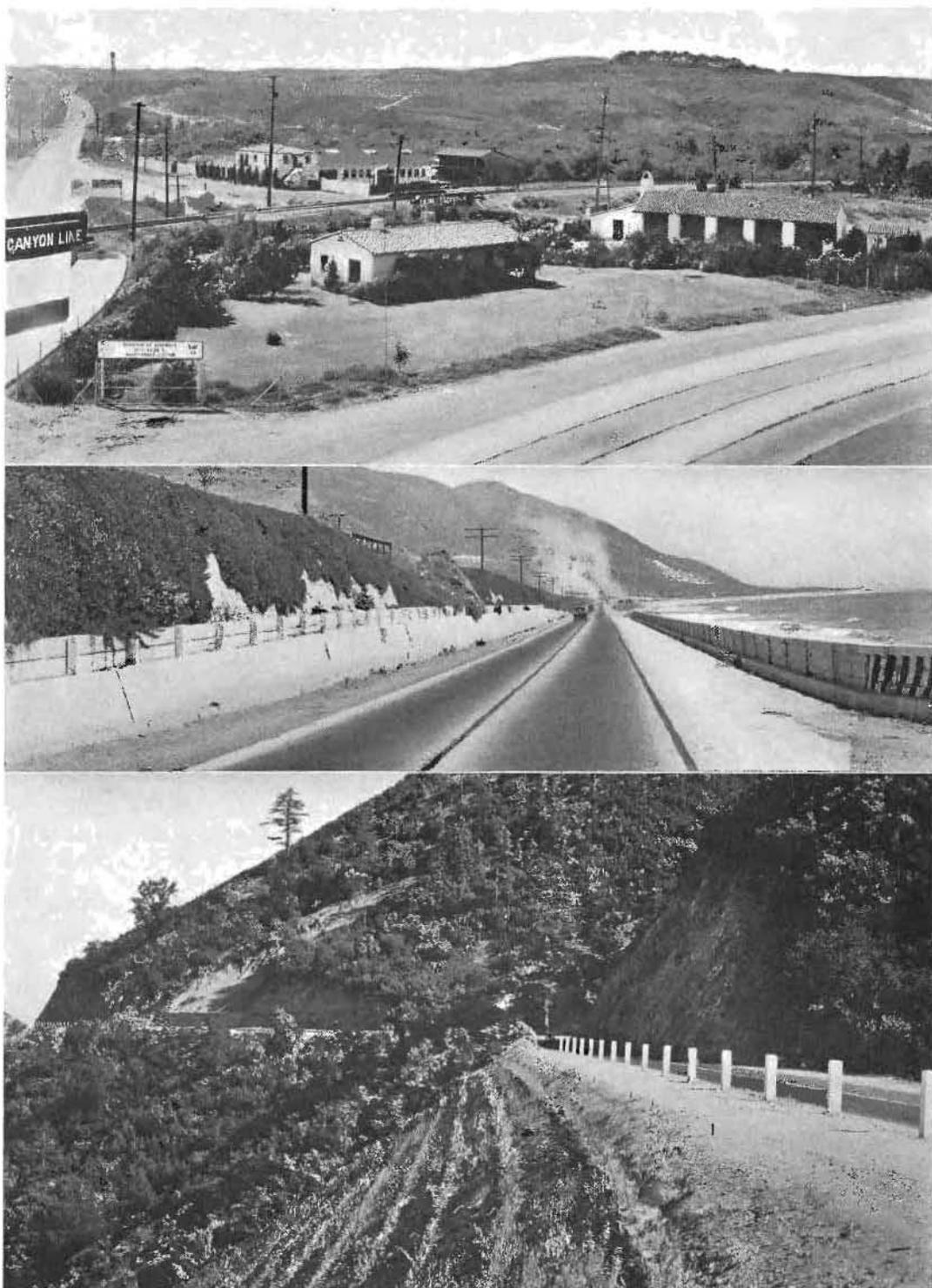
Proper and appropriate roadside landscaping or improvement is often difficult to recognize, and certain areas stand out and attract unfavorable comment only if nothing has been done to blend the road into the surrounding terrain.

A development of intensively landscaped parks and recreational areas demands an expensive and continuous upkeep, the cost of which decreases very little from year to year. More real value will be derived from expenditures on the maintenance of shade trees in our hot interior valleys, for instance, where many may be benefited, rather than on various developments for appearance only.

These areas should be confined to the centers of population and to the improvement of town and city entrances. Appearances under these conditions, where first impressions are sometimes important, can be valued in dollars and cents by the residents and the city business enterprises. An attractive entrance to any town or city—unfortunately, we have very few—does much to increase good will and improve business conditions.

The Division of Highways for some years past has been slowly increasing the organiza-

(Continued on page 28)



ROADSIDE BEAUTIFICATION PROGRESS is shown in these views. At top, tree and shrub plantings embellishing Serra Maintenance Station at highway intersection. Center, ice plant covering slopes on Coast State highway near Ventura. At bottom, a fill slope erosion control project by wattle method interplanted with grains and grasses.

Business of Building Roads that Repay Costs to Taxpayers

THE average motorist gives little thought to the cost or the problems concerning the agency that provides him with smooth, safe highways. He simply figures that it is a natural sequence in the affairs of his State and Nation that good highways are provided. It doesn't occur to him that a most unusual mental and physical effort may have been required to construct a safe, substantial highway through a swamp or mountain section or to provide a great bridge over a long stretch of water or a ravine that will reduce his mileage between two given points and thus save him much wear and tear on his car and tires, besides gasoline consumption.

It has come to a point where those who really study the situation are convinced that the business of building public highways has become a leader in every state in the Union. In the first place, we must have highways that are safe and enduring and they must be built without waste of public funds. And the day of bottle-neck one-way bridges has passed. Motorists are demanding bridges that are as wide as the highways they serve.

CONSTRUCTION URGED

Safety construction such as under-passes and over-passes at highway and railroad crossings is urged upon the state road departments and sometimes folks forget that there is a limit to funds available to these departments for all construction work throughout the states and insist upon the impossible.

No one has yet figured out a method of building good highways and bridges without funds. Successful performance simply can't be had under such circumstances. All gas tax and license tag fcs should be devoted to road and bridge construction and maintenance.

PAY DOUBLE TAX

Taxpayers, who are always motorists, frequently forget this truism and thoughtlessly support a movement to divert gas tax to other governmental purposes. In some cases this makes the motorist pay a double tax—one for the privilege of owning and operating a car on the public highways and again when some of the gas tax and license tag fees that he pays are applied to governmental service for which he also pays personal property or

PROMPT RESTORATION OF BOX CANYON HIGHWAY WINS COMMENDATION

THE METROPOLITAN WATER DISTRICT
of Southern California
306 West Third Street
Los Angeles, California

Nov. 14, 1935.

Mr. S. V. Cortelyou,
Division of Highways,
808 State Building,
Los Angeles, California.

Dear Sir:

I wish to commend the officials and engineers of the State Division of Highways for the prompt and diligent manner in which they carried forward the repairing of the 7½-mile section of highway east of Mecca. This road was seriously damaged by a cloudburst on August 22, and thereby made impassable for heavy traffic. The closing of this road worked a considerable inconvenience to the Metropolitan Water District because of the fact that it gives access to portions of the aqueduct construction operations between Mecca and Shaver's Summit.

The district was advised that the damaged highway had been repaired and was opened for traffic on October 7.

Very truly yours,

F. E. WEYMOUTH,
General Manager and Chief Engineer,
The Metropolitan Water District
of Southern California.

CALIFORNIA HOLDS SECOND PLACE IN USE OF GASOLINE

With gasoline consumption in the United States up 3.95 per cent, or 305,942,000 gallons, during the first six months of this year, California continued to hold second place on a total of 685,611,000 gallons against 675,626,000 in the first six months of last year, according to nationwide figures. New York retained first place with 723,640,000 gallons, compared with 718,270,000 in the first half of 1934.

real estate taxes. All this isn't so hot for the motorist, but he looks to the representatives in the State legislature to put a stop to it and many of them, in sincere approval, do what they can as individual law-makers.

Finally this question will be effectively disposed of by State and Federal laws, but in the meantime, it is a serious factor in holding back highway construction where it is most needed.—*Florida Public Works.*

New Highway Route Passes Close to Old Vaca Family Adobe

(Continued from page 10)

they were replaced by shingles, as the people then considered shingles much more modern and "classy." The walls are more than 2 feet thick, and the building originally contained more than the three rooms that now remain. It is the only adobe still standing in this region.

Mrs. Lyon's husband, born in Sonoma in 1848, passed away in 1926. His parents were members of the ill-fated Donner party, which was snowbound east of the Sierra Nevadas in the winter of 1846-47.

SOLD TOWNSITE FOR \$3,000

The valley in which these buildings are located is known as Laguna Valley, because of a small, shallow lake lying a short distance south and east of the old adobe.

The Vacas and Penas were the first Europeans in this region, having come here in 1832. The grant to them was made in 1842-46. The town of Vacaville was started in 1851 when Manuel Caleza de Vaca deeded to William McDaniels nine square miles of the grant for a consideration of \$3,000 and a town site, one square mile named Vacaville, and 200 town lots in 1856.

To celebrate the wedding of Mrs. Lyon a bear and a bull fight was held at the Vaca Ranch. The ladies witnessed the fight from the balcony of the Vaca adobe, afterward destroyed in the earthquake of 1892.

NEW ROAD SHORTER

The new highway location passes close to the old adobe, surrounded by old fruit and shade trees—some said to have been planted seventy-five years ago.

The following data will indicate the great improvement to be made by the new construction:

The present road, between the points where the new location ties into it at each end, has a total of twenty-three curves, twelve of which are of 300 foot radius, and none flatter than 1500 foot radius. The total angle included in these curves is 849° 33' or nearly 2½ complete circles.

The new location, between the same points, has six curves, with one curve of 1000

JACK FROST SHORTENED BAY BRIDGE CABLES BY 9 INCHES IN COLD SNAP

When icy winds swept down from the Alaska coast on October 31, they set a cold weather record in San Francisco and established a new record of an entirely different sort.

The low temperature—43 degrees, one degree lower than the previous cold record of October 14, 1881—brought Yerba Buena Island nine inches closer to San Francisco.

Cables of the San Francisco-Oakland Bay bridge shrank nine inches over the mile and a quarter of steel strands between Rincon Hill and the mid-bay island.

Bridge engineers said that the shrinkage made a good weather story and did no harm to the bridge. Structural plans allow for a two foot expansion and contraction of cables during high and low temperatures.

foot radius; the rest being 3800 foot radius and over.

The total angle is 113° 26½' less than one-third of a complete circle, and also less than 1/7 of the curvature in present road. There is also a saving in distance of nearly three-quarters of a mile in a span of less than four miles or about 19 per cent.

This project was advertised with alternate items for paving. The low bid was for the asphaltic concrete pavement, for which this contract was awarded.

The work to be done consists in general of constructing a graded roadbed 36' wide, placing imported borrow for the full width of the roadbed and from 0.5 to 0.9 of a foot in depth below the bottom of the pavement.

A new reinforced concrete bridge is to be constructed over Alamo Creek with a clear roadway of 34 feet consisting of two 21'-6" spans and one 27' span, with concrete piers on steel piles.

This replaces a concrete county built bridge which has a clear roadway of 20' and an overhead construction which limits the height of loads below the legal limit. Having a sharp curve at each end, this bridge introduces a serious hazard to auto traffic, which the new bridge will remove.

With the completion of this section, the most tortuous part of the present route between San Francisco and Sacramento will have been eliminated, which will mean a large aggregate saving to the more than 5000 vehicles which pass over this road daily during times of peak travel.

Half Moon Bay Road Grades Reduced from 10.64 to 7 Percent

(Continued from page 2)

for improvement, and a survey of the hill section was commenced.

It was evident from the start that it was not practical to construct a modern, high standard highway in the vicinity of the existing road; hence, a new location was made on the southerly side of the Pilareitas Creek Canyon.

The result was that in order to connect from the Skyline Boulevard at the saddle of the Coast Range, to the paved portion of road on the valley floor, it was possible to reduce the total curvature from 3046°, or about 8½ complete circles, to 490° or 1½ complete circles; to increase the minimum radius of curvature from 50 feet to 360 feet, and to reduce the maximum rate of grade from 10.64% to 7%.

SAVING IN DISTANCE

The distance involved was reduced from 3.1 miles to 2.7 miles, a saving of nearly one-half mile. These improvements are of great value, particularly when considering the heavy truck travel, and also the great number of pleasure cars that use this road over the week ends and on holidays.

It was in November, 1934, that a contract was awarded to grade a 30-foot roadbed and place 22 feet of crusher run base 5 inches thick, and treat the surface with emulsified asphalt.

The major items involved in the construction were approximately: 400,000 cubic yards of roadway excavation; 1,700,000 station yards of overhaul; 10,500 tons of crusher run base, with 120 tons of emulsified road oil, 1600 tons of screenings and 50 tons of fuel oil.

More than a mile of 8-inch perforated metal pipe under-drain was required to care for seepage water. The easterly branch of Pilareitas Creek is taken care of in a 72-inch corrugated metal pipe, while the main, or northerly branch is spanned by a redwood timber structure consisting of a 19-foot span over the stream with a 19-foot cattle and wagon pass adjacent thereto.

The total cost of the work was approximately \$178,000.

The traffic which at present is about 4000 machines on Sundays, will appreciate the wide swinging, easy curves, and the smooth surface of the new road.

Highway Accidents a National Problem Says T. H. MacDonald

(Continued from page 9)

It is disappointing that so many of these state reports are looking backward rather than forward. There must be a recognition that competition is both in the character and in the cost of service.

MASTER HIGHWAY PLAN

Recognizing that three million miles of public roads offer a serious problem in basic planning of an adequate highway system, in which land use and all the social and industrial factors common to our population will determine highway necessities, the Secretary of Agriculture has approved a comprehensive highway planning survey in cooperation with the state highway departments.

This survey is already definitely programmed in about two-thirds of the states, and when completed will give all the facts upon which to base a master highway plan for the future.

One of the principal objects of this survey is to determine how best to serve the farm population which is not located upon the federal-aid and state systems of highways, so as to bring to the land the utility of an all-year road. It should be honestly recognized that a tremendous amount of the traffic on the highways now is not traffic lost to other agencies but is new business. Mr. Eastman recently estimated there had been created by the development of the motor car and improved highway more than four times the travel market that had previously existed. This business is highly competitive between communities as well as between facilities.

RECREATION A MAJOR INDUSTRY

Recreation has become a major industry. A roadway was opened in the Shenandoah National Park one year ago. The surfacing was not completed until within the past few months. On Sunday, October 20, more than 28,000 people traveled this new parkway. This was business which did not exist one year ago in that community. How much was wholly new business it is impossible to tell, but here is a recreational area more than 80 miles removed from the nearest large city, and the miles of new travel in Virginia thus generated run into fantastic figures.

Federal legislation has been enacted and the new Motor Carrier Bureau created in the Interstate Commerce Commission to regulate the business of interstate public carriers. It is also charged with the duty of promulgating rules to promote safety on the highways. Nothing that might be said as to planning is more important than to hold up as a great national problem the drastic curtailment of accidents upon our streets and highways. Planning must take into consideration not only physical facilities but their use, which extends to legislation and regulation.

Some of the comprehensive activities in transportation planning have been mentioned here, but these are only a part, and we can expect as wonderful advances in the immediate future as we have had in the past. There is no field which comes more intimately into contact with the life of each one of us, both economic and social.

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. 13 DECEMBER, 1935 No. 12

"Streamlined" Highways

Construction policies that will develop "streamlined" highways adequate to serve America's streamlined automobiles will be advanced at the approaching Convention-Road Show of the American Road Builders' Association in Cleveland January 20-24, according to William P. McDonald, President of the association.

Mr. McDonald declared that public interest in the national highway program is more intense than at any previous time within the last six years, and that the convention program will include detailed consideration of many new factors that have entered highway development, including the pressing demands for constructing highways designed to meet the ever-increasing volume and speed of motor vehicle traffic.

He said the primary demand that existed a decade ago for hard-surfaced roads is now expanded to include road construction that will accommodate automobiles of high speed.

Mr. McDonald said the Hayden-Cartwright Act provided the groundwork for a three-year highway program, and this factor is enabling highway officials and contractors to buy new equipment with confidence that it will be needed in carrying out the construction program already assured.

Mary has a new tight skirt,
So neat, so bright, so airy;
It never shows a speck of dirt,
But it surely does show Mary.

Clarice (motoring): "I said you could kiss me, but I did not say you could hug me."

Henry: "Oh, that's all right; I just threw in the clutch."

Law Clear as to City Liability in Parallel Parking Violations

JUST as the automobile of yesterday, with its angle parking, ruled out the hitching post, so has parallel parking today sounded the death knell for angular stalls on State highways and many of the streets in cities of California.

The 1935 legislature, taking a tip from cities which reduced accidents and speeded up traffic with parallel parking, raised the strongest barrier against angle parking when it made it mandatory to parallel park on all through State highways and on such highways running through incorporated areas. The second greatest factor to endorse the safety method of parking was the action of the Los Angeles county board of supervisors which recently adopted an ordinance enforcing parallel parking as outlined by the legislature.

LAW IS CLEAR

Question of a city's liability in event an accident is caused through angle parking on highways which the state law says must use parallel parking, is one of the major reasons for incorporated areas to follow the Los Angeles action, according to E. Raymond Cato, chief of California Highway Patrol.

"The law is clear in its parallel parking demand," says Cato, "and I am advising incorporated areas to clearly mark their highways against angle parking to prevent what may result in court action in event an accident occurs."

Safety organizations backing the parallel parking system specify three reasons for its popularity: 1—Persons stepping from the curb between cars have clear vision of the highway; 2—Cars do not have to back into traffic when leaving a parking area; 3—A greater area for moving traffic is opened.

The new state law requiring parallel parking follows:

"Except when loading or unloading merchandise, no person shall park or leave standing any vehicle at the curb or edge of a through state highway unless both right wheels of the vehicle are within 18 inches of the curb or edge of such highway."

The Division of Highways of the Department of Public Works has been instructed by Director Earl Lee Kelly to cooperate with California Highway Patrol in assisting cities to meet demands of the new State law.

Building 3 Bridges and 3 Tunnels on 4.3 Miles of Feather River Highway

By F. W. HASELWOOD, District Engineer

CONSTRUCTION work on the Feather River Highway, now nearing the home stretch, is proceeding as rapidly as finances and the country encountered will permit.

Since 1928, work has been in progress eastward from Oroville and westward from Keddie on the seventy-mile unit of new construction, most of which follows the canyon of the North Fork of the Feather River or its tributaries. This work has been carried on continuously by two large convict camps, supplemented by contracts for bridge and grading work.

FIVE MILES TO GO

The frontiers of the two convict camps have gradually progressed toward each other until at the present time Camp 28, located at Rich Bar, is working as far down as Tobin, which is 29.7 miles below Keddie, while the front line trenches of Camp 30, located near Cresta, are at Grizzly Dome, which is thirty-six miles above Oroville. The advanced work of these two camps, therefore, is separated by but 4.3 miles.

Within this particular gap of 4.3 miles between Grizzly Dome and Tobin three contracts are nearing completion. One is for grading 2.4 miles between Rock Creek and Storrie, awarded October 25, 1934, involving an expenditure of \$211,600.

Another contract covers the construction of a 300-foot steel truss bridge across the North Fork of the Feather River at Tobin, at a cost of \$75,000.

The third contract covers construction of two bridges across the North Fork, one at Storrie and one at Rock Creek, at a total cost of \$119,000. All three of these contracts are expected to be completed about the first of the year.

HIGHWAY BRIDGE UNDER RAILROAD

The completion of the bridge across the North Fork at Tobin will permit the crews from Camp 28 to continue their grading down the river toward Storrie.

The crossing of the North Fork at Tobin is one of the several unique situations encountered in the construction of this road.

In contrast to the Pulga crossing, where the highway bridge spans the river directly over and across the bridge of the Western Pacific Railroad, the highway at Tobin passes under the Western Pacific bridge at the crossing of the North Fork.

The most difficult and expensive work in the canyon now confronts the crews of Camp 30. Precipitous granite cliffs rise from the water's edge to great heights. Workmen are suspended by ropes or find a footing on logs anchored to the face of the cliff by iron bars. Due to the precautions of those directing the work and the skill of the men assigned to these dangerous tasks, no accident has yet occurred in this difficult section of the work.

GALLERIES FOR TUNNEL

The strategy of the construction crews is fast solving the problem of constructing a highway across or underneath these bare and near vertical cliffs. The construction of three tunnels is in progress. The headings are completed and enlargement is in progress on the first two, which are 265 and 400 feet long. The third, which passes under the Elephant Butte section of Grizzly Dome, from which some 70,000 cubic yards of rock fell into the river last spring, will be 1,200 feet long.

This tunnel will have three adits or galleries on the river side, which will assist in the ventilation and lighting. Work is in progress on this tunnel from the west portal and from two adits.

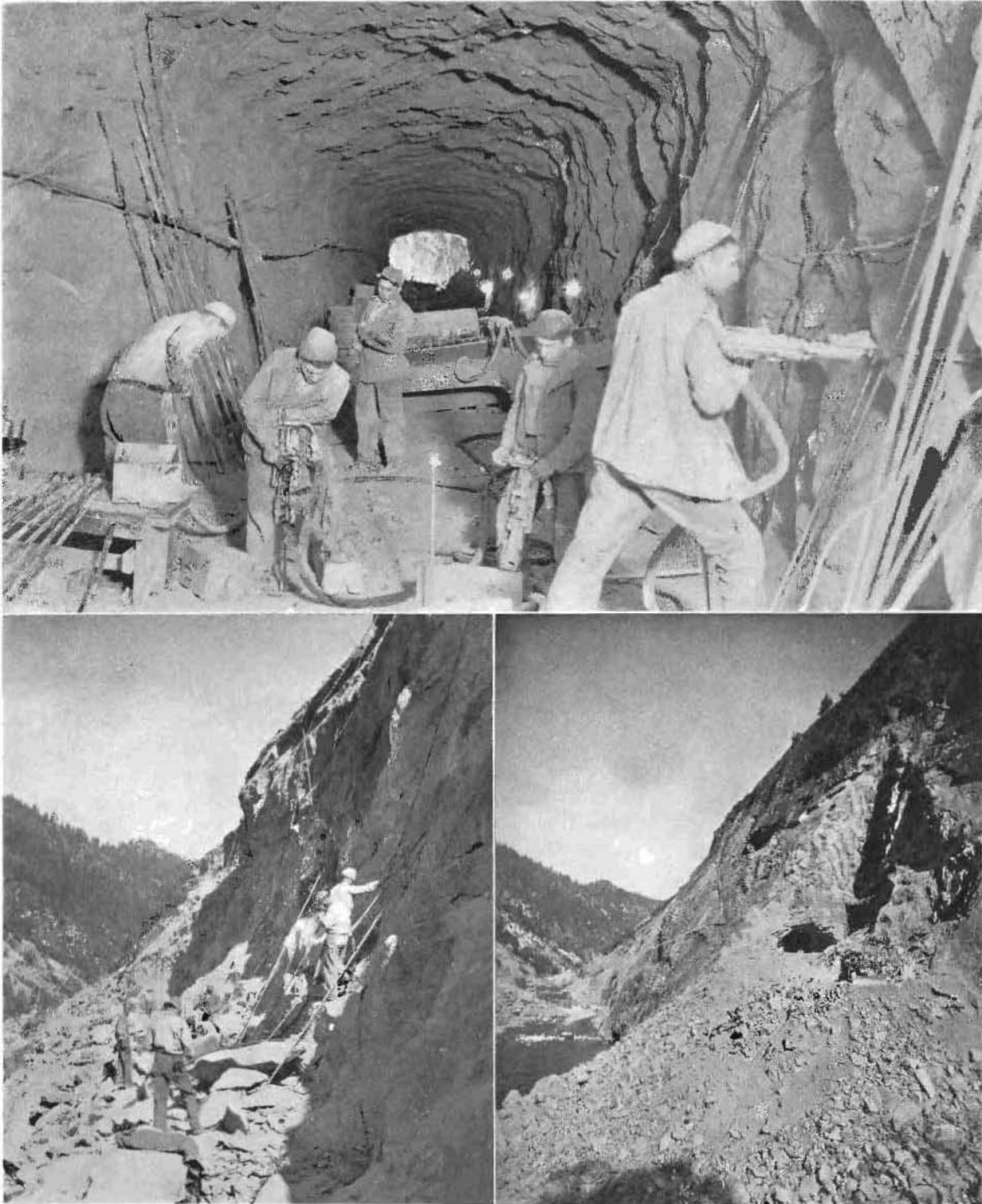
Work from Camp 28 is directed by H. L. Waste, Superintendent, and R. E. Ward is Resident Engineer. E. R. Rawson is Superintendent at Camp 30, and George M. Webb is Resident Engineer.

You can't fool all of the people all the time, but somebody is trying it all the time.—*Savannah Morning News*.

"There's only one thing worse than trying to shave with a razor after the wife has sharpened a pencil with it."

"And what's that?"

"Trying to write with the pencil."—*Pearson's*.



GRIZZLY DOME HIGHWAY OPERATIONS in Feather River Canyon involve much heavy rock work. At top drillers are widening the 400 foot bore. Lower views show crew widening the highway bench beyond tunnel and, at right, the entrance to the bore. The tractor is on grade.

State Removing Snow on 54 Highways

(Continued from page 4)

The program for the 1935-1936 season includes the following roads:

Route No.	Name of Highway	Location of Works
1.	Redwood Highway, Oregon Mt. and portions	
3.	Pacific Highway, Redding to Oregon Line	
4.	Ridge Route, Castaic to Grapevine	
11.	Echo Summit, Placerville to Kyburz	
12.	San Diego-El Centro, Alpine to Mt. Springs	
13.	Sonora Pass Rd., Sonora to Long Barn	
15.	Tahoe-Ukiah Highway, Rough and Ready to Emigrant Gap	
17.	Nevada City Lateral, Auburn to Nevada City	
18.	Merced-Yosemite, Capay to El Portal	
19.	Jackrabbit Trail, Moreno Grade	
20.	Weaverville Lateral, Blue Lake to Redding Meadow Valley to Route 29	
20.	Redding-Lassen Park, Redding to Shingletown	
21.	Quincy Lateral, Oroville to Berry Creek	
23.	Mono Rd., Mojave to Nevada Line	
24.	Ebbetts Pass Rd., Angels Camp to Dornington Markleeville to Nevada State Line	
25.	Yuba Pass Rd., Downieville to Sierra City Sierraville to Route 83	
26.	Imperial Valley Highway, Redlands to White-water	
28.	Alturas Lateral, Redding to Nevada Line	
29.	Susanville Lateral, Dales to Nevada Line	
31.	Arrowhead Trail, Verdumont to Nevada Line	
34.	Carson Pass Rd., Jackson to Bartons	
35.	S. Fk. Trinity R. Rd., Bridgeville to Douglas City	
37.	Donner Summit Rd., Auburn to Truckee	
38.	Truckee River Rd., Emerald Bay via Truckee to Nevada State Line	
39.	Brockway Rd., Tahoe City to Nevada State Line	
40.	Tioga Pass Rd., Groveland to South Fork	
41.	General Grant Park Rd., Dunlap to Park	
43.	Crest Route, San Bernardino to Victorville via Big Bear Lake	
46.	Klamath River Rd., Weitchpec to Shasta River	
47.	Butte Meadows Rd., Chico to Forrest Ranch	
57.	Walker Pass Rd., Bakersfield to Freeman	
58.	Tehachapi Pass Rd., Arvin Road to Mojave	
59.	Lancaster-Bailey Rd., Ridge Route to Lancaster	
61.	L. A. Park Rd., Cajon Pass to Wrightwood	
63.	Westgaard Pass Rd., Big Pine to Nevada Line	
64.	Perris-Indio Rd., Hemet to Palm Springs	
65.	Mother Lode Highway, Auburn to Mariposa	
72.	Weed-Klamath Falls Rd., Weed to Oregon Line	
73.	Susanville-Lakeview Rd., Susanville to Oregon Line	
75.	Huntington Lake Rd., Toll House to Deep Creek	
76.	Montgomery Pass Rd., Bishop to Nevada Line	
78.	Descanso-Temecula Rd., Descanso to Aguanga	
82.	Etna Mills Rd., Yreka to Etna Mills	
83.	Hobart Mills Rd., Hobart to Truckee	
89.	Cobb Mountain Rd., Cobb to Lower Lake	
95.	Coleville Rd., Coleville to Nevada Line	
96.	Sweetwater Rd., Bridgeport to Nevada Line	
112.	Mammoth Lake Rd., Jct. Rte. 23 to Lake Mary	

Route No.	Name of Highway	Location of Works
125.	Wawona Rd., Hawkins School to Yosemite Park	
127.	Camp Nelson Rd., Springville to Camp Nelson	
188.	Camp Seeley Rd., Rte. 43 to Rte. 59	
189.	Lake Arrowhead Rd., Rte. 43 to Rte. 59	
190.	Mill Creek Rd., Forest Boundary to Camp Angeles	
198.	El Cajon-Santa Ysabel Rd., Ramona to Santa Ysabel	

HOUSING—EQUIPMENT SHELTERS

Snow-removal work requires not only proper equipment and organization, but also proper facilities for caring for both men and equipment. The cold weather and constant strain from removing wet or frozen snow cause frequent breakdowns of equipment. Lack of repair facilities and spare parts at the scene of action means a snow-blocked road. In the high altitudes, with the prevalence of strong winds and low temperatures, this may easily imperil the life of the motorist who drives these roads, relying upon the effectiveness of snow-removal efforts.

Likewise, an eight-hour trick at the wheel of a truck, plowing snow, is a strain on a man; and warm, comfortable quarters, with facilities for serving hot meals at any hour of the day or night, are essential.

QUARTERS FOR SNOW FIGHTERS

Permanent quarters designed for these needs have been provided east of Emigrant Gap and at the Summit on Donner Pass; at Mineral and Lost Creek on the Susanville Lateral; at Crestview, Conway Summit, and Sonora Junction on the Bishop-Reno road; and at five locations on the Crest Route between San Bernardino and Big Bear Lake. At other locations, the regular maintenance stations are adequate to serve the purpose.

On Donner Summit the layout consists of a truck shed of the roundhouse type, some one hundred feet in diameter, and includes a repair shop with pits and tools to handle major equipment repairs. A thirty-two-man bunkhouse is connected to the truck shed by a covered passage. The truck shed is sealed and a steam heating plant is installed to heat not only the truck shed but the bunkhouse as well.

Storms can be forecast, but their exact occurrence, intensity, or duration are matters

(Continued on page 30)



We'd at last gotten used to the neighbors
 And the neighbors were used to us,
 We'd fixed all the leaky faucets
 And almost ceased to cuss
 When the windows stuck in summer
 And the rain came thru in fall,
 And the neighbors' crying babies
 We no longer heard at all,
 So we felt we were pretty well settled,
 As Highway people do,
 Whenever they live in the same small house
 For more than a month or two.
 We'd saved up all of twelve dollars
 And were feeling most sinfully rich,

And both of us bravely ignored the fact
 That our feet were beginning to itch,
 And that living in one small country town
 For over a year and more,
 Had ceased to seem like heaven
 And was fast becoming a bore!
 And then, when it seemed there was nothing left
 That we could do or see,
 And we thought of joining the local club
 In desperate ennui,
 The word came thru of a transfer!
 We didn't know where or when,
 And it didn't really matter
 Since it meant we were MOVING again!



So we got out the packing cases
 And wondered what went into which,
 And "Cap" started making up bed-rolls
 With an expertly tied half-hitch,
 While I cleaned the kitchen cupboards
 And thought: What on earth shall I do
 With half of a bottle of cleaner
 And a sink strainer, almost new?
 And why did I save all these glasses
 That once contained cottage cheese?
 And when will they turn the gas off,
 And where are the cellar keys?
 Shall I take this sack of potatoes
 I bought at last Saturday's sale?
 And what about stopping the paper,
 And also the milk and the mail?
 And how will I pack my formal
 So that it doesn't crush?
 And where are my boots and trousers,
 I'll need them out there in the brush.
 Why did I buy that kitchen clock,
 It's the deuce of a thing to pack!
 And I must tell "Cap" to remember
 To take the Browns' lawn mower back!



I wonder what he can be doing?
 It's awfully quiet in there!
 He's probably packing the iodine
 In my best silk underwear!
 I'll just go and see—There's the doorbell!
 I wonder who that can be?
 My hair is a wreck and I'm dirty,
 I hope it's not callers for tea!

"Oh, Hello, Mrs. Brown! Yes, I'm packing.
 "Oh, no, it's no trouble at all,
 "I was just going to put on the kettle,
 "So glad you could find time to call.
 "And you brought little Junior! Oh, honey,
 "Do you mind not sitting on that?
 "What's in it? Why, not very much, dear,
 "Only my new fall hat!
 "Do you take cream or lemon? I'm sorry
 "I haven't some cookies or cake,—
 "Oh, Junior, that's ant paste! Don't eat it!
 "That gives people stomach ache!
 "Must you go, Mrs. Brown? Well, goodbye, dear,
 "I hope that I'll see you again,
 "Though we move so much in the Highway
 "That it's hard telling where or when."

That's over! It's time for dinner
 But I don't think we'll eat at home—
 "Why, 'Cap,' you're all bloody! You're hurt—
 "Oh, it's only mercurochrome?
 "Well, go take a bath and get dressed, dear,
 "We'll eat and then go to a show,
 "The rest will be good for us both—
 "What? You say that the water won't flow?
 "And the phone has been disconnected?
 "And the power has been shut off, too?
 "And you just saw the gas man leaving—?
 "Then there's only one thing to do:
 "We'll put on our coats and just go as we are,
 "And whatever the neighbors say
 "We won't have to hear, since tomorrow
 "Is Highway Moving Day!"

—GLADYS CRAIG POTTER,
 (Wife of C. A. Potter, Resident Engineer,
 District II, Redding, California.)





During the month work was put under way on flood control and reclamation work in Sutter, Yuba and Yolo counties that furnishes employment for approximately 170 men from relief labor rolls.

Applications were received for enlargement and reconstruction work on five dams and construction is progressing on five other similar projects in various parts of the State.

Under the Federal cooperative topographic mapping program nine new quadrangle sheets were published during the month. News of the irrigation districts, cooperative snow surveys, water distribution and other activities of the Division is presented in the monthly report of the State Engineer as follows:

IRRIGATION DISTRICTS

Several days were spent in the field in connection with reports on petitions from the Corcoran, West Side and Citrus Heights irrigation districts for authority for work under section 11 of the California District Securities Commission Act. The work for which authority was requested consisted of the relocation of 12 miles of main canal by the Corcoran district, the replacement with concrete of some 40 old wooden structures, canal lining and other work by the West Side district, and replacement and repairs on pipe lines by the Citrus Heights district.

California District Securities Commission.

Orders were issued by the commission to the following districts:

1. Byron-Bethany Irrigation District: Approving refunding plan through Reconstruction Finance Corporation loan of \$372,500.

2. West Stanislaus Irrigation District: Approving change of plan; approving bonds for certification in the principal amount of \$121,000, the said bonds to be used as security for PWA loan of like amount.

3. Approving assessment rates for 1935-36, under section 11 of the Securities Commission Act, for the following districts: Carmichael, Citrus Heights, San Dieguito and Waterford irrigation districts.

FLOOD CONTROL AND RECLAMATION

a. Maintenance, Sacramento Flood Control Project

Commencing November 11th, a small WPA crew has

been engaged in miscellaneous work about the warehouse and headquarters, on the levees and on the ditches. This crew consisted of nine men at the start and has been increased to 17. As soon as it is increased to suitable size, about 30 men, it will be transferred to river channel clearing work.

b. Relief Labor Work.

Approval has been received on five WPA applications and preparations are being made to commence work.

Work will commence Monday, November 25th, with a crew of 60 men clearing the Feather River overflow channel above Marysville in Sutter County. A crew of 40 men will also commence work on November 25th in Yuba County, either on the Feather River overflow channel or the Bear River.

Work will be commenced on November 26th with 40 men in the Sacramento By-pass in Yolo County, filling an old cross ditch.

These projects have been slow in starting, but it appears now that the relief roll is building up rapidly, so that all of the approved projects will be fairly well started within the next six weeks.

c. Sacramento Flood Control Project.

Reports have been rendered on a number of applications before the Reclamation Board and inspections have been made on approved applications.

Considerable time has been spent in assisting in the preparation of data and reports in connection with the modification of the construction and bank protection programs proposed by the U. S. Division Engineer.

Work is proceeding in the installation of pipes and other incidental construction for the south levee of the American River, contract for which has been let by the California Debris Commission. Actual earthwork will be commenced in about one week.

This office has completed the surfacing with gravel of a road upon the levee at Wholfrom warehouses above Colusa, at a cost of \$500.

Work by the contractor under the California Debris Commission, for the construction of three drainage pumping plants on the Sutter By-pass, has been proceeding slowly awaiting delivery of material and equipment.

d. San Joaquin River.

Contract was awarded for construction of three units of levee in Reclamation District No. 2064, under Chapter 365, 1935, to close the three gaps in the levee. The contractor started work on November 1st, and it is expected to be completed by December 2d.

e. Flood Measurements and Gages.

All of the flood gaging stations and automatic recorders maintained by this office each winter are now in full operation, and arrangements have been made for making measurements of flood discharges should this be required.

Plan to Irrigate 50,000 Acres of Land

(Continued from preceding page)

WATER RIGHTS

Supervision of Appropriation of Water.

Twenty-seven applications to appropriate water were received during October; 11 were denied and 14 were approved. Fourteen permits were revoked and the rights under 5 permits were confirmed by the issuance of license.

One of the applications received which is of major importance is that by the county of San Bernardino. This application proposes an appropriation of 1000 cubic feet per second and 110,000 acre-feet per annum from West Fork of Mojave River and Mojave River for irrigation and domestic purposes on 50,000 acres of land in San Bernardino County.

Inspections of projects under permit preliminary to the issuance of license, were made in Butte, Colusa, Placer, Sacramento, Sutter and Yolo counties. Work of this character is concluded for the current season.

On October 1st reports were requested from 1310 permittees and on October 15th reports were requested from 477 licensees. These reports are coming in daily and are being subjected to analysis for the purpose of determining the status of the projects covered by permit and license.

DAMS

Application for approval of plans and specifications for enlargement of the Veeh Dam in Orange County was filed November 1, 1935. The proposed enlargement will raise the crest 5.75 feet and increase the storage capacity of the reservoir from 46 to 108 acre-feet. The estimated cost of the work is \$500.

Application for approval of plans and specifications for enlargement of La Patera Dam in Santa Barbara County was filed November 15, 1935. The enlargement will increase the height 2 feet and the storage capacity of the reservoir from 162 acre-feet to 201.8 acre-feet. The work is estimated to cost \$1,100.

Application for approval of plans and specifications for alteration to the Pine Grove Dam in Nevada County was filed October 24, 1935. The work contemplated consists of the removal of the existing spillway, the construction of a new and larger spillway in a different location, and repairs to the outlet conduit and gate structure.

Application for approval of plans for alteration of the American River Head Dam of the Pacific Gas and Electric Company in El Dorado County was filed November 2, 1935. The proposed work consists of reconstruction of one abutment wall. This application was approved by the State Engineer November 13, 1935.

CONSTRUCTION WORK UNDER WAY

Construction work under way in southern California on San Gabriel No. 1 Dam of the Los Angeles County Flood Control District, Cajalco Dam of the Metropolitan Water District and Grant Lake Dam of the city of Los Angeles is proceeding satisfactorily. Repairs on the Lake Sherwood Dam in Ventura County are nearing completion.

The construction work on the Santa Clara Valley Water Conservation District's dams is nearly completed. Work on the enlargement of the O'Shaughnessy Dam of the city of San Francisco and the construction of the West Valley Dam in Modoc County is proceeding slowly, but in a satisfactory manner.

At the Mad River Dam for the city of Eureka the work is still in the excavation stage, and at Arcata Dam the work other than clearing and stripping will be delayed until spring.

Major alterations and repairs on the Lake Francis Dam of the Pacific Gas and Electric Company and on the Huntington Dam of the Southern California Edison Company are nearing completion.

Overpour protective work at the Combie Dam of the Nevada Irrigation District on Bear River and the Melones Dam of the Oakdale and South San Joaquin irrigation districts on the Stanislaus River is practically complete.

Minor repair and maintenance work such as painting of exposed concrete faces for decrease of seepage, clearing of spillways of debris, installation of booms, testing and checking of operating mechanisms and removal of spillway gates and flashboards is under way in preparation for the coming run-off season.

SACRAMENTO-SAN JOAQUIN WATER SUPERVISOR

Office work is proceeding on compilation of the 1935 report covering the diversions, stream flow, and return flow in the Sacramento-San Joaquin territory and salinity in the delta.

The flow of the Sacramento River at Sacramento in early November was about 7000 second-feet with little recent variation. The flow of the San Joaquin River near Vernalis was 1700 second-feet early in the month.

There has been a continued recession of salinity during the past month so that salinity of 100 parts of chlorine per 100,000 is now below Antioch and Collinsville.

CALIFORNIA COOPERATIVE SNOW SURVEYS

Practically all arrangements for the snow surveys in the coming season have been completed. Through the cooperating agencies, surveys will be made to furnish data from which forecasts of the April-July, 1936, stream flow will be made for all of the major stream basins. The principal surveys will occur about the end of March.

Office work is in progress in bringing natural flow computations up to date, compiling normals, etc., and otherwise assembling and correlating the data upon which no work was done during the period July, 1933, to August, 1935, when the snow survey work as a State project was temporarily discontinued.

FEDERAL COOPERATION—TOPOGRAPHIC MAPPING

Progress was made during October in connection with the field work on the Paynes Creek and Burney

(Continued on page 26)

Topographic Survey Sheets Covering 9 Areas Published

(Continued from page 25)

Quadrangles in Tehama and Shasta counties which are Federal sheets, and on the Sebastopol Quadrangle in Sonoma County, which is a cooperative sheet. Progress was made also in connection with the office work on Cucamonga No. 4 Quadrangle sheet in San Bernardino County, which is also a cooperative sheet.

The following published sheets made their appearance during the month:

Dunsmuir Quadrangle— Final sheet on a scale of 1:125,000 with 100' contours.

Oildale Quadrangle— Final sheet published on a scale of 1:31,680 with a contour interval of 5'.

West Camp Quadrangle— Final sheet published on a scale of 1:31,680 with a 5' contour.

Reef Ridge Quadrangle— An advance sheet published on a scale of 1:31,680 with contour intervals of 5' and 25'.

Dark Hole Quadrangle— An advance sheet published on a scale of 1:31,680 with contour intervals of 5' and 25'.

Azusa, Mt. Wilson, Little Tujunga and Mt. Lowe Quadrangles—

Advance sheets covering areas in Los Angeles County published on a scale of 1:24,000 with contour intervals of 5' and 25', the work being done by the Geological Survey in cooperation with the County of Los Angeles.

The Dunsmuir, Oildale and West Camp are cooperative sheets, the former covering areas in Siskiyou and Shasta counties, the Oildale sheet covering areas in Kern County and the West Camp sheet covering areas in Kern and Kings counties.

WATER RESOURCES

South Coastal Basin Investigation.

Work on the South Coastal Basin Investigation has continued along routine lines during the present month.

Central Valley Project.

The United States Bureau of Reclamation is making progress in initiating work on the Central Valley Project in California for which the President has approved an initial allotment of \$15,000,000. Their engineers are studying the various units of project proposed for immediate construction and are working closely with the State Engineer. The Department of Public Works is cooperating in every way possible with the Bureau of Reclamation in speeding work on the project and proposes financing the drilling operations at the site of the combination highway and railroad bridge over the Pit River.

Yerba Buena Tunnel Bore Completed with Removal of all Core

THE YERBA BUENA Tunnel for the San Francisco-Oakland Bay Bridge is a reality.

Boring through the island has been completed and the last of the core removed. Construction of the upper deck of the huge trans-bay structure, which will cut the tunnel in half horizontally, has been started.

Inside its thick concrete walls the tunnel is 66 feet wide and 53 feet high. The accompanying photograph shows how an automobile is dwarfed in size by the height and width of the bore, the largest of its kind in the world.

DRIVE THREE BORES

The tunnel is completely lined with concrete of a minimum thickness of four feet on its side walls and a minimum thickness of three feet over its crown. Chief Engineer C. H. Purell and his staff actually built the tunnel and then bored it out.

Open portals at the east and west end of the island tunnel first were excavated. The engineers then drilled three bores through Yerba Buena, two at either lower side and one in the crown, blocked out in a horseshoe-shaped excavation, which then was concrete and steel lined from three to four feet. The rocky core within the tunnel walls then was dug out with mammoth power shovels.

TWO TRAFFIC DECKS

The tunnel is 540 feet in length. Together with a reinforced concrete viaduct and four 288-foot steel truss spans, it constitutes the midbay portion of the great San Francisco-Oakland Bridge.

The bore will amply accommodate the bridge structure with its two traffic decks, the upper with six lanes for fast automobile travel and the lower with three lanes for heavy trucks and two tracks for interurban trains. The roof of the tunnel is supported by 16-inch steel arch ribs spaced every three feet and imbedded in concrete with a crown thickness of three feet.

The Yerba Buena Crossing was the fifth contract for the bridge awarded by the Department of Public Works and called for an island anchorage, tunnel, piers, concrete viaduct and relocation of certain existing roads and buildings on the military and naval reservation. This work will cost \$1,821,129.50.

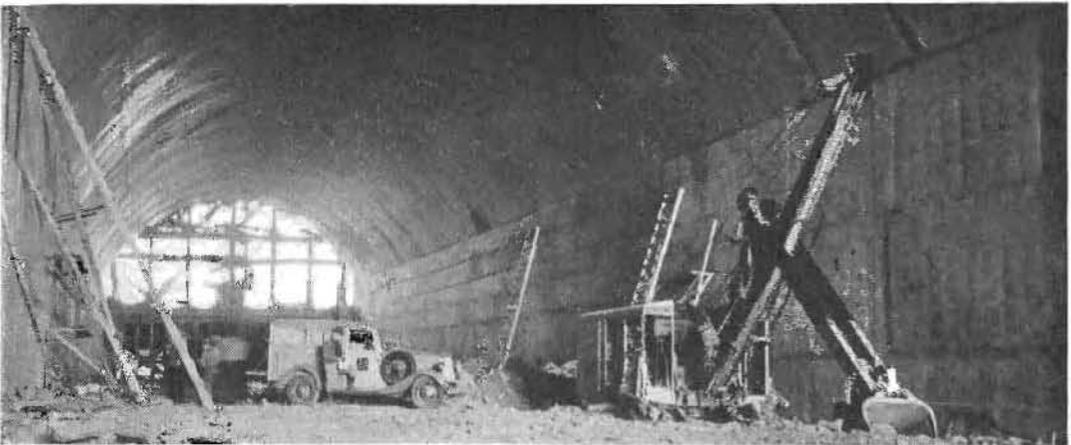
A pedestrian is a man who missed the payments on his car.



BAY BRIDGE TUNNEL BORE on Yerba Buena Island just completed is 76 feet wide by 58 feet high making it the largest bore tunnel in the world. Note size compared with trucks.



REMOVING LAST OF CORE—A horseshoe shaped excavation was made through the rock which was then concrete and steel lined before the inside or core of the tunnel was dug out.



UPPER DECK CONSTRUCTION is begun at far end of tunnel to accommodate six lanes of fast automobile travel. Lower deck will have three truck lanes and two railroad tracks.

U. S. Funds Finance Road Landscaping

(Continued from page 14)

tion and personnel handling roadside improvement work, until at the present time, the organization is made up of a landscape engineer, with an assistant, two landscape draftsmen, and from one to five tree foremen and crews in each of the eleven districts throughout the state. These men have all passed civil service examinations and are sufficiently experienced and capable to handle the required work.

Plans and specifications for all phases of improvement work are prepared in the Sacramento headquarters office. However, it has been only within the last two years that any appreciable progress has been made. The government requirement that 1 per cent of the federal and state allocation for the construction of roads in California be expended on improvement projects has given the opportunity, heretofore impossible by reason of lack of funds, to develop some worthwhile projects.

Two large projects—the Santa Monica Palisades and the new through Boulevard in Santa Barbara, are being supplied with hand labor through the SERA and WPA, the state furnishing the equipment, materials, and supervision. It is estimated that the cost of these projects when completed will exceed \$80,000. It is projects of this nature that it would be impossible to carry out were it not for the availability of government funds.

LARGE LANDSCAPING PROJECT

The main east entrance to Los Angeles—the Ramona Boulevard, five and nine-tenths miles in length—was landscaped at a cost of some \$23,000. Here is an example of beneficial maintenance expenditure estimated at \$5,000 a year.

The design was such that undesirable views would be screened and pleasing vistas and skyline effects produced. Native California plant material was used almost entirely, in order to create as natural a landscape as possible and because indigenous material will require less maintenance as it becomes established.

Other large projects include a ten-mile planting between Encinitas and Oceanside on the coast highway to San Diego; the north entrances to Ventura and Santa Barbara; and

one that is quite unusual—the mission-style development at the intersection entering San Juan Bautista, in San Benito County. This will serve as an entrance to one of our most picturesque missions and will be constructed in true mission style from adobe brick and tile.

A campanile and cross will be the main architectural features—landscaped with plants used by the old padres when the missions were first founded. This will represent a type of roadside development that will require a minimum of maintenance.

The north and west entrances to Sacramento are being improved. The west entrance development, connecting with the new Sacramento River bridge, represents a new type of roadside development for city entrances. Curbs, gutters, sidewalks, individual water supply and irrigation system, trees, shrubs, and grass are to be installed.

ENTRANCE TO SACRAMENTO

The total cost of this project is estimated at approximately \$28,000. Necessary continuous maintenance will exceed \$2,000 a year. The north entrance is being planted to trees and shrubs, in order to screen the railroad from the highway. Here the soil and climatic conditions demand constant watering for several years, and a water system is being installed to provide more economical watering than would be possible were it necessary to haul water in tank trucks for the maintenance of this planting.

The landscaping program for 1936 will include several similar projects throughout the state, but more emphasis is being placed on projects that will be of immediate practical benefit to the public, such as drinking fountains, picnic areas, and scenic points, where the first cost is followed by minimum maintenance costs.

Also, the hand labor requirements of the government are being utilized to experiment with erosion control on cut slopes and to obliterate scars of construction, in an endeavor to illustrate that practical roadside improvement or landscaping can pay dividends as well as be a constant drain on maintenance funds.

For jaywalkers every year is a leap year.

Old Timer, Do You Hold a Card to Beat This?

THERE is competition in the Old Timers' Club of the State Division of Highways for the honor of being the first charter member.

Possession of one of the identification cards issued by the old California Highway Commission in 1912 and thereafter to every man appointed on the staff of a division engineer is the only membership requirement.

Last month Thomas H. Dennis, Maintenance Engineer of the Division of Highways, assumed the position of head man when he produced an identification card certifying to his employment as an instrument man attached to Division V, San Luis Obispo, which bore the date March 21, 1912. Now comes E. J. Bassett, District Office Engineer, District II, with a card issued on the same day.

RIVALRY KEEN

"This card should, I believe," writes Mr. Bassett, "give me equal rights with Mr. Dennis."

Evidently Mr. Bassett thinks he might have received his appointment some hours earlier than Mr. Dennis, for he laments:

"If these cards had only been numbered!"

The rivalry of these two, however, may lose some of its importance as Mr. Bassett adds: "Mr. F. W. Haselwood, my superior in District II, informs me he holds a card older yet, and it may be that he will submit his as a membership application."

CAN'T PRODUCE CARD

Mr. Bassett and Mr. Dennis have another rival although the latter's aspirations are somewhat beclouded by a technical question which the members of the Old Timers' Club will have to settle themselves.

The question is raised by J. C. Alstrom of Willits, Mendocino County. Records of the California Highway Commission show that Mr. Alstrom was employed March 15, 1912, six days before the issuance of identification

CALIFORNIA HIGHWAY COMMISSION		
<small>COMMISSIONERS</small> CHAS. D. BLANEY W. D. DARLINGTON BURTON A. TOWNE, CHAIRMAN	Forum Bldg SACRAMENTO, CALIFORNIA.	<small>HIGHWAY ENGINEER</small> AUSTIN B. FLETCHER <small>SECRETARY</small> WILSON R. ELLIS
THIS IS TO CERTIFY that <u>Edwin J. Bassett</u> of <u>Redding, Cal.</u> <u>was duly appointed, March 21, 1912, to be</u> <u>Instrumentman attached to</u> <u>Division II</u> <u>of the CALIFORNIA HIGHWAY COMMISSION, his term</u> <u>of office to be at the pleasure of the Commission.</u> <div style="display: flex; justify-content: space-around;"> <div>  <small>HIGHWAY ENGINEER</small> </div> <div>  <small>SECRETARY</small> </div> </div>		

FIRST PLACE TIE—Card of E. J. Bassett bears same date as T. H. Dennis card shown last month.

cards to Mr. Dennis and Mr. Bassett. BUT—Mr. Alstrom can not produce his credentials. He writes:

"I went to work for the State in the then newly organized Highway Department on March 15, 1912. My position was Chief of Party on location in District 111, of which W. C. Howe was District Engineer, and I was with Mr. Howe there until he was transferred to District V, when he took me and my party with him. I was with him until July 8, 1917 * * *. I never heard of any appointment card when I was employed. I think it would be a nice little souvenir for a person to have. I wonder what has become of my card? I am interested in securing it if it still is around and to be found."

RECORDS SUPPORT CLAIM

Mr. Alstrom says the members of his first party were Jerry Devine, instrument man; Fred Anderson, chainman-rodman, (deceased); E. R. McEwen, chainman-rodman; and Charles Casey, teamster.

Aging records of the old California Highway Commission reveal Mr. Alstrom's appointment on March 15, 1912, the commission having voted to employ him on February 22 of that year, and there is a notation that in part answers his inquiry as to what became of his card. The notation reads: "Identification card sent."

Snow Removal Operations Described

(Continued from page 22)

of conjecture. In the heavy snow areas, it is therefore necessary to have an adequate force, subject to call at all times. In these areas storms have been known to last for a week, piling up a total of eight to ten feet of snow. Again, heavy winds following the end of a storm have created almost as much work, by drifting the newly fallen snow.

Snow removal usually starts with the storm and continues throughout its duration. The first units out are the 3½ to 5-ton four-wheel-drive trucks equipped with speed plows of the "One-Way" or "Reversible" type. This equipment, operating at twenty to thirty miles an hour, pushes the snow to the sides of the road until the storage space is filled.

Where the total fall does not exceed two feet, these plows are capable of maintaining some ten to fifteen miles of road. Falls in excess of this amount require additional storage, which is acquired by pushing the snow beyond the limits of the roadway with a wing plow attached to the side of the truck and extending outward beyond the roadway.

Where the fall is greater than can be handled with the above equipment, truck or tractor-driven rotary plows are required to throw the yarded snow well beyond the roadway limits to provide space for the next fall. A combination of speed and rotary plows has successfully handled a total season's fall of forty feet.

"V"-TYPE WORKS FAST

The "V"-type speed plow, having a five-foot vertical height and eleven-foot wing spread, has demonstrated its effectiveness wherever road alignment permits of fast operation. This plow will handle two to three feet of loose snow without pause, and is capable of bucking through drifts four to six feet in height. The side wings aid materially in furthering the outward disposal of the snow carried upward by the "V." This unit is particularly valuable at locations where the season's fall does not exceed six feet, though occasional heavy falls and drifts can be expected.

Several types of rotary plows have been developed, either truck or tractor operated. Of these, the most promising is the auger-blower type. A single engine, developing 175 horsepower, drives both plow and truck.

The snow is picked up by two sets of augers mounted horizontally, normal to the road surface at the front of the machine. The revolving augers break up the snow and carry it inward to a centrally located blower, from whence it can be directed outward in either direction. It is possible to throw snow some one hundred feet with this unit.

An attachment for this rotary is a long upper boom, equipped with claw-like teeth which tear down the drifts, moving back and forth across the face of the auger blades. With this attachment, drifts ten feet high and over can be worked down to the augers.

TRAILER WIDENS ROAD

The trailer widening rotary is a comparatively recent development especially adapted to locations where restricted storage impedes removal. The four-foot rotor is trailed on an offset hitch by a truck, after the snow has been bladed to the roadsides. It will widen banks up to five feet in height, throwing the snow a considerable distance off the road. The cleanup, however, is somewhat loose, as a small amount of snow either falls back or is thrown outward into the roadway by the rotor.

The power plant consists of a motor generating 114 horsepower at 1800 r.p.m. This unit effects a real economy, lessening equipment investment under conditions normally requiring an expensive truck-mounted rotary.

The following equipment, which is all state-owned, is used on snow-removal work:

- 139 trucks ranging from 2½ to 5-ton capacity
- 29 5-ton tractors
- 120 truck-operated displacement plows
- 19 truck-operated rotary plows
- 5 tractor-operated displacement plows
- 1 tractor-operated rotary plow
- 22 graders, tractor pulled

COST OF REMOVAL

The cost of snow removal varies of course with the conditions encountered. Naturally it is less expensive in the lower altitudes where the removal is effected in conjunction with the routine maintenance activities. In the high mountain area where removal is the major objective, special crews and equipment must be held in readiness throughout the winter season.

The amount of fall, water content of snow, and drift conditions, all affect the cost of

(Continued on page 32)

Highway Bids and Awards

for November, 1935

ALAMEDA COUNTY—Overhead King over S. P. R. R. near El Cerrito Hill in Albany. Reinforced concrete girder spans and steel girder spans with concrete deck. District IV, Route 69, Section Albany. Lingren & Swinerton, Inc., San Francisco, \$251,798; Bodenhamer Construction Company, Oakland, \$251,297; Pacific Bridge Co., San Francisco, \$252,692; Healy Tibbitts Construction Co., San Francisco, \$265,727; Fredrickson-Watson Construction Co. & Fredrickson Bros., Oakland, \$269,617; McDonald & Kahn Co., Ltd., San Francisco, \$272,163; Clinton Construction Co., San Francisco, \$273,262; M. B. McGowan, Inc., & C. W. Caletti & Co., San Francisco, \$283,786. Contract awarded to J. F. Knapp, Oakland, \$249,281.

ALAMEDA COUNTY—Between San Francisco Bay Bridge and Foiger Avenue. About 4 miles to be graded and paved with asphaltic concrete. District IV, Routes 5 and 69, Section Oakland-Emergencyville-Berkeley. A. Teichert & Son, Inc., Sacramento, \$278,343; Peninsula Paving Company, San Francisco, \$268,938; Heafey-Moore Co., Oakland, \$277,934; Union Paving Co., San Francisco, \$263,456; Fredrickson & Watson Construction Co., Fredrickson Bros.-Jones & King, Oakland, \$266,413; Southern California Roads Company, Los Angeles, \$321,622. Contract awarded to Hanrahan-Wilcox Corp., San Francisco, \$247,353.

CONTRA COSTA COUNTY—A reinforced concrete pier overhead structure over the A. T. & S. F. Ry. $\frac{3}{4}$ miles north of Concord and about 0.18 mile of roadway to be graded and surfaced with plant mix surfacing. District IV, Route Feeder Rd., Section Malthy O. H. Xing. A. Soda & Son, Oakland, \$19,614; McHugh & Heilman, San Francisco, \$22,438. Contract awarded to A. T. Howe, Santa Rosa, \$17,702.

IMPERIAL COUNTY—Between 4 miles west of Westmoreland and Trifolium Canal. 3.2 miles plant-mix surface. District XI, Route 26, Section A. R. E. Hazard & Sons, San Diego, \$41,785. Contract awarded to Oswald Bros., Los Angeles, \$39,898.

INYO COUNTY—Grading 7.3 miles between Death Valley Jct. and California-Nevada State line. District IX, Route 128, Section A. A. S. Vinnell Co., Los Angeles, \$10,351; Contract awarded to Basich Brothers, Torrance, \$9,854.50.

LASSEN COUNTY—Between Long Valley Creek and 2.8 miles north of Route 21. About 9.2 miles to be graded and a bituminous seal coat applied. District II, Route 29, Section E. Peninsula Paving Co., San Francisco, \$128,160; George Pollock Co., Sacramento, \$163,894; Isbell Construction Co., Reno, Nevada, \$151,812; Dunn & Baker, Klamath Falls, Oregon, \$148,630; Hemstreet & Bell, Marysville, \$152,554. Contract awarded to Harms Bros., Sacramento, \$127,322.

LOS ANGELES AND KERN COUNTIES—Between $\frac{1}{2}$ mile south of Kern County Line and Fort Tejon. About 5.5 miles to be graded, paved with Portland cement concrete and a reinforced concrete bridge constructed. District VI, Route 4, Sections D. and A. Gibbons & Reed, Burbank, \$382,264; Basich Bros., Torrance, \$396,517; Granfield, Farrar & Carlin & N. M. Ball, San Francisco, \$368,451; Southern California Roads Co., Los Angeles, \$380,580. Contract awarded to Griffith Co., Los Angeles, \$342,975.

LOS ANGELES COUNTY—A reinforced concrete stairway to pedestrian overhead 0.5 mile north of Colorado Avenue. District VII, Route 60, Section Santa Monica. Carl Hallin, Los Angeles, \$8,235; J. B. McIntosh, Glendale, \$8,535; Hoagland Engr. & Construction Co., Long Beach, \$9,416; L. W. Odell, Los Angeles, \$9,849; Contracting Engr.'s, Inc., Los Angeles, \$10,461. Contract awarded to Parish Bros., Los Angeles, \$6,834.

LOS ANGELES—Marengo Street between Soto and Cornwell Street; 0.5 mile to be graded and paved with asphaltic concrete and plant mix surfacing. District VII, Route 4, Section Los Angeles. Mike Radich, Los Angeles, \$7,651; Griffith Co., Los Angeles, \$7,991; C. F. Robbins, Los Angeles, \$8,315; Paul R. Hughes, Long Beach, \$8,704. Contract awarded to Tomei Construction Co., Culver City, \$7,410.

LOS ANGELES COUNTY—In Santa Monica at 4th Street railway grade crossing construct a flood lighting system. District VII, Route 60, Section Santa Monica. Norton & Norton Electrical Co., Ltd., Los Angeles, \$845; Walker Martin Corp., Ltd., Los Angeles, \$983. Contract awarded to D. S. McEwan, Santa Monica, \$835.

LOS ANGELES—Rosemead Blvd., between San Gabriel Blvd. and Ramona Blvd. About 3.5 miles to be graded and paved with Portland cement concrete. District VII, Route 168, Section B. and C. George Herz & Co., San Bernardino, \$144,316; J. L. McClain, Los Angeles, \$127,366; Basich Bros., Torrance, \$136,627; Matich Bros., Elsinore, \$119,952; Gogo & Rados, Los Angeles, \$127,866; J. E. Haddock, Ltd., Pasadena, \$128,267; Oswald Bros., Los Angeles, \$119,455. Contract awarded to C. O. Sparks, Los Angeles, \$116,866.

MARIN COUNTY—Furnish and apply Armor Coat to roadway and Seal Coat to shoulders between Belvedere Crossing and Tiburon. About 1.3 miles. District IV, Route 52, Section A-Blv. Lee J. Immel, Berkeley, \$7,516; A. G. Ruisch, San Francisco, \$8,449; Palo Alto Roads Materials Co., Ltd., Palo Alto, \$7,425. Contract awarded to E. A. Forde, San Anselmo, \$6,891.

MONTEREY COUNTY—Across Thompson Gulch, about 3 miles north of King City. About 0.3 mile to be graded and surfaced with crushed run base and natural rock asphaltic surfacing. District V, Route 2, Section E. J. L. Conner, Monterey, \$32,174; Granfield, Farrar & Carlin, San Francisco, \$35,640; L. A. Brisco, Arroyo Grande, \$31,462; Stewart & Nuss, Inc., & J. Jurkovich, Fresno, \$31,839. Contract awarded to A. Teichert & Son, Inc., Sacramento, \$29,216.

MONTEREY COUNTY—Between 3 miles north of Big Sur and Molera's Ranch. About 1.8 miles to be graded and surfaced with bituminous treated screen river gravel (road mix method). District V, Route 56, Section F. Force Construction Co., & W. A. Kettlewell, Oakland, \$91,145; George J. Bock Co., Los Angeles, \$88,858; George Pollock Co., Sacramento, \$95,666; J. L. Conner, Monterey, \$88,684; Peninsula Paving Co., San Francisco, \$79,692. Contract awarded to Granfield, Farrar & Carlin, San Francisco, \$77,586.

ORANGE COUNTY—At Newport Beach constructing grade separation and 0.8 mile approaches graded and paved with asphaltic concrete and Portland Cement Concrete. District VII, Routes 43 and 60, Section Newport Beach, A and A. Sharp & Fellows Contracting Co., Los Angeles, \$173,459; Oscar Oberg, Los Angeles, \$176,688; M. B. McGowan, Inc., San Francisco, \$177,686; J. E. Haddock, Ltd., Pasadena, \$181,747; R. R. Bishop, Long Beach, \$188,340; Griffith Co., Los Angeles, \$199,363; Daley Corp., San Diego, \$203,068. Contract awarded to Mundo Engineering Corp., Los Angeles, \$154,922.

SACRAMENTO COUNTY—Between Courtland and Freepoint. About 0.4 mile constructing riprap slope protection. District III, Route XI, Section E. and F. Blake Bros., Co., San Francisco, \$30,153; Hutchison Co., Oakland, \$31,391. Contract awarded to Healy-Tibbitts Construction Co., San Francisco, \$28,802.

SAN DIEGO COUNTY—At Santa Margarita River. About 0.7 mile to be graded. District XI, Route 2, Section C. V. R. Dennis Construction Co., San Diego, \$32,815; A. S. Vinnell Co., Los Angeles, \$33,815; Geo. J. Bock, Los Angeles, \$34,596; Sharp & Fellows Construction Co., Los Angeles, \$35,555; Daley Corp., San Diego, \$36,550; Dimmitt & Taylor, Los Angeles, \$40,957; R. L. Oakley, Los Angeles, \$43,155; C. G. Willis & Sons, Inc., & Chas. G. Willis, Los Angeles, \$43,353. Contract awarded to Basich Bros., Torrance, \$30,430.

SAN DIEGO COUNTY—Over A. T. & S. F. Ry. $\frac{1}{2}$ mile north of Del Mar, widen structure and widen and asphaltic concrete pave approaches. District XI, Route 2, Section A. Lynch-Cannon Eng. Co., Los Angeles, \$37,944; R. L. Oakley, Los Angeles, \$42,999; R. R. Bishop, Long Beach, \$31,336; M. H. Golden, San Diego, \$31,880; Byerts & Dunn, Los Angeles, \$33,674; Parish Bros., Los Angeles, \$26,554; B. O. Larsen, San Diego, \$32,864; Contracting Engineers,

(Continued on page 32)

Snow Roads Total 57,000 Vehicle Miles During the Winter

(Continued from page 30)

removal. Removing the wet snow on Donner Summit is found to be more expensive than an equivalent removal of dry snow on the Red Bluff-Susanville lateral. On the other hand, the cost of removing lighter falls of dry snow on east slopes of the Sierra between Bridgeport and Bishop is greater than on either of the routes mentioned, due to the heavy winds which drift the snow for days after the snow-storm is over.

Periodical traffic counts have been made on these snow roads for several years to determine the justification of this removal. These counts indicate that some fifty-seven million vehicle miles occur on these roads during a normal winter season. The total vehicle miles traveled on these snow roads during the winter season are equivalent to the total vehicle miles traveled during one and one-fourth days on all roads and streets in California, or equal to the total vehicle miles traveled for three days on every road and street in Los Angeles County.

TRAFFIC PAYS COST

The total cost of removal last year was \$346,000, or an average cost of removal of six-tenths of one cent per vehicle mile. This cost is but half of what the motorist returns from the gasoline fuel tax; but when one considers the tying up of 3,000 miles of road, which cost an average of \$15,000 a mile, even for a period of sixty days, it will be seen that the interest charges at 4 per cent will alone almost justify the cost of removal.

We may confidently expect that this work will expand as the mountain roads are improved to the standards required for snow removal. The great investment in roads and automobile equipment, as well as the business activities associated with snow sports, will further this work, until California's highways will eventually return a year-round interest on their investment.

California Highway Patrolmen traveled a total of 45,049 miles in the first nine months of this year to serve warrants for traffic violations.

Golf is the tie that binds many a husband and wife by separating them on Saturdays, Sundays and other fighting holidays.—*National Motorist*.

In Memoriam

LOUIS B. PROSPER, who entered the State service in January, 1919, and had been employed continuously since that time as a Maintenance Foreman in the Ventura District, passed away on November 9, 1935. Mr. Prosper was born in Holton, Maine, in 1879.

Prior to coming to California in January, 1919, Mr. Prosper was employed for several years by the Massachusetts Highway Commission and came into the State service in California very well recommended. He was a very capable man and made an excellent Maintenance Foreman.

Everyone in the Ventura District knew "Louie"; knew him for his pleasing personality and kindness, and knew him to be a loyal and faithful employee of the State Division of Highways, who was always willing to serve, keeping the interests of the highways under his care foremost in his mind. His passing is grieved by his fellow workers in District VII and by the host of other friends he made during his long service with the State.

Mr. Prosper leaves a widow, Helen May Prosper, and our sincere sympathy goes out to her.

HIGHWAY BIDS AND AWARDS

(Continued from page 31)

Inc., Los Angeles, \$37,147. Contract awarded to E. S. & N. S. Johnson, Pasadena, \$25,992.

SANTA CLARA COUNTIES—Undergrade Xing under S. F. R. R. at San Jose. 2 concrete abutments and st. supers, and about 0.14 mile to be graded and paved with Portland cement concrete. District IV, Route Feeder Road, Section Almaden Road Xing, Rocca & Co., San Rafael, \$71,701; Lord & Bishop, Sacramento, \$72,118; Earl W. Heple, San Jose, \$73,710; M. E. McGowan, Inc., San Francisco, \$76,148. Contract awarded to A. J. Raich, San Jose, \$70,766.

SOLANO-NAPA COUNTIES—Between 1 mile north of Carquinez Bridge and Cordelia. About 11.2 miles to be graded and paved with Portland cement concrete. District X, Route 7 and 8, Sec. F, G, H, and A. N. M. Ball Sons and Bodenhammer Construction Co., Berkeley, \$442,117; A. J. Raich and A. G. Raich, San Francisco, \$460,341; Fredrickson & Watson Construction Co., Fredrickson Bros., Jones & King, Oakland, \$439,686; Basich Bros., Torrance, \$461,804; Peninsula Paving Co., San Francisco, \$461,556; A. Teichert & Son, Inc., Sacramento, \$466,919; Union Paving Co., San Francisco, \$472,322. Contract awarded to Harahan-Wilcox Corp., San Francisco, \$434,428.

VENTURA COUNTY—A. C. M. P. Drain to be constructed 12.5 miles north of Ventura. District VII, Route 2, Section F. B. Frank Barr, Ventura, \$16,120; Basich Bros., Torrance, \$16,167; Mike Radich, Los Angeles, \$19,352. Contract awarded to Parish Bros., Los Angeles, \$8,464.

VENTURA COUNTY—Between Newberry Park and Conejo Creek, 4.8 miles graded and paved with asphalt concrete, Portland cement and plant-mix. District VII, Route 2, Section B. Sander Pearson & Mundo Engineering Co., Los Angeles, \$526,340; Granfield, Farrar & Carlin, San Francisco, \$463,719; J. E. Haddock, Ltd., Pasadena, \$495,261; Lewis Construction Co., Los Angeles, \$554,227; Geo. Pollock Co., Sacramento, \$569,130; Gibbons & Reed Co., Burbank, \$515,522. Contract awarded to Mitty Brothers Const. Co., Los Angeles, \$466,036.50.

Just when you think you can make both ends meet, somebody moves the end.

STATE OF CALIFORNIA
Department of Public Works

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

FRANK F. MERRIAM.....Governor
EARL LEE KELLY.....Director
JUSTUS F. CRAEMER.....Assistant Director
EDWARD J. NERON.....Deputy Director

DIVISION OF HIGHWAYS

CALIFORNIA HIGHWAY COMMISSION

HARRY A. HOPKINS, Chairman, Taft
TIMOTHY A. REARDON, San Francisco
PHILIP A. STANTON, Anaheim
CHARLES D. HAMILTON, Banning
RAY INGELS, Ukiah
C. H. PURCELL, State Highway Engineer, Sacramento
JULIEN D. ROUSSEL, Secretary

HEADQUARTERS STAFF, SACRAMENTO

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

DISTRICT ENGINEERS

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

DIVISION OF WATER RESOURCES

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

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

DIVISION OF ARCHITECTURE

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

HEADQUARTERS

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

DIVISION OF CONTRACTS AND RIGHTS OF WAY

C. C. CARLETON, Chief
CLARENCE W. MORRIS, Attorney, San Francisco
FRANK B. DURKOE, General Right of Way Agent
C. R. MONTGOMERY, General Right of Way Agent
ROBERT E. REED, General Right of Way Agent

DIVISION OF PORTS

Port of Eureka—William Clark, Sr., Surveyor

