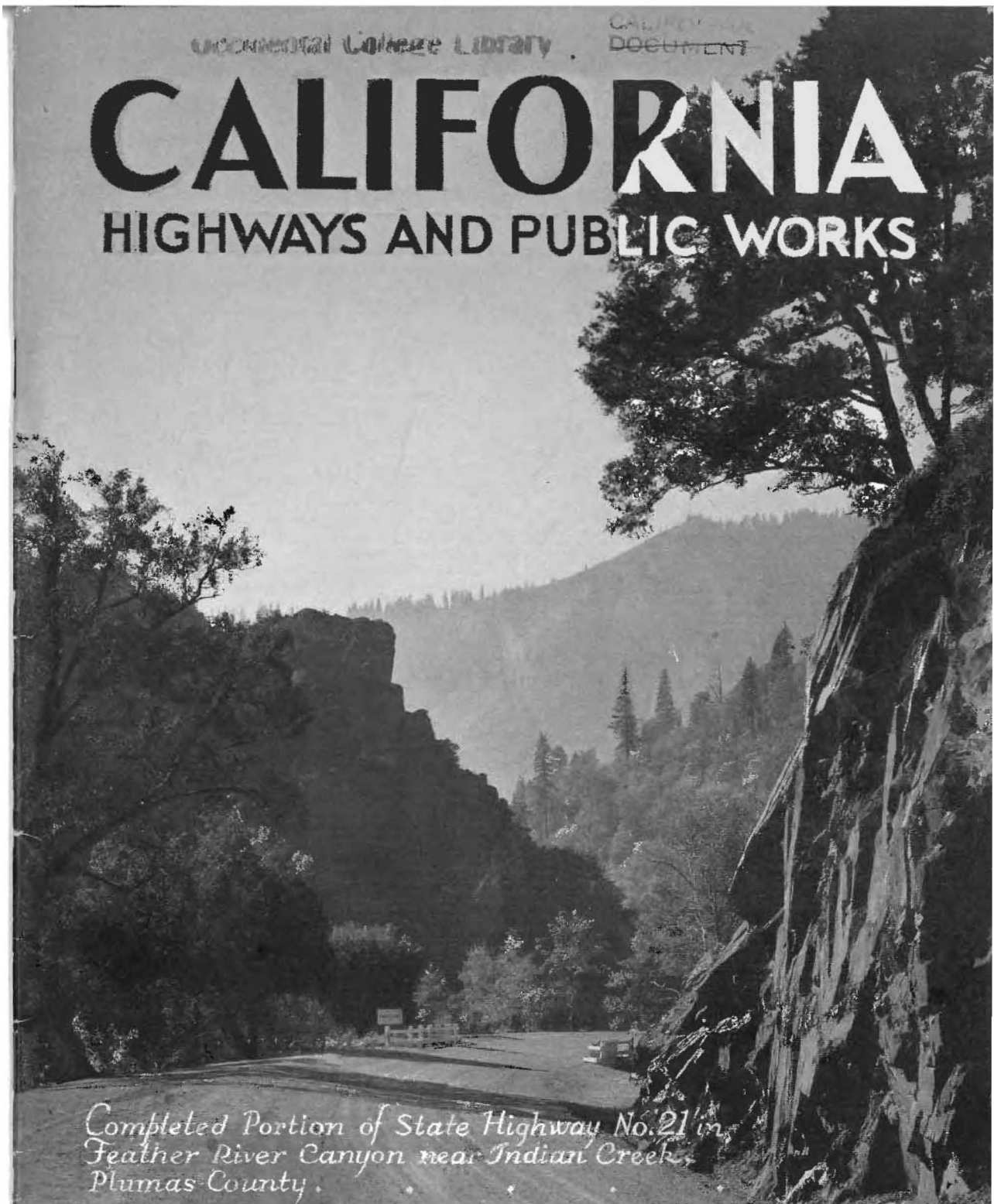
CALIFORNIA

HIGHWAYS AND PUBLIC WORKS



Completed Portion of State Highway No. 21 in Feather River Canyon near Indian Creek, Plumas County.

Official Journal of the Department of Public Works
NOVEMBER • 1935

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Fifty Highway Projects

Providing 4,500,000 Man-hours Work

Being Put Under Way

With Federal Relief Funds

By **HARRY A. HOPKINS,** Chairman California Highway Commission

A PROGRAM of 50 Federal Works Highway projects has been recommended by the Division of Highways for construction under the allocation as authorized by Congress of Federal Emergency Relief funds to California and has been approved up to this date by the three federal agencies that are administering these funds.

The projects as approved by the District Office of the U. S. Bureau of Public Roads; the State Director of the National Emergency Council and the State Administrator of the National Works Progress Administration provide for expenditure of 78 per cent of the federal funds allocated for distribution and administration by the State Division of Highways for the improvement of state highways, feeder roads, and streets in cities or metropolitan areas under the Emergency Apportionment Act of 1935.

HARRY A. HOPKINS

The highway improvements thus made possible in California are in addition to the projects provided for in the regular state highway budget and in the Federal Grade Separation program recently published.

The Federal regulations governing the expenditure of the funds require that at least 25 per cent shall be applied to county or feeder roads not on the Federal Aid or state highway systems and at least 25 per cent to city streets or roads in metropolitan areas. The balance is to be applied on state highways or Federal Aid routes.

The 50 approved projects include 32 on state highways in 25 counties; 11 on feeder roads in 10 counties; and 7 in cities or metropolitan areas in 2 counties, thus distributing the improvements over 37 counties.

The program submitted provides for an expenditure of approximately 78 per cent of the total apportionment, of which 40 per cent is on feeder roads and metropolitan area projects and the balance, or about 38 per cent, on the state highway system.

The remaining balance of the total apportionment has been recommended on definite projects in metropolitan areas but some adjustment of these projects is necessary to obtain final Federal approval.

RELIEF TO UNEMPLOYMENT

The projects included in this program will provide approximately 4,300,000 man hours

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Santa Monica Tunnel Being Built in Open Cut on Footing of Concrete Piles

By **P. R. WATSON,** Resident Engineer

ANOTHER highly important project in the improvement of highway facilities for the movement of traffic to and from the Los Angeles metropolitan area through the Santa Monica coastal district is the Santa Monica Tunnel now fast approaching completion.

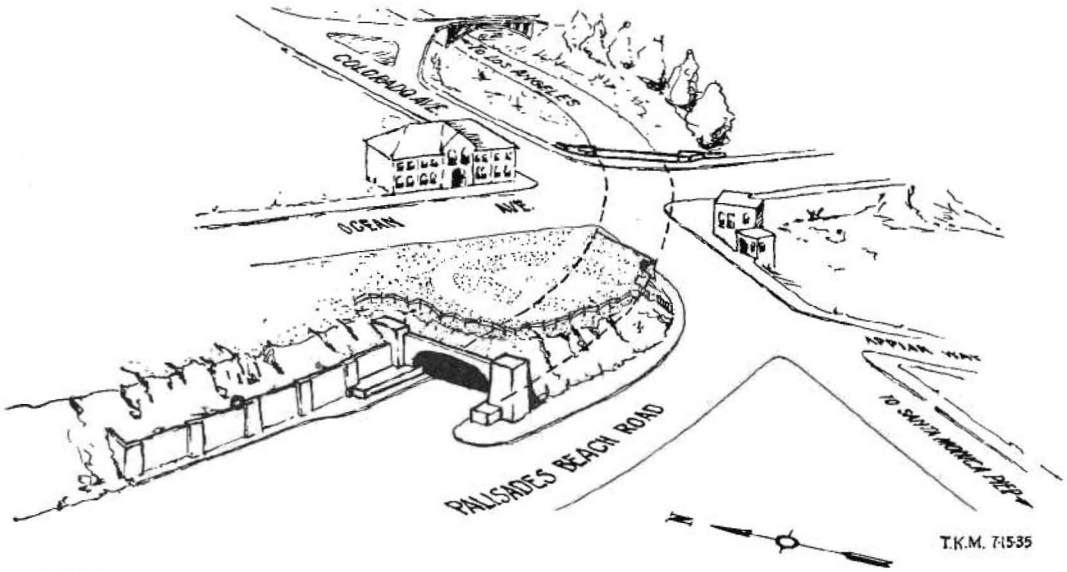
The contract was 80 per cent complete on November 4th, 6 per cent ahead of schedule. On that date, the east portal with its massive pylons, one pylon of the west portal, the 170 foot retaining wall at the westerly end and nine of the ten forty-foot sections of the tunnel had been constructed.

The Santa Monica Tunnel forms the connecting link between the Roosevelt Highway and Lincoln Boulevard in the city of Santa Monica, both highways being a part of U. S. Highway 101.

BUILT IN OPEN CUT

It passes under the intersection of Ocean and Colorado Avenues in the city and under a portion of the Palisades Park. The 400-foot tunnel was made necessary by restrictions which prevent use of the park for highway purposes so that it was decided to go under instead of through it. As the tunnel plans bring the top but a very short distance below the original ground surface, open cut construction was used and upon completion of the work the tunnel will be covered with back fill to conform to the original surface of the park.

The tunnel excavation was started at the west portal to allow the Pacific Electric Co. to construct a temporary trestle across Colorado Street for their tracks and to allow removal of the existing tracks from Ocean Avenue where the tracks interfered with construction. Various other public utilities took advantage of this delay to get their lines clear of the work.



SKETCH showing route of Santa Monica Tunnel from Beach road under park and city avenues.

Some difficulty was encountered by the contractor due to the instability of the soil and it was necessary to slope banks well back to protect the work. In all, 43,000 cubic yards of earth were removed.

PILE-DRIVER CAUSES SLIDE

The driving of the foundation piles followed closely the grading operation. A sub-

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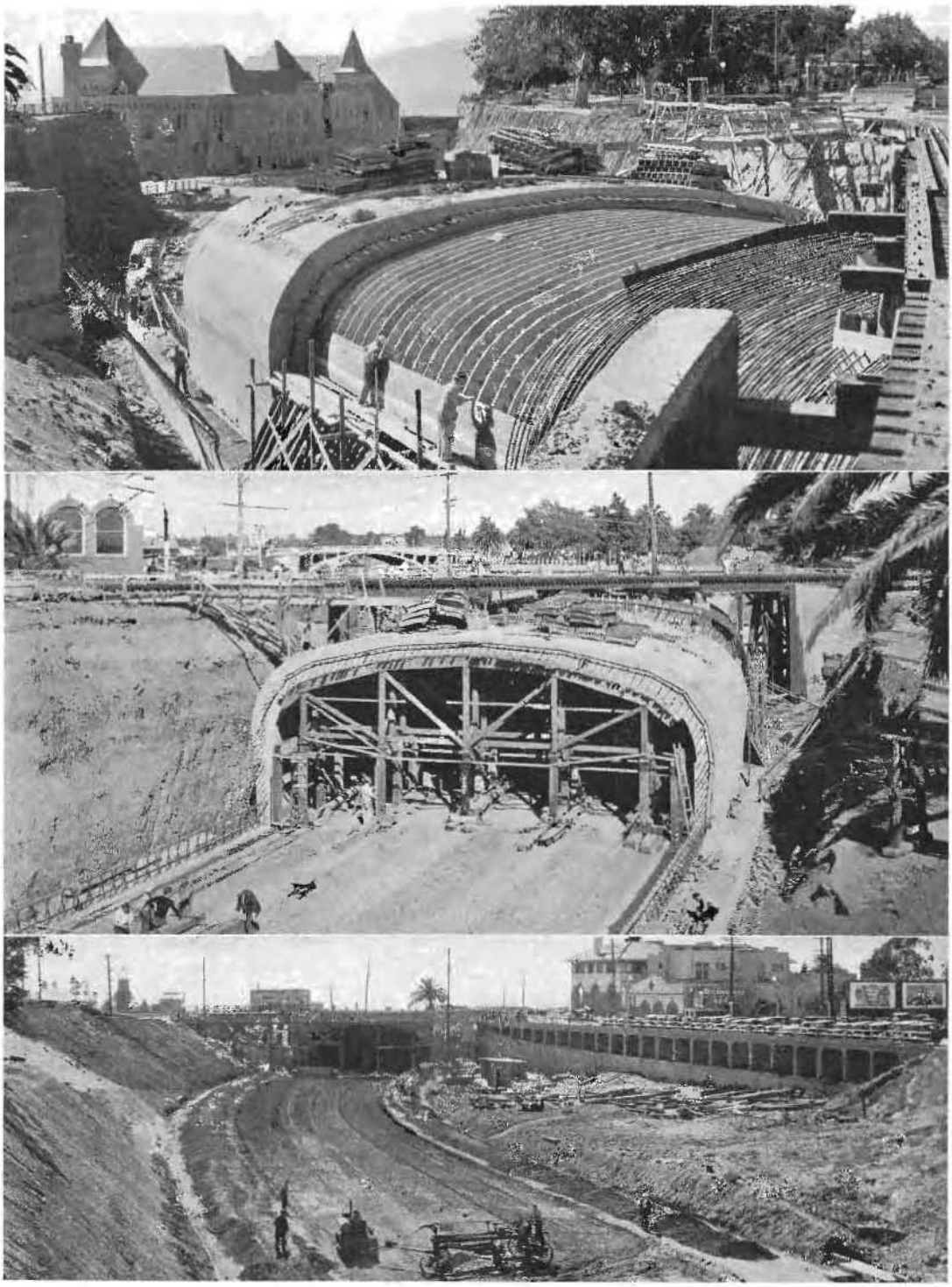

SANTA MONICA TUNNEL CONSTRUCTION—At top, view of open cut through Palisades park, looking toward beach, showing one section of tunnel already concreted and preparation of falsework and reinforcement materials for next section. The center picture gives a good view of the flat arch type made necessary by location conditions. At bottom is shown the east approach open cut under construction.

Sepulveda Boulevard Key Link Opened and Dedicated by Governor Merriam

By **P. A. McDONALD**, Assistant Office Engineer

"THE Sepulveda Boulevard route" and "an outlet to the sea," phrases that have long been synonymous for the residents of the great San Fernando Valley, became a reality on Sunday, October 20, 1935, when amid colorful and impressive ceremonies the new paved highway between Ventura Boulevard and Sunset Boulevard was officially opened and dedicated. This new highway is the key section of the Sepulveda Boulevard route linking the San Fernando Valley with the beach cities.

In attendance at the formal dedication ceremonies representing the State, were Governor Frank F. Merriam; Earl Lee Kelly, Director of Public Works; Justus F. Craemer, Assistant Director of Public Works; Ed. J. Neron, Deputy Director; Chairman Harry A. Hopkins, California Highway Commission; Julien D. Roussel, Secretary of California Highway Commission; S. V. Cortelyou, District Engineer, Division of Highways.

PROGRAM IN PATIO

Also in attendance were Supervisor John R. Quinn, Los Angeles County; Lloyd Aldrich, City Engineer of Los Angeles; as well as members of the City Council; members of the Los Angeles City Board of Public Works; and others prominent in political, social and religious activities.

In the patio before the Casa De Sepulveda situated in a cleft of the hills, a program was conducted with Leo Carillo, motion picture celebrity and member of one of the early California families, acting as master of ceremonies. Governor Frank F. Merriam was introduced, the Harvard School R. O. T. C. unit, acting as Guard of Honor. Brief remarks were made by various state, county and city officials.

Governor Merriam pledged himself to a continuance of the policy of devoting all gas tax moneys to the construction and improvement of more highways; Director of Public Works Earl Lee Kelly said that $850,000 would be spent in the next year and a half for further improvements of the Sepulveda Boulevard route; and Chairman Harry A. Hopkins of the California Highway Commission told of the progress made in the development of such through routes.

SEPULVEDA SCIONS PRESENT

Following this a pageant of dances and songs was held depicting the various stages in the development of California from the early days of the Spanish period. It was only fitting that assisting in dedication of this new highway, traversing lands once owned by Don Francisco Sepulveda, and known as Rancho San Vicente, there should be present a great-granddaughter of the old Don, the Princess Conchita Sepulveda de Pignatelli, with her little daughter, Stefanella Pignatelli, who cut the traditional ribbon opening the highway in formal dedication.

Other pioneer descendants present were Senora Dolores Machada y Sepulveda, Mrs. Josephin Sepulveda Bacon, and Mrs. Louisa Sepulveda, granddaughters; Senor Ildephonso A. Sepulveda and John G. Mott, great-grandsons of Don Francisco.

These were the ones who saw more behind the fiesta celebration than a direct and smooth highway which will make traffic between the coast and the valley faster and more economical. Their memories recalled, no doubt, the early history of this area, of which their immediate forebears were a part.

GLAMOROUS DAYS RECALLED

They recalled the Portola Monterey Expedition in 1769, when the old Sepulveda trail was first mentioned by Fray Juan Crespi, diarist of the expedition; how the path was later used to transport goods from San Fernando Mission to San Pedro, and how the grantees of the great ranchos, retired from the king's service, rode across the trail to reach El Camino Real.

And as the glamorous days of the dons gave way to modern things and the Sepulveda descendants joined the modern march, the old trail grew important to commerce. In 1922, first steps were taken to transform the Indian footpath to a highway of commerce.

The dedication day program began with a great caravan of automobiles and historic floats carrying representatives from a score of

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SEPULVEDA HIGHWAY DEDICATION SCENES—A portion of the three-lane key link of the new highway which was officially opened to the public by Governor Merriam Sunday, October 20, is shown in the top picture. This key link section pierces the Santa Monica mountains by tunnel and connects San Fernando Valley with the remainder of the route to the sea.

In the State official group, left to right, are Justus F. Craemer, Assistant Director of Public Works; F. J. Grumm, Engineer of Surveys and Plans; District Engineer S. V. Cortelyou; Director of Public Works Earl Lee Kelly; Governor Frank F. Merriam; Chairman Harry A. Hopkins of the California Highway Commission; Secretary Julien Roussel; Deputy Director of Public Works Ed. Neron and Ralph Balfour, District Right of Way Agent.

Bottom picture shows the west portal of the tunnel.

Seven Miles of Box Canyon Highway Graded, Surfaced, Opened in 42 Days

By **H. S. COMLY**, District Maintenance Engineer

FOLLOWING the deluge that descended upon the desert mountains north of the Salton Sea, in Riverside County, in the early morning of August 23d, the maintenance forces of District XI of the Division of Highways immediately started the work of repairing the damage which had been done to State Highway Route 64 through Box Canyon, about six miles north of Mecca. Seven miles of road had been completely obliterated so that the task included the location, grading and surfacing of an entirely new road.

Preliminary work started on the morning of August 23d, a few hours after the damage had been wrought, using what equipment and men were available at maintenance stations at Indio and Oasis. Additional equipment and men were started out from other points in the district and on the morning of August 26th operations were in full swing, clearing debris and following up with the grading.

GRADED WITH TRACTORS

As the road lies almost entirely in the bottom of the wash, only tracklaying type of equipment could be used, the sand being too unstable to afford traction to wheeled equipment. The entire seven miles of road was graded with tractors operating bulldozers, revolving scrapers and road graders.

Field location surveys were made immediately in advance of the grading forces, grades laid in the field and stakes set for construction. The road by this method, was built on much better alignment than the old road which followed the pioneer wagon road closely, traversing lines of least resistance. Advantage was taken of the experience gained during many years maintenance and the road located where it will be least affected by future floods.

OPENED IN 42 DAYS

On September 20th, when grading operations had advanced sufficiently to allow of unimpeded progress to oiling operations, surfacing was started. The surface was constructed to a width of 20 feet by mixing the natural sandy material with asphaltic oil at the rate of two gallons per square yard.

Grading and surfacing had advanced sufficiently on October 7th, to permit of opening the entire seven miles of road to light traffic, 42 days after the flood.

Through traffic had not been inconvenienced during this period as the Indio Cutoff leading direct to Indio over State Highway Route 64 was open for uninterrupted travel at all time.

The road was compacted sufficiently to permit of its opening to unrestricted traffic on October 17th and final trimming was done and the job completed on October 25th.

Five hundred tons of asphaltic oil were used in constructing the surface and the total cost of the seven miles of road, including grading was $12,000. All work on the project was done by the maintenance forces of the Division of Highways, under the direction of Superintendent Mitchell at Indio.

Phil. Stanton on Road Back to Good Health

This Thanksgiving Day will be a far pleasanter one for State Highway Commissioner Philip A. Stanton of Anaheim than was the last one.

Mr. Stanton was afflicted with a serious illness a year ago, partially recovered and then suffered a relapse. For many months he was confined to his bed. Now he is improving rapidly, is able to walk about his room and while still kept at home by his physicians is once more taking an active part in state highway affairs, receiving visitors and personally attending to official correspondence.

Until his illness, he rarely missed a meeting of the Highway Commission. His years in the State legislature and participation in public affairs have made him a well known figure in every section of California and thousands of his friends and acquaintances will be pleased to hear that he is on the road to recovery.

BEFORE AND AFTER THE FLOOD. The above pictures show two sections of the 7-mile stretch of highway in Box Canyon, Riverside County, that was entirely destroyed by a cloudburst storm on August 23d last and the restored highway as completely graded and surfaced on new location and better alignment and opened to traffic in 42 days.

Six Months Work for 5300 Men

(Continued from page 1)

of work, or translated into other terms: 5300 men will be employed for a full 6 months period. These are average figures both for men and for the time since all of these jobs will not run for exactly 6 months. Some will take longer time to complete and some less time. They indicate, however, the gainful employment which will be provided by this Federal allocation.

ties and cities will be required to supply the necessary funds for right of ways on feeder roads or projects in metropolitan areas not on the state highway system.

MINOR EXPENDITURES NECESSARY

These limitations on the application of the Federal funds mean that on all of these projects the state may be required to bear

FEDERAL EMERGENCY RELIEF PROJECTS ON STATE HIGHWAYS

County	Route	Location	Miles	Type	Amount
Mendocino	48-AB	The Oaks and Clow Cr. Line Changes	1.74	Grade and Surface	$50,000
Lassen	29-E	Long Valley to Jc. of Route 29	9.25	Grade and Oil	140,000
Tehama	3-AD	Southerly Boundary to Red Bluff	15.00	Grade and Widen	150,000
Shasta	28-A	1½ mi. E. of Bella Vista to Diddy Hill	7.7	Grade and Surface	210,000
Modoc	28-C	2½ mi. W. of Cedarville to State Line	12.5	Grade and Oil	75,000
Plumas	21-G	Near Summit School to Beckwith Pass	5.0	Grade and Oil	60,000
Butte	45-A	Big Butte Creek to Biggs Road (portions)	4.0	Oil and Surf. Seal Coat	16,700
Sacramento	11-DEF	Isleton to Sacramento (portions)	16.5	Grade and Surf. Shldrs.	150,000
Placer	91-A	Lincoln to Newcastle (portions)	2.0	Grade and Oil	30,000
Santa Cruz	116-A	San Lorenzo R. near Ben Lomond	0.43	Grade, Surf. and 2 Brs.	43,000
Sonoma	104-C	Cotati to 2 mi. West	2.19	Grade, Surf. and Struct.	75,500
San Joaquin	53-C	Potato Slough at Terminous	0.40	Bridge and Apprs.	150,000
Tuolumne	13-C	Sullivan Cr. to 3½ mi. NE.	3.38	Grade and Surf.	102,000
Stanislaus	110-A	1 mi. W. to 1.6 E. San Joaquin R.	2.6	Bridge and Apprs.	143,000
Monterey	56-F	Molera Ranch to 1.6 mi. Southerly	1.8	Grade and Surf.	90,000
San Luis Obispo	125-D	1 mi. E. Cholame to Kern Co. Line	6.7	Grade and Surf.	217,000
Santa Barbara	80-A	Santa Barbara Ave. to Los Olivos	5.3	Grade and Surf.	141,000
San Benito	119-C	Paicines to Pinnacles (portions)	2.4	Grade and Surf.	100,000
Kern	139-B	4 mi. S. of Shafter to Shafter	4.0	Grade and Surf.	75,000
Ventura	151-B	Casitas Pass—East Pass to West Pass	2.38	Grade and Surf.	84,000
Ventura	151-B	Casitas Pass—East Pass to Coyote Cr. Br.		Grade and Surf.	76,500
Orange	183-A	Bolsa Ave; Westminster Blvd. to Bolsa Chica Rd.	3.00	Surfacing	40,000
Ventura	9-AB	L. A. Ave.; La Vista to Somis Road	5.91	Grade and Pave	55,000
San Bernardino	59-E	Lake Arrowhead Dam to 3 mi. N.	2.5	Grade and Surf.	75,000
San Bernardino	61-A	Wrightwood to Rte. 59	5.9	Grade	150,000
San Bernardino	191-A	Little Mt. entrance to San Bernardino	1.0	Grade and Surf.	63,000
San Bernardino	77-A	Co. Line to Merrill Ave.	4.0	Grade and Surf.	66,000
Inyo	128-A	Death Valley Jct. to Nevada Line	7.2	Grade	10,000
Inyo	76-A	1¾ mi. N. Bishop to Mono Co. Line	7.3	Grade	15,500
Riverside	187-F	Mecca to Rte. 26 (portions)	8.5	Grade and Surf.	25,000
Riverside	64-Q	10 mi. W. Indio to Indio	10.3	Grade, Oil and Bridge	150,000
Imperial	201-AB	E. of Heber to E. of Brawley	17.2	Grade, Surf. and Br.	50,000

While this program is being financed almost in its entirety with Federal funds the state will have to provide for purchase of rights of way and certain incidental minor improvements as the Federal funds are not available for such purposes. The state will be obliged to use its own highway funds for necessary rights of way on projects on the state highway system. For the same reason the counpart of the cost, such as expenditures for the construction of cattle passes, culverts, fences, and rental of publicly owned equipment, which are continually cropping up on every job.

Like the Federal Grade Separation program, projects on this highway program must be under contract by December 15th to comply with the Federal government's regulations

Projects Already Advertised for Bids

(Continued from preceding page)

and the Department of Public Works is striving to accomplish this result. A considerable number of these projects have already been advertised for bids.

The limited time permitted has necessitated the working of three shifts of engineers, draftsmen, specification writers and others in the district offices of the Division of Highways, as well as the Sacramento headquarters and I am confident we will have the program ready by December 15th.

The recommended projects on the state highways, feeder roads and metropolitan area streets and roads are listed in the accompanying tabulations showing the location, mileage, and type of each project.

FEDERAL EMERGENCY RELIEF PROJECTS ON FEEDER ROADS

County	Route	Location	Miles	Type	Amount
Mendocino	Feeder	Longvale to Dos Rios	16.0	Grade	304,732
Napa	Feeder	E. Side Napa R. Road—St. Helena to Larkmead	6.27	Grade and Bridge	60,264
Calaveras	Feeder	Mokelumne R. to West Point	1.6	Grade and Bridge	161,439
Kings	Feeder	6 mi. N. Hanford to 2 mi. S. Kingsburg, Stratford to Lemoore	14.5	Widening Shldrs.	14,730
Fresno	Feeder	State Hiway near Dunlap to Orange Cove	13.0	Grading	31,000
Kern	Feeder	Kern Co. Park to 1 mi. East	1.0	Grade	38,300
Los Angeles-Orange	Feeder	State Rte. 176 at Cedar St. to Luitweiler Ave.	2.56	Grade and Surf.	327,000
Los Angeles	Feeder	San Gabriel Canyon; Camp Bonito to Follows Camp	2.5	Grade	372,600
Los Angeles	Feeder	Palo Verdes near Portuguese Bend		Grade and Oil	306,100
San Diego	Feeder	Iron Spgs. Cr. to Palomar Mt. Observatory	3.25	Grade and Surf.	301,962
Imperial	Feeder	2 mi. W. Calapatria to Imperial Road	20.0	Grade and Surf.	296,800

FEDERAL EMERGENCY RELIEF PROJECTS IN MUNICIPALITIES

County	Route	Location	Miles	Type	Amount
Los Angeles	Feeder	Glendale; Los Feliz Rd.; San Fernando Rd. to S. P. R. R.	0.15	Widen and Resurface	18,398
Los Angeles	161-Gndl	Glendale; Colorado St.; Central Ave. to San Fernando Rd.	0.64	Grade and Repave	38,031
Orange	Feeder	City of Orange; Batavia St., La Veta to Walnut	1.00	Grade and Pave	9,922
Orange	181-Ora	Glassell Ave.; Maple to Almond—Chapman Ave.; Plaza to Orange	0.30	A. C. Pavement	23,073
Los Angeles	Feeder	Somerset Ave.; Spring St. to Hathaway Drive	2.2	Grade and Oil	63,242
Orange	184-SA	S. Main St. in Santa Ana	1.27	Widen Roadway	48,183
Los Angeles	158	Sepulveda Blvd.; Brand Blvd. to San Fernando Rd.	3.79	Grade	510,600

NEW OIL RESERVES DISCOVERED

Recent warnings that the petroleum reserves of the United States are nearing exhaustion are to a degree discounted in a booklet just published by the American Petroleum Institute which states that new crude oil reserves discovered so far this year have been greater than estimated crude oil requirements for the entire year. The principal discoveries have been made in Texas, Oklahoma, New Mexico and Louisiana.

She: "Are you cool in time of danger?"
He: "Yes—but at the wrong end."

Guide—"This castle has stood for 600 years. Not a stone has been touched, nothing altered, nothing replaced."

Visitor—"Um, they must have the same landlord we have."—Chaser.

Conejo Grade Realignment to Save Mileage, Abolish Dangerous Curves

By **JUSTUS F. CRAEMER,** Assistant Director of Public Works

WITH an allocation of $550,000 set up in the current biennial budget for the "realignment and improvement of Conejo Grade" and bids for the contract scheduled for opening November 21, dirt will soon be flying on this major reconstruction project in Ventura County that will eliminate the old narrow and dangerous section of state highway on the "Ventura Boulevard" route between Los Angeles and Ventura that has long been a detriment and menace to traffic because of its steep grades and hairpin turns.

Originally located in 1912 as one of the first roads to be surveyed by the then newly organized State Highway Department, the standards of alignment and grade of the present highway were adequate for the small volume of slow moving traffic of that time.

Being on the portion of the main State Highway Route No. 2 between Los Angeles and Ventura, the volume of traffic using the road increased very rapidly from the date of its original construction. The average speed of vehicles likewise increased so that within a few years the sharp curves of the old route became more and more hazardous to traffic and the number of accidents increased constantly.

JUSTUS F. CRAEMER

TRAFFIC FAVORED NEW ROUTE

By 1929, when the new Coast Highway route was completed between Oxnard and Santa Monica, the old route was overcrowded and some of the sharper curves on the Conejo Grade had become quite dangerous. As a result traffic showed a preference for the new route so that about 60 per cent of the coast traffic followed the Oxnard-Santa Monica Route and only 40 per cent chose the old route. Truck traffic especially preferred the "sea level" route to the steep grades, narrow roadbed, and inferior alignment of Conejo Grade.

In 1929 it was decided that, by expending a comparatively small amount of money on widening curves, additional safety could be provided for traffic until the necessary relocation of the grade could be made. A small state crew equipped with a power shovel was then started on the improvement of the worst curves on the old grade and continued this work for about one year. A much safer alignment has resulted but it was realized from the start that this could not adequately provide for traffic for an indefinite length of time.

FATAL ACCIDENT HISTORY

During 1932 and 1933, figures furnished by the California Highway Patrol indicate that in four accidents on this grade, no less than seven persons were killed and four were seriously injured. It was evident that only by making a radical change in alignment over the whole section from Newbury Park to Conejo Creek could a permanently satisfactory highway be provided.

This "Ventura Boulevard" route, as the route which includes Conejo Grade is known, contrary to the general belief, is actually a few miles shorter between Ventura and the business district of Los Angeles than the

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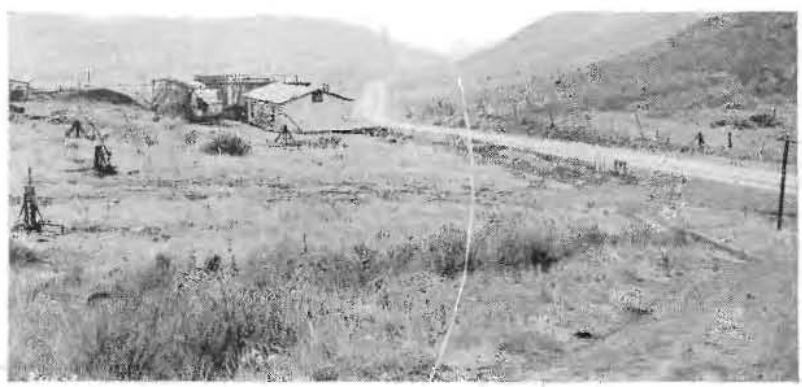
CONEJO GRADE, an obsolete section of the Coast Highway in Ventura County, soon to be replaced by new highway on improved alignment. Built in 1912 it has been the scene of many accidents because of its steep grades and sharp turns. The new routing will be straighter, safer and nearly a mile shorter

THIS IS ONE of 49 curves that make the existing Conejo Grade a menace to traffic. A total curvature of 2067 degrees will be reduced to 367 degrees and the curves to only 12 in number on the new location routing.

THE REALIGNMENT indicated by white line will cut across part of an old oil field that has long been an interesting sight to tourists. It is a shallow well field and the little oil wells are operated by single cable lines.



Nojoqui Grade Completion Eliminates 33 Curves on Coast Highway Route

By L. H. GIBSON, District Engineer

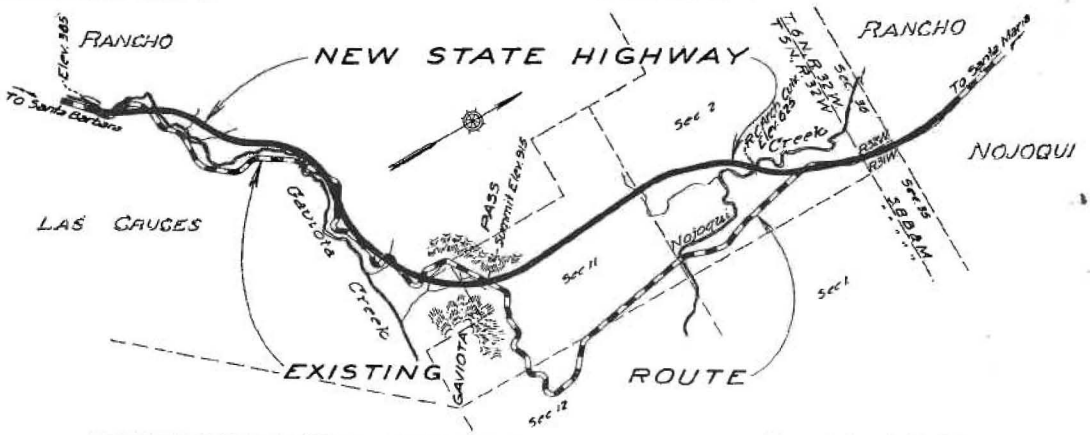
WORK was completed in the latter part of October on the Nojoqui Grade Relocation project in Santa Barbara County, between Las Cruces and four miles south of Buellton, and the motorist traveling the Coast Highway (U. S. 101) will be agreeably surprised to find the forty-four tortuous curves on the old road reduced to eleven of long radius and clear vision.

Also, it will be apparent from the speedometer reading that the new road shortens the traveling distance by nearly one mile, and more noticeable yet will be the time saving factor, especially compared with the frequent delays caused along the old route when encountering heavily ladened trucks.

excavation, about 200,000 cubic yards, was removed from a single cut at the summit of Gaviota Pass.

Shortening the length of the project, and reducing some old 7 per cent grade to a 6 per cent maximum on the new road made it necessary to cross the summit 40 feet below the old road which was itself in a 25-foot cut. The slopes of this cut were stepped back at two separate levels to prevent slides developing, and one of the benches was used as a detour during construction. Almost the entire excavation was handled in an efficient manner by a fleet of twelve cubic yard carryall scrapers.

Surfacing is of the standard 20′ x 0.75′–



NEW NOJOQUI GRADE location is shown by heavy black line, old route by dotted line

This new road, although only 3.7 miles in length, represents a noticeable improvement which is readily brought to mind by the fact that the motorist in negotiating the forty-four curves on the old route turned through 2305° of curvature, or the equivalent of making about 6½ complete circles over the length of the project, while on the eleven curves on the new alignment only 373° of curvature are to be found, or the equivalent of only slightly over one complete circle.

The entire project was characterized by heavy grading, the final analysis showing that about 670,000 cubic yards of excavation were moved which gave an average of 180,000 cubic yards per mile. A major portion of this

0.55′–0.55′–0.75′ portland cement concrete reinforced with dowels, supported by cross bars, at the regular transverse expansion and weakened plane joints.

SUBGRADE MATERIAL IMPORTED

The local excavated material did not meet requirements for subgrade on which to place high type pavement and it was necessary to employ some method of subgrade stabilization. This was accomplished by placing an imported selected material subbase to a depth of about 9 inches under the pavement and 4 inches on the shoulders. Prior to placing the selected material the subgrade of local material was rolled and sealed with a bituminous mem-

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NOJOQUI GRADE through Gaviota Pass in Santa Barbara County has been transformed from a narrow, tortuous series of 44 sharp curves to a wide highway with only 11 long radius curves.

NEW ROUTE climbs through the hills on an easy 6 per cent maximum grade made possible by deep cuts representing 670,000 cubic yards of excavation and shortening the distance by nearly a mile.

OLD ROUTE abounded in hairpin turns such as the two shown in the above picture taken before the improvement when traffic was compelled to loiter along behind heavily laden trucks.

Conejo Relocation Involves Problems

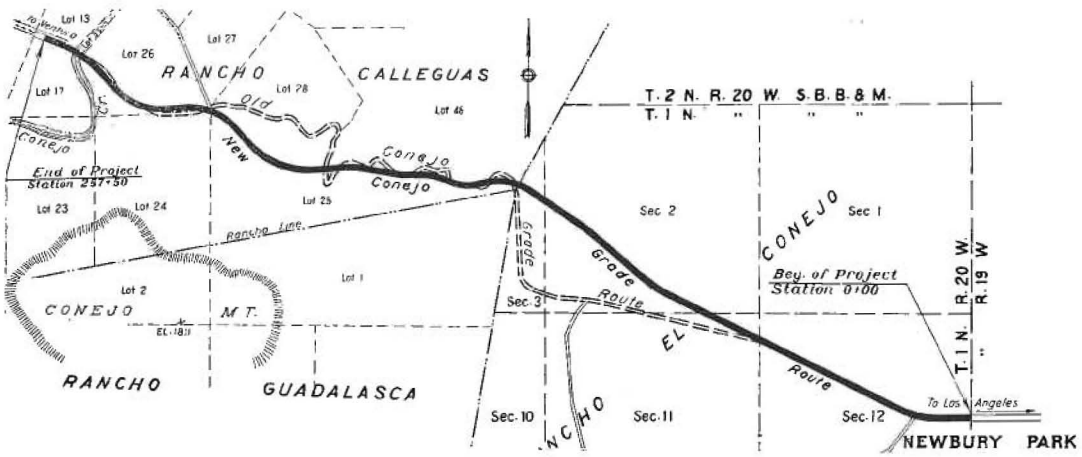
(Continued from page 10)

Oxnard-Santa Monica route and many trucks as well as passenger cars would prefer it to the coast route if Conejo Grade were improved to requisite modern standards.

PRESENTS TECHNICAL PROBLEMS

The relocation of this section across the low Conejo Range of mountains has presented many technical difficulties. The old location, although in general fairly direct, necessarily had many short radius curves in order to keep construction costs to a minimum as well as keep within the allowable 6 per cent maximum grade.

Preliminary studies were started in 1927 looking to the relocation of the route and



HEAVY BLACK LINE shows new alignment compared with old Conejo grade

though many possibilities were considered these studies resolved themselves in general into three alternative routes. These were known as the "North Route," the "Middle Route" and the "South Route."

The "Middle Route" was by far the most direct alignment but on account of its directness would necessitate a grade for a portion of the distance in excess of 6 per cent. However, far better alignment could be secured by adopting this route, as well as keeping curvature to a much lower figure than on either of the other two routes.

MIDDLE ROUTE SHORTER

The advantages of the North and South routes were that flatter grades could be obtained although the reduced percentage of grade would require considerably more curvature and distance. On account of the more direct alignment to be secured by adopting the Middle Route, a material saving in distance and consequently in cost was possible.

All of these matters were carefully considered in arriving at a decision as to the route finally adopted. Surveys indicated that by using a 7 per cent grade for the two miles down the west slope of the Conejo Range, the Middle Route could be used and thus secure the advantages of better alignment and shorter distance. The advantages of this route were so great as to outweigh the slight disadvantage of a two mile length of 7 per cent grade, and the Middle Route was therefore adopted.

NEARLY MILE SAVED

The length of the improvement will be 4.83 miles with a saving in distance of .84 mile over the present route. Some idea of the value of this project to traffic may be obtained from the following comparison of the new and old routes:

	Existing	Proposed
Length in feet	29,404	24,950
Maximum elevation	771	837
Total number of curves	49	12
Total degrees of curvature	2,067	373
Minimum radius of curvature	65	1,200
Width of roadbed in feet	30	46**

**8' oiled shoulder to be constructed on each side.

(Continued on page 22)

Work Put Under Way Last Month

The following tabulation lists the contracts awarded and pending award and projects advertised by the Division of Highways between the dates October 1, 1935, and November 1, 1935. The work thus put under way includes 50 miles of grading, paving and bituminous crushed rock surfacing, 4 overhead crossings, 2 grade separations, an underpass and a pedestrian stairway:

County	Location	Miles	Type
Alameda	Bay Bridge to Folger Ave. Subway	4.0	Pavement
Alameda	In Albany near El Cerrito Hill		Overhead crossing
Contra Costa	At Maltby, near Concord		Overhead crossing
Imperial	4 miles west of Westmorland to Trifolium Canal	3.2	Bit. tr. rock surface
Los Angeles and Kern	¼ mile south of Kern Co. Line to Fort Tejon	5.5	Pavement
Los Angeles	Rosemead Blvd., San Gabriel Blvd. to Ramona Blvd.	3.5	Pavement
Los Angeles	In Santa Monica at Palisades Beach Road		Pedestrian stairway
Los Angeles	In Newhall, San Fernando Road from 4th St. to Placerita Road	0.8	Pavement
Los Angeles	Verduga Road to Flintridge Country Club	1.4	Pavement
Monterey	In Salinas		Underpass
Monterey	At Thompson Gulch	0.2	Bit. tr. rock surface
Orange	At Newport Beach		Grade separation
San Diego	At Santa Margarita River	0.6	Grading
San Diego	Near Del Mar		Overhead crossing
Solano	Fairfield to Vacaville	3.8	Pavement
Salano and Napa	Carquinez Bridge to Cordelia	11.2	Pavement
Ventura	12.5 miles north of Ventura		Drainage
Lassen	Long Valley Creek to 2.8 miles north of Route 21	9.2	Grade and surface
Sacramento	Courtland to Freeport	0.4	Slope protection
Santa Clara	On Almaden Rd. near San Jose		Grade separation
Monterey	At Molera Ranch	1.8	Grade and surface
Ventura	Newbury Park to Conejo Grade	4.8	Pavement
Riverside	Near Beaumont		Overhead crossing

Newman-Crows Landing Realignment Abolishes Bad Turns, Saves Over Mile

By **R. E. PIERCE**, District Engineer

WITH appropriate ceremonies participated in by state, county and civic officials, the newly completed realignment of that portion of State Highway Route No. 41 between Newman and Crows Landing in Stanislaus County was officially dedicated and opened to the public on Monday, November 11th.

This road, known as the West Side Highway and extending from near Tracy on State Route No. 5 to King's River Canyon via Fresno and General Grant Park is the main road serving the communities on the west side of the San Joaquin Valley south of Tracy. It is one of the county roads taken into the state secondary system by the 1933 legislature.

MANY SHARP CURVES

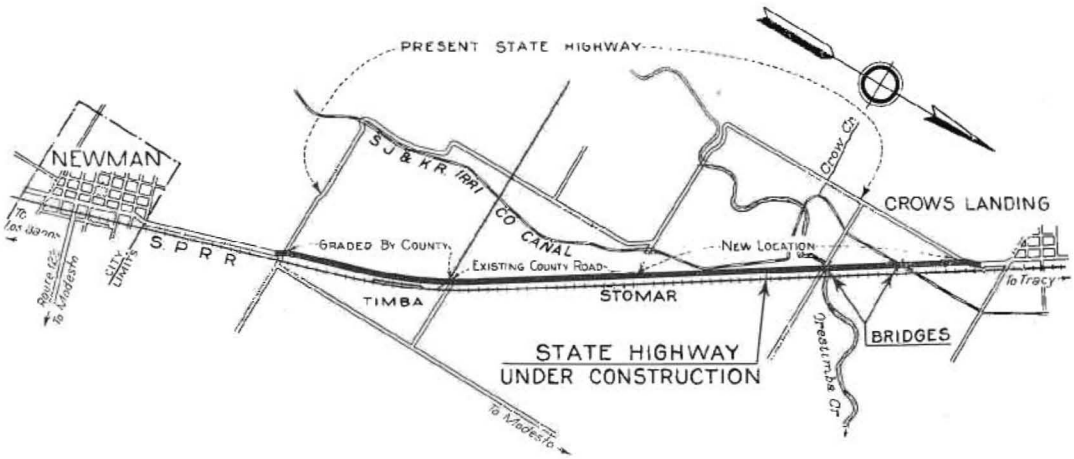
Referring to the accompanying map it will be noted that the existing road leaves the vicinity of the Southern Pacific Railroad line a short distance north of Newman and has numerous sharp turns and curves before it again returns to the railroad a short distance south of Crows Landing.

Some of these curves on the old road have a very bad accident record, one in particular, which turns sharply off a bridge over an irrigation canal, has been the scene of many accidents and some deaths.

The present road is an example of location following the line of least resistance along an old meandering county road instead of by the direct route along the railroad as the state has built.

MILE AND HALF SAVED

The old road has several right angle turns as well as numerous sharp curves with restricted sight distance. The new road, aside from the long, easy, reversing curves at each end made necessary by the fact that the county road is centered on a narrow right of way while the new location is centered on an 80 foot right of way, has only one curve, paralleling the railroad curve, with a radius of 11,369 feet. A saving of nearly 1½ miles in distance is made by the new location.



SKETCH MAP of Newman-Crows Landing realignment

The improvement is 4.54 miles in length, and consisted in general of constructing a roadbed 32 feet wide, with a crushed gravel base and road-mix oil surface 20 feet wide.

Two timber bridges 24 feet wide have been constructed, one over Orestimba Creek 136 feet long and one over an irrigation canal 119 feet in length.

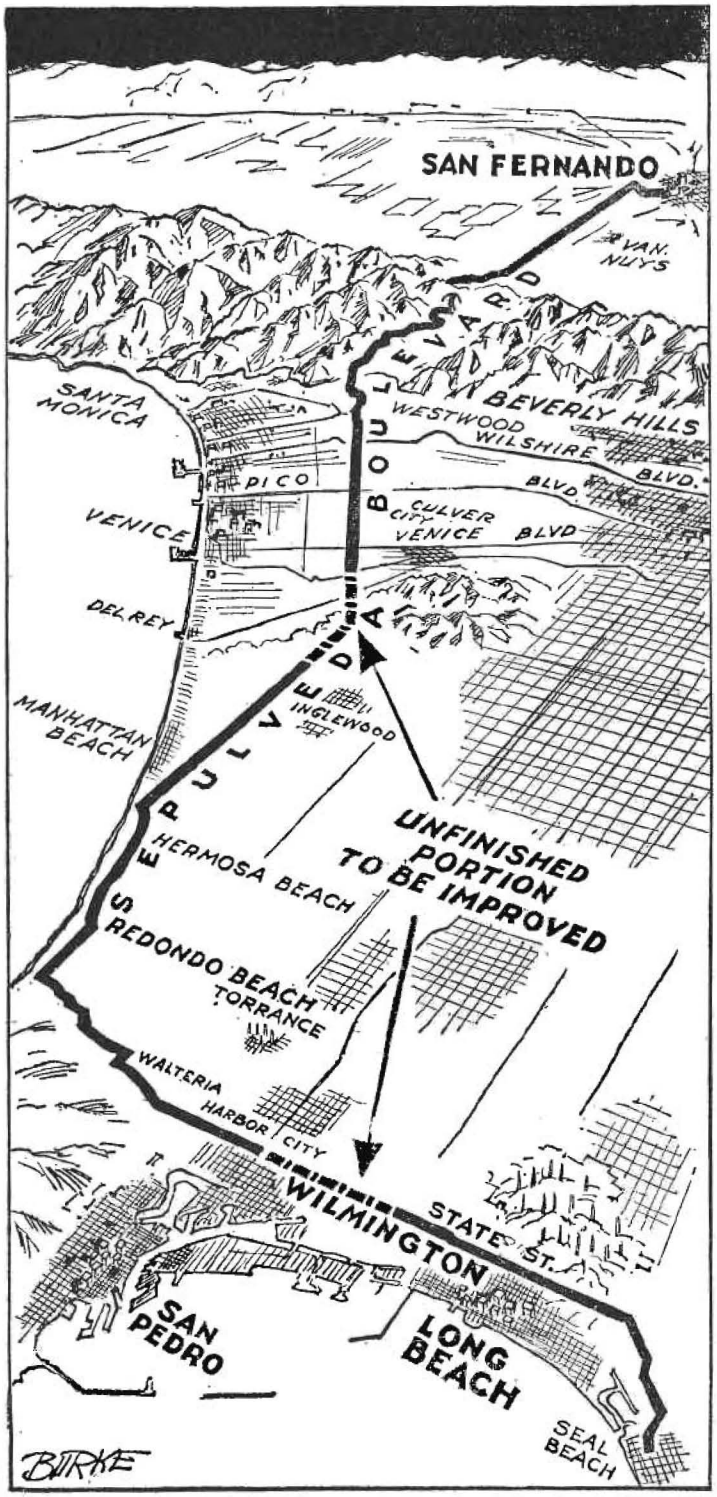
The county authorities, especially the Board of Supervisors, through their local representative, F. R. Raines of Westley, supervisor of

(Cntinued on page 22)

STRAIGHT AND WIDE runs the new highway for 4.54 miles between Newman and Crows Landing on State Route No. 41, cutting out many dangerous curves on the narrow old county route.

RIGHT ANGLE TURNS were responsible for a bad accident record on the six mile stretch of old highway, one in particular being the scene of several fatalities. Two of these turns are pictured.

AT THE DEDICATION ceremonies on Armistice Day hundreds of citizens gathered and automobiles lined the highway for several miles near the speakers' stand midway between Newman and Crows Landing.



FROM VALLEY TO SEA runs the route of Sepulveda Highway of which the key section through Santa Monica Mountains was recently dedicated. Sketch showing completed and unfinished portions reproduced through courtesy of Los Angeles Examiner.

New Sepulveda Link Includes Mountain Tunnel

(Continued from page 4)

communities which left Seal Beach at noon. The parade continued to Ventura Boulevard, returning in double column to the celebration site in time for the gala dedication fiesta. This caravan was joined by gayly-dressed equestrians from the adjoining ranchos when it neared the dedication site, approximately one-half mile north of Sunset Boulevard.

FINANCED BY GAS TAX

This newly opened section, seven and six-tenths miles in length, extends from Ventura Boulevard on the north, south through the Rancho San Vicente to Sunset Boulevard. Surfacing of this section with 30-foot asphaltic concrete pavement bordered on each side by oil treated rock shoulders, at a cost of $300,000, was completely financed out of revenues derived from the state gasoline tax. Grading had previously been completed in 1930.

To the motorist traveling north from Sunset Boulevard, the road, built on easy grade and gentle, winding curves, traverses some of Southern California's most beautiful scenery, bounded on each side by the heavily wooded slopes of the Santa Monica Mountains.

TUNNEL THROUGH MOUNTAINS

These first impressions are climaxed at the summit where, upon emerging from the north portal of a 665 foot tunnel bored through the mountains 130 feet under Mulholland Drive, a vast panorama of the San Fer-

(Continued on page 30)

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 NOVEMBER, 1935 No. 11

SEPARATING GRADES

Approval by the President of $642,000 in payment for grade crossing elimination projects under way in this state serves to call attention to this work being carried on by the California Highway Commission under the federal grants. Of the $220,000,000 set aside from the four billion works relief fund for crossing elimination California has been allocated $7,500,000.

Like all public works projects, the idea that grade separation work could be got under way promptly has proved illusory. George T. McCoy, assistant state highway engineer, points out that often a great deal of preliminary work is required in getting agreements for acquiring property, moving buildings, relocating roads and the like. Then the Government's requirements as to relief labor, distribution according to railway mileage and other restrictions add to the complication.

Nevertheless thirty-nine grade separation projects have been worked out to come within the PWA's seven and a half million allocation. Within the limitations imposed an effort has been made to remove the worst traffic menaces. Helpful in this work were statistics kept by the California Railroad Commission since 1926 showing that 40 per cent of accidents occurred at 3 per cent of the state's 12,500 grade crossings.—*San Francisco Chronicle.*

ONE EYE OPEN

Mrs. A—My husband has no idea what I go through when he snores.

Mrs. B—Mine never misses his small change either.

If you must have a blowout have it at home.

U. S. Will Construct Three Bridges Along Inter-American Road

PRESIDENT ROOSEVELT has approved a program of bridge construction work on the route of the Inter-American highway in Central America, the U. S. Bureau of Public Roads, in charge of activities on the highway, announces.

Congress in June, 1934, appropriated $1,000,000 "to meet such expenses as the President in his discretion may deem necessary to enable the United States to cooperate with the several governments, members of the Pan-American Union, in connection with survey and construction of the proposed Inter-American Highway." As the initial activity under this program, the Bureau of Public Roads has undertaken the construction of several bridges in Panama, Guatemala and Honduras, the estimated expenditure being $340,000.

THREE BRIDGE LOCATIONS

The bridges are as follows: Republic of Panama—bridge over the Chiriqui River, approximately 600 feet long; Honduras—bridge over the Choluteca River, approximately 600 feet long; Guatemala—bridge over the Tamazulpa River, approximately 300 feet long.

The United States will furnish surveys, plans, specifications, and estimates for the bridges, all steel or other fabricated material for structures, mechanical equipment, and transportation to site of work. It also will construct the superstructure, supervise all construction, and furnish all inspection and supervision when needed in connection with getting out materials furnished by the other country.

LOCAL PARTICIPATION

The other country will furnish all local materials, labor and transportation incident thereto, together with rights of way, and labor needed in constructing foundations, substructures, and grading approaches for a distance sufficient to complete the stream crossing and make the structure usable.

The Inter-American highway route traverses Mexico and the republics of Central America, its termini being Nuevo Laredo, Mexico, across the Rio Grande from Laredo, Texas, and Panama City.

Be sure the only crank in the car is in the tool box.

State Completes Alemany Link With San Francisco's Boulevard System

By JNO. H. SKEGGS, District Engineer

THE San Francisco Peninsula has long been a problem as far as highway development is concerned.

Bounded on the west, north and east by the Pacific Ocean and San Francisco Bay, the only outlet for the motor vehicle traffic of the city of San Francisco except via ferries or toll bridge is to the south.

The city of San Francisco has been developing an extensive boulevard system in the city, and also has contributed to the development of several highways outside of the city.

The state has taken a number of city streets into the state highway system, and has recently supervised the expenditure of about one-half a million dollars of federal apportionment funds in improving some of the major streets forming connections and feeders to the two bridges now under construction across San Francisco Bay.

LATERAL HIGHWAY NEEDED

In order to allow for segregation of traffic between the major highways leading to the south, it is necessary to construct laterals.

For this purpose the city has constructed the Alemany Boulevard from the Bay Shore Highway to the Junipero Serra Boulevard, just north of the south city limits.

In order to allow completion of this lateral to connect with the Skyline Boulevard, the state has constructed the section from the westerly end of the Alemany Boulevard near Daly City, westerly to the Skyline Boulevard at Thornton, 1.7 miles, all in San Mateo County. This now becomes State Route No. 56 in lieu of the section of the old Edgemar Road from San Pedro Avenue (and Edgemar Road) to junction with the Skyline Boulevard.

The project, financed from federal apportionment of Federal Emergency Relief funds for 1935, was let to contract in March, 1935.

The work consisted of constructing a graded roadbed 56 feet wide and placing a bituminous treated, crushed gravel or stone surfacing 42 feet wide and 0.25 foot thick, on a crusher run base 0.50 foot thick.

The major contract items were 244,000 cubic yards of roadway excavation, with about 2,000,000 station yards of overhaul. Crusher run base was placed in the amount of about 16,750 tons, with 6000 tons of treated surface.

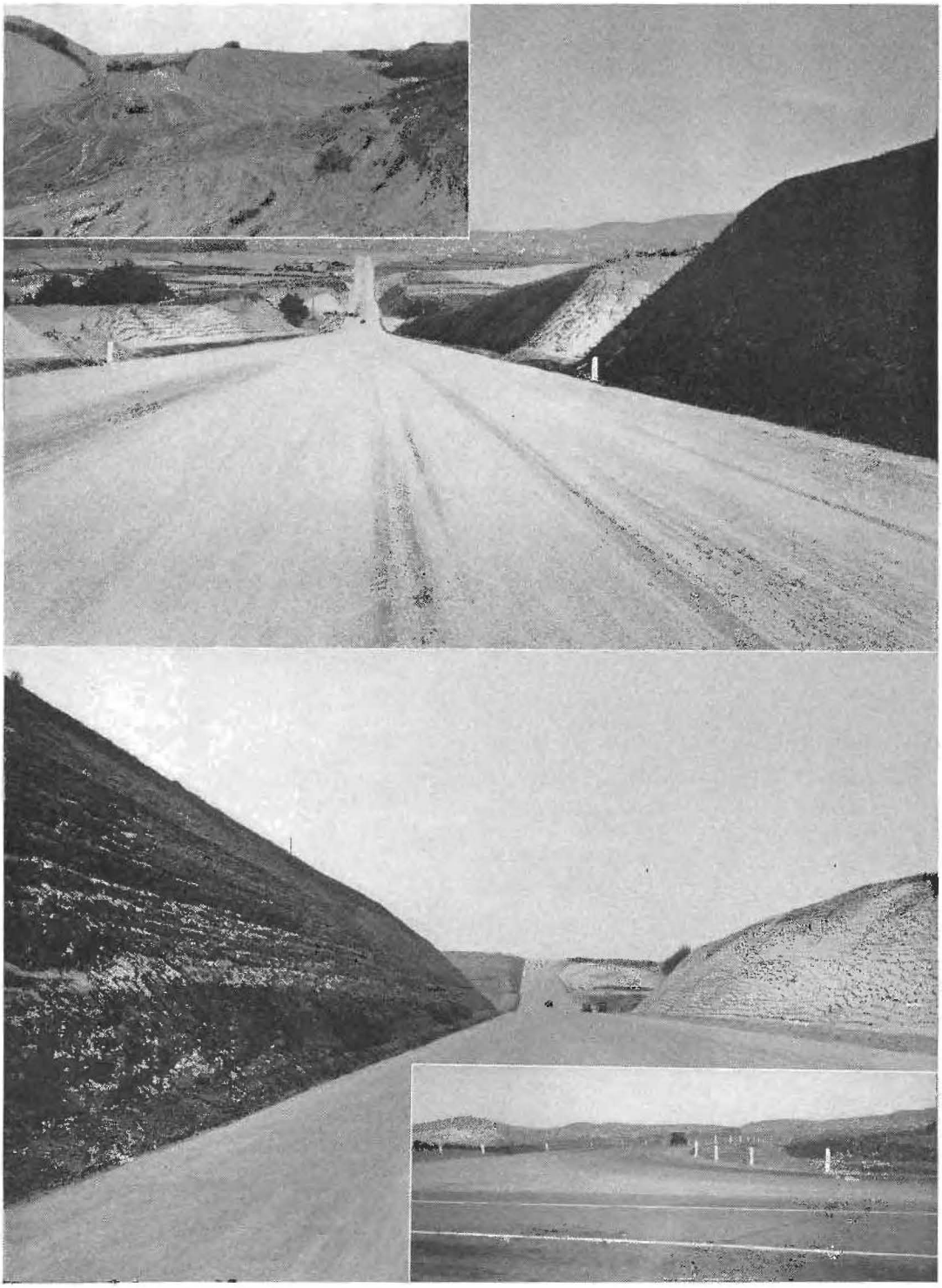
MAP of completed project shown by heavy black line.

Several deep gulches required 30 inch and 72 inch culverts, and adjacent to the Junipero Serra Boulevard, it was necessary to move a 54 inch and a 30 inch water main belonging to the San Francisco Municipal Water Department.

The water mains, being the principal source of water from the Calaveras and Hetch-Hetchy water sheds, speed in changing, and extreme care were required not to interfere seriously with the cities' water supply.

The excavated material involved in the project was chiefly sand, and while a large

(Continued on page 22)



ALEMANY BOULEVARD EXTENSION just completed by the State in San Mateo County connecting Skyline Boulevard and Junipero Serra Highway required 244,000 cubic yards of roadway excavation with 2,000,000 station yards of overhaul. The new highway is 1.7 miles in length and slopes are extensively planted. Upper inset shows part of grading operation. Lower inset shows Skyline intersection.

Conejo Grade Will Have Third Lane to Permit Passing

(Continued from page 14)

In general a 20-foot concrete pavement will be constructed on a 46-foot roadbed although on the grade down the westerly slope of the range two 10-foot strips of concrete pavement will be separated by a 10-foot width of plant-mixed oil surfacing. This will provide a 10-foot traffic lane between the concrete strips for vehicles to pass on the grade.

On some of the high fills, oil and rock surfacing will be used instead of concrete pavement until the fills have had time to attain their full settlement. Shoulders throughout the length of the project will be oiled the full width of roadbed, thus providing ample space for vehicles to park well off of the paved area.

Preliminary estimates indicate that 770,000 cubic yards of excavation and 5,300,000 station yards of overhaul will be required for the grading of the project and 6660 cubic yards of concrete pavement will be placed.

Approximately one year is being allowed in which to complete the contract so that by the latter part of 1936 it is expected the new road will be opened to traffic.

At the westerly end of the project the present bridge across Conejo Creek is to be widened under separate contract to a width of 44 feet to conform to the width of roadbed on each side.

NEWMAN-CROWS LANDING REALIGNMENT ABOLISHES BAD TURNS

(Continued from page 16)

the 5th District, have shown a fine spirit of cooperation by building the right of way fences on the entire project, as well as extending a timber cattle pass beneath the railroad to connect with one built under the new highway.

The dedication ceremonies were held on the new highway midway between Crows Landing and Newman. Among the speakers on the program were President Arthur Rathaus of the Newman Chamber of Commerce; President C. R. Perrier of the West Side United Chambers of Commerce; E. K. Finney, chairman, Board of Supervisors; J. F. Blakely and F. C. Tatton of California State Chamber of Commerce.

5000 Cu. Yds. Per Day Moved by Tractors on Alemany Project

(Continued from page 20)

amount of material was involved, the work was performed with exceptional speed and ease, as shown by the fact that it was possible to move 5000 cubic yards per day, using three 80 h.p. tractors with three 12 cubic yard carryalls, and operating three 6-hour shifts per day.

The alignment is exceptionally good, being one tangent with sweeping curve connections to the boulevards at either end of the project. Grades are light, and a connection is now being made to the Merced Boulevard near the center of the project.

TRAFFIC GREATLY INCREASED

The resulting highway is a splendid sample of this type of temporary road as developed to allow cheap construction pending final settlement of fills, etc., together with a serviceable roadway for fast and heavy traffic.

As soon as it was possible to travel the road, the motoring public did so, and to date the traffic has increased so fast that it is estimated that there are 1000 machines a day using it. This will be greatly augmented when the adjacent section to the south from Thornton to Edgemar, now under contract, is completed.

The total cost of the project is approximately $135,000.

33 CURVES ELIMINATED ON COAST HIGHWAY ROUTE

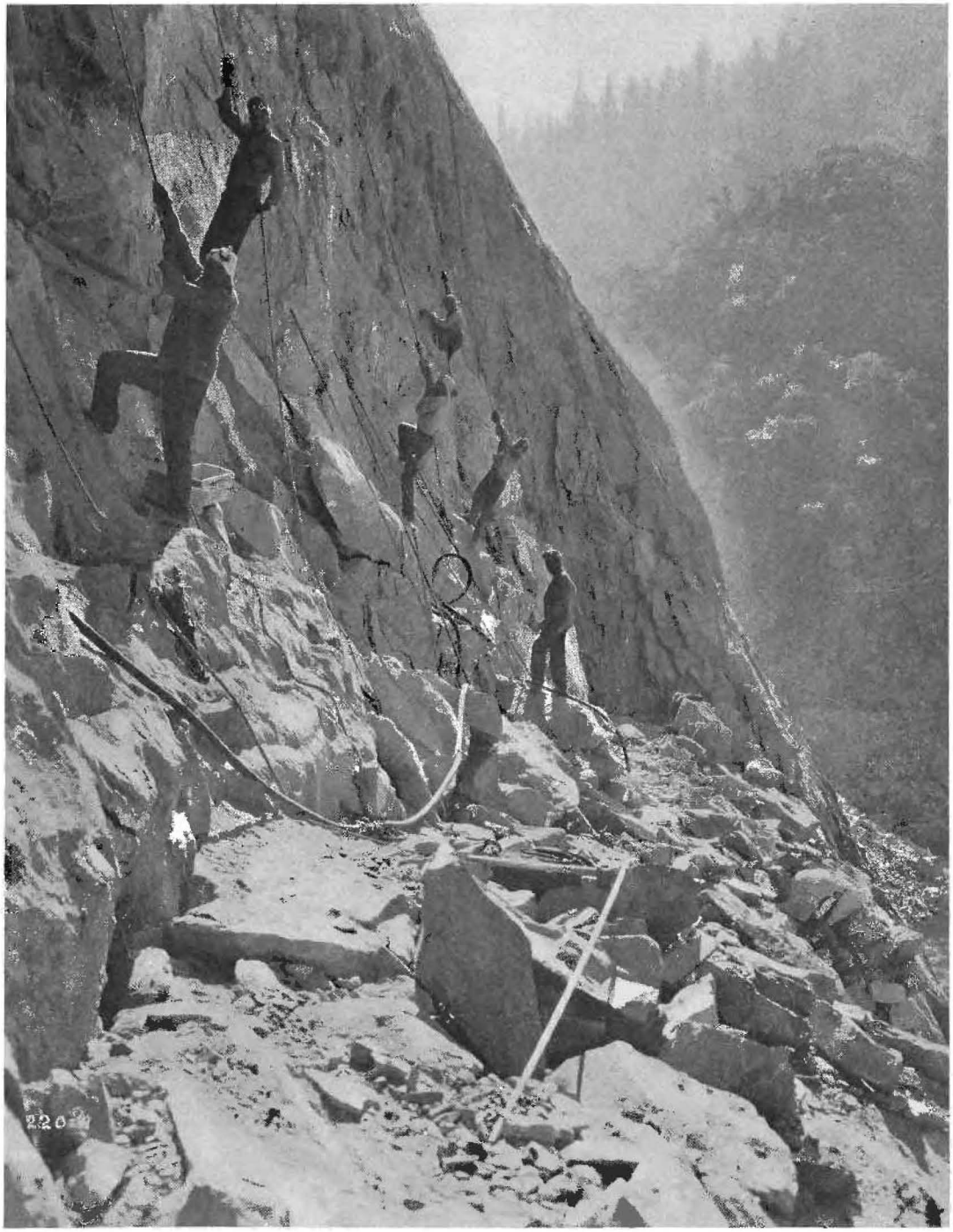
(Continued from page 12)

brane of Grade E asphalt to prevent moisture or water percolating upwards into the selected material subbase.

At Nojoqui Creek a 14 x 16 foot reinforced concrete arch culvert was constructed. A feature of this structure was the adoption of a heavily reinforced concrete arch invert in order to adequately support the structure which was situated over soils incapable of supporting the load imposed by using the customary footings for such structures.

The project was advertised for competitive bids and awarded to the lowest bidder.

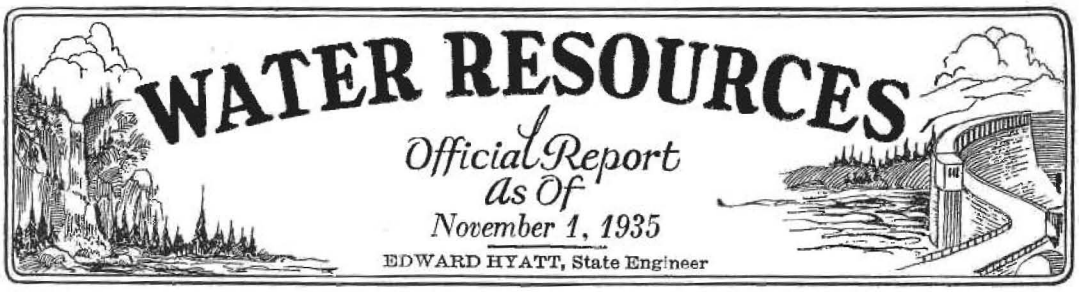
The cost aggregated a total expenditure of about $425,000.



LIKE FLIES ON A WALL these workers are clinging with the aid of ropes to the precipitous face of Grizzly Dome in Feather River Canyon on the location of the new highway being constructed through that rocky mountain gorge.

They are part of a drill crew engaged in blasting and excavation work on East Portal Tunnel No. 2 through which the highway will be carried under the huge granite mass of Grizzly Dome that blocks the line of the highway.

Excellent progress has been made in completing West Portal Tunnel No. 2 at Grizzly Creek where widening operations are now in progress.



The U. S. 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 have been in the State during the past month studying the various units of the project proposed for immediate construction and are working closely with the State Engineer in laying out their program.

The project will be broken down into units in order to provide an orderly construction program fitting Works Progress regulations.

Walker Young, Construction Engineer of the U. S. Bureau of Reclamation, has been placed in charge of the project and is now in Sacramento organizing his office and personnel preparatory to getting the work started. He has located his headquarters at least temporarily, in the Federal Building at 9th and I Streets, Sacramento.

IRRIGATION DISTRICTS

This office is engaged in a revision of Bulletin No. 18, "California Irrigation District Laws." The revised edition of this bulletin will contain the California Districts Securities Commission Act, the California Irrigation District Act and related laws, California Water Storage District Act, California Water Conservation Act of 1923, California Water District Act and the County Water District Act, all as amended to 1935.

The formation of the North Kern Water Storage District, Kern County, was approved in an organization election held on October 8, 1935.

CALIFORNIA DISTRICTS SECURITIES COMMISSION

The Securities Commission approved expenditures from the general funds of the following districts operating under Section 11 of the California Districts Securities Commission Act:

Carmichael Irrigation District, changes in pumping plant ---------- $1,700
Fairoaks Irrigation District, replacement of pipe lines ---------- 6,300
West Side Irrigation District, installation of drainage wells ---------- 3,000

Orders were issued to the following districts:

Tracy-Clover Irrigation District: Approving the voting of $20,000 in refunding bonds and expenditures in connection with the same; approving plan of debt adjustment under the Federal Bankruptcy Act.

Scott Valley Irrigation District: Approving the voting of refunding bonds in the principal amount of $67,000, to be exchanged for a like amount of outstanding bonds.

Santa Fe Irrigation District: Validating refunding bonds in the principal amount of $394,500 to be issued to the Reconstruction Finance Corporation.

FLOOD CONTROL AND RECLAMATION

Maintenance, Sacramento Flood Control Project.

A crew has proceeded with routine maintenance during this period, on minor repairs to by-pass structures and bridges. The timber check gates at the three pumping plants have been examined and repairs made, following the lowering of water in the borrow pits. A small crew is engaged in clearing tule and water growth out of several of the drainage canals.

Repairs are being made on the bank revetment work in the Sacramento River at Freeport and Isleton.

Sacramento Flood Control Project.

The deputy in charge of flood control and reclamation has attended a number of conferences and has made three inspection trips with representatives of the U. S. Engineer Office and the Reclamation Board, in connection with the modification of the construction and bank protection programs proposed by Colonel Jackson.

Survey and planning of work in connection with incidental construction for the south levee of the American River has proceeded and construction will be commenced within a week.

The California Debris Commission has completed the construction of the Butte Slough Outfall Gates, consisting of seven 66-inch pipes with gates. The operation of this structure will be in charge of this division. The contractor for the three drainage pumping plants on the Sutter By-pass, under the California Debris Commission, has continued his work during the period, being somewhat delayed by lack of material. The final completion of the work will depend upon the delivery of some of the specially designed large pumping units, but it is expected that no difficulty will be encountered in caring for the winter drainage water.

Dam Repairs and Construction Rushed

(Continued from preceding page)

San Joaquin River.

Bids were opened on October 16th, for the construction of three units of levee in Reclamation District No. 2064, under the provisions of Chapter 365, Statutes of 1935. Two low bids at a price of 14 cents per cubic yard were received, and the Director of Public Works awarded the contract to J. C. Bolt of Stockton, the total cost being approximately $5,845.

DAMS

Application for construction of the White House Creek dam was filed on October 5, 1935. This is to be an earth dam 58 feet in height with a storage capacity of 970 acre-feet, situated on White House Creek in San Mateo County. The estimated cost of the structure is $7,500. The water is to be used for irrigation.

Application for the repair and alteration of the spillway and control works at Lake Francis dam of the Pacific Gas and Electric Company filed on October 2, 1935, was approved on October 14, 1935. The dam is situated on Dobbins Creek, tributary of Yuba River, in Yuba County.

Application for approval of plans for alteration of the Lower Peak Lake dam of the Pacific Gas and Electric Company was filed on October 2, 1935. This dam is located on a tributary of the South Yuba in Placer County. The application was approved on October 14, 1935.

On September 23, 1935, an application was filed for the repair of the Cummings Dam on Rock Creek in Modoc County. The application was approved on October 5, 1935.

The application for the alteration of the Bowman North Rockfill dam of the Nevada Irrigation District on Canyon Creek in Nevada County was approved on September 21, 1935.

The application of the Lava Cap Gold Mining Corporation, of Nevada City, California, for the enlargement of their log crib-earth filled dam in Nevada County was approved on October 5, 1935.

SAN GABRIEL WORK UNDER WAY

Work on the construction of the San Gabriel No. 1 dam of the Los Angeles County Flood Control District is proceeding under approval of the revised plans for the same by this division.

Work has been commenced on the Cajalco Dam of the Metropolitan Water District.

The stripping of the site and excavation of foundation for the Grant Lake Dam of the city of Los Angeles is progressing.

Construction of the city of Arcata's dam is under way.

Excavation of the cutoff trench at the West Valley dam of the South Fork Irrigation District in Modoc County has been practically completed in the low elevations of the structure and it is expected that fill construction will be under way within the next few days.

The work on all of the dams of the Santa Clara Valley Water Conservation District is proceeding satisfactorily and it is expected that on all except the Coyote dam, the fill will be completed within twenty or thirty days.

The work of stripping the foundation of Clear Creek dam on Clear Creek in Siskiyou County has been completed and the owner has decided to delay the pouring of concrete until next summer.

Construction of the Mad River dam of the city of Eureka is in the excavation stage.

SACRAMENTO-SAN JOAQUIN WATER SUPERVISOR

Field work comprising measurements of the diversions, stream flow, and return flow in the Sacramento-San Joaquin territory is being brought to a close for the season. Office work in computing the diversions and compiling the data for the 1935 report will begin on the first of November.

Practically all diversions from the river have ceased for the season and this, combined with the run-off from the recent storm, had increased the flow of the Sacramento River at Sacramento to about 7500 second feet on October 18, 1935.

Salinity which this season encroached into lower Delta channels only, has begun to recede with the increased stream flow so that salinity of 100 parts of chlorine per 100,000 is now but a short distance above Antioch and Collinsville. The following tabulation for salinity at upper Bay and Delta stations as indicated by water samples taken on October 14th, is compared to the corresponding salinity on October 14, 1934.

Comparison of Salinity at Upper Bay and Delta Stations on October 14, 1934, and October 14, 1935.

Station	*Salinity in parts of chlorine per 100,000* 10/14/35	10/14/34
Point Orient	1680	1720
Point Davis	1340	1610
Bullshead Point	1140	1410
Collinsville	130	620
Three Mile Slough Bridge	8	385
Rio Vista Bridge	2	220
Antioch	160	620
Central Landing	4	43
Dutch Slough	13	250

CALIFORNIA COOPERATIVE SNOW SURVEYS

Under an appropriation measure passed by the last Legislature, limited funds became available on September 15, 1935, for resumption by the Division of the project of Snow Surveys and forecasting of stream flow. This project was originally initiated in 1929 but State support was discontinued in June, 1933. Subsequent to that date, the snow sampling equipment was permitted to remain with the cooperating agencies and a number of these continued the surveys in the late winter and early spring of 1934 and

(Continued on page 28)

Highway Crew Fights Fire in Malibu Hills Saving School, Pupils and Homes

SURROUNDED by a wall of fire, employees of the Maintenance Department of the Division of Highways, District 7, valiantly fought the conflagration which last month swept through the beautiful Malibu hill region in Los Angeles County and by their efforts saved a number of homes and the schoolhouse in the Decker Canyon Settlement, which was directly in the path of the flames.

The highway maintenance men were assisted by the men, women and children of six families and Mrs. Weaver, the school teacher, who elected to remain with them in the imperiled area, refusing offers of the Division of Highways to move them and their household belongings in state trucks.

In a report to Director of Public Works Earl Lee Kelly, E. T. Scott, Maintenance Engineer of the Seventh District, forwarded an account of the fire fighting work of his crew written by Maintenance Superintendent Bernard M. Gallagher, and praises the members highly for their courage. Gallagher reported:

DISCOVERED FIRE IN HILLS

"Due to the heavy wind storm early in the morning of Wednesday, October 23, we instructed all the foremen to patrol the roads for fallen trees and other debris. John Schorr, who lives on Decker Road and works on the crew of Foreman Otto Apperson, notified Apperson that there were a few fallen trees and a large amount of brush and rock on Decker Road. Apperson immediately sent Schorr, C. F. Saman and William Dreasher in a truck up this road to clear it as he had been informed a fire was sweeping in that direction from Malibu and he wanted the road open.

"While the men were engaged in this work and had progressed to a point about nine miles inland, they discovered a fire just starting. This was about 11 o'clock in the morning. They at once notified Fire Warden Joe Ozanne.

REFUSED TO FLEE

"Immediately thereafter they proceeded to notify the scattered residents in the district of the approach of the fire. Some of the residents moved out at once, but six families with sixteen children and the school teacher, Mrs. Weaver, decided to remain on the school grounds with the maintenance crew and assist in protecting the school and homes around it.

"John Schorr was urged to load his household effects on a state truck, but thought it would not be the right thing to do in view of the refusal of the other families to desert their homes. He hauled his furniture to the school house and put it in a corrugated iron garage. Sparks got inside the garage while Schorr was battling the fire and destroyed his furniture.

"At 11.30, I went to our highway construction camp and asked Roy Alley, the foreman, to send up a truck and crew to the school to lend assistance. He dispatched Norton, Flores, Dituri, Kanchl, Smith, Housman, Bradley and Albanez to the scene and followed in his own car.

SCHOOL AND HOMES SAVED

"Our men started the pump near the school, filling the storage tank, water barrels and everything else available that would hold water. The fire hit them about 1.15 p.m. and passed over them.

"They battled the flames for about 20 minutes and were able to save the school house, its outlying buildings and several homes nearby. But for the crew and the residents who remained with them the entire group of buildings and homes would have been burned.

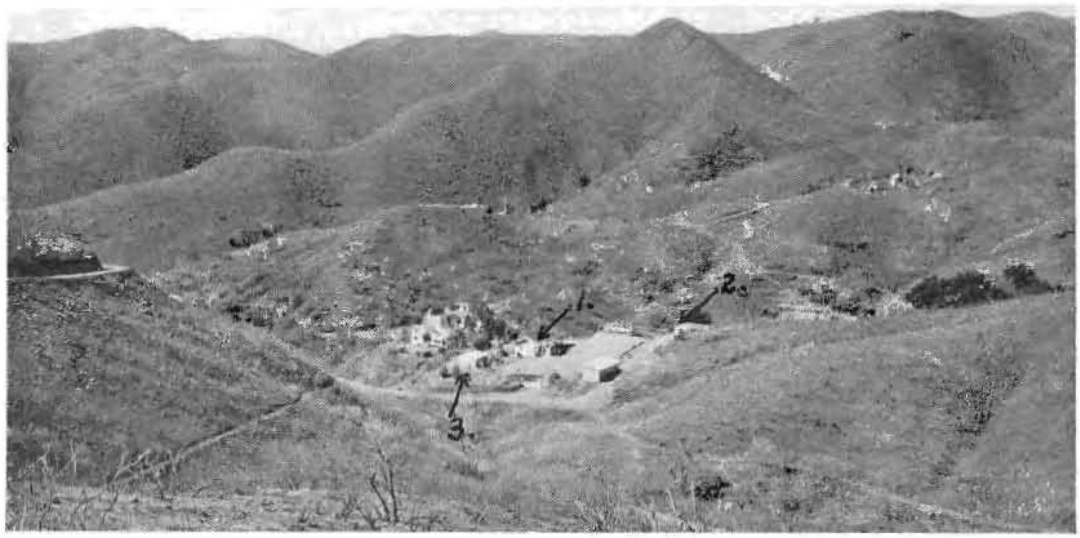
"The school is situated on an acre of ground that is cleared and is in a little valley between two hills on which was dense undergrowth. Four adjacent homes were destroyed, including the one rented by Schorr.

FLAMES 40 FEET HIGH

"Schorr said that during the worst of the fire their location was surrounded by a wall of flames, some of which were 40 feet high.

"I feel that our men, together with Mrs. Weaver, the teacher, and the families that

(Continued on page 32)



MALIBU FIRE SCENES where highway crew did heroic work. 1—Decker school; 2—Water tank; 3—School garage.

REMAINS OF FURNITURE moved for safety to school garage by John Schorr of highway crew.

WATER TANK where men waged desperate fight with flames to save only water supply.

BURNED AREA showing hundreds of acres surrounding little school community where flames raged leaving blackened hills denuded of trees and brush.

State Resumes Snow Survey Work on a Cooperative Basis

(Continued from page 25)

1935, but the data were not assembled and correlated and no forecasts were published by the Division.

Expenditure of State funds under this project has been made contingent upon like expenditure by the various cooperating agencies, Federal district, public utilities, etc., and these agencies have already submitted statements of the expenditures which they expect to make in cooperating on the Snow Survey work during the present biennium. The total of these statements has more than matched the State appropriation.

With the resumption of this work, the item of first importance during the past month has been the necessary field arrangements and survey preparations before the winter snows set in. Equipment and supplies are being checked and snow samplers and accessories replaced or added where necessary. It now appears that surveys may be anticipated at practically all of the snow courses surveyed prior to 1933 except that it may not be possible to obtain as many of the "key course" surveys formerly made monthly from the end of January to the end of April.

WATER RIGHTS

Supervision of Appropriation of Water.

Twenty-four applications to appropriate water were received in September; 14 were denied and 20 were approved. In the same period 3 permits were revoked and 1 passed to license. Among the permits issued was one to the city of San Luis Obispo for 2.32 cubic feet per second and 1799 acre-feet per annum storage from Lopez Creek in San Luis Obispo County. The estimated cost is $600,000.

Field inspections of projects were made in Sacramento, Solano, San Joaquin, Stanislaus and Merced counties preparatory to the issuance of licenses confirming the rights under permits previously issued.

FEDERAL COOPERATION—TOPOGRAPHIC MAPPING

Topographic field work in connection with the Paynes Creek and Burney Quadrangles was carried on in Tehama and Shasta counties. Some progress was made in connection with office work on the Sebastopol Quadrangle in Sonoma County and office work on the Healdsburg Quadrangle in Sonoma County was completed. Some vertical control work was done on the Krayenhagen Hills Quadrangle in Fresno County. Final sheets of the Los Alamitos Quadrangle in Orange County are now available. This sheet is done on a scale of 1:31,680 with a contour interval of 5 feet.

The final map of the Sylmar Quadrangle is now available. This covers an area in Los Angeles County on a scale of 1:24,000 with a contour interval of 5 and 25 feet, the work being done by Los Angeles County in cooperation with the Geological Survey.

Santa Monica Flat Arch Tunnel Built in 40-foot Sections

(Continued from page 2)

contract was awarded for driving the 708 concrete piles required for the tunnel footing. Piles were driven at approximately three foot centers to a bearing of 40 tons and the average penetration of the piling was 17.5 feet. It was necessary to closely watch the banks during the driving operations as the jar tended to cause slides. One major slide of 200 cubic yards partly buried two men working close to the bank.

The temporary trestle of the Pacific Electric line was constructed with a removable span over each footing and when the driver reached this point, the removable span was lifted out by a track crane and the driver taken through the opening, driving pile as it went through. This work was done between the hours of 1 and 5 a.m. when there were no train movements.

Upon the concrete pile heads a reinforced concrete footing block was cast 3½ feet thick and 10 feet wide which formed the foundation of the tunnel proper.

FLAT ARCH ROOF

The tunnel is a rigid frame structure resembling a very flat arch with a span of 56 feet and has a clearance above the pavement of 21 feet. The tunnel is being constructed in 40 foot sections and each of these sections contains approximately 420 cubic yards of concrete and 32 tons of bar reinforcing steel.

Concrete for each section was poured in three operations, the walls, the haunches and then the crown portion. Transit mixed concrete is being used throughout as there is no space available for the storage of materials at the job.

The cost of falsework upon a project of this size is of primary importance as approximately 35,000 feet B.M. of lumber is required for the centering and sheeting of each 40 foot section. As all of the tunnel sections are similar, the contractor conceived the idea of building the falsework in two parts, the lower part being a series of framed bents and the upper part a series of trusses resembling roof trusses.

Joists cut to the shape of the arch were supported by these trusses and the joists were sheeted with two-inch material. A six-inch wedge space separated the two parts of

(Continued on page 32)

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

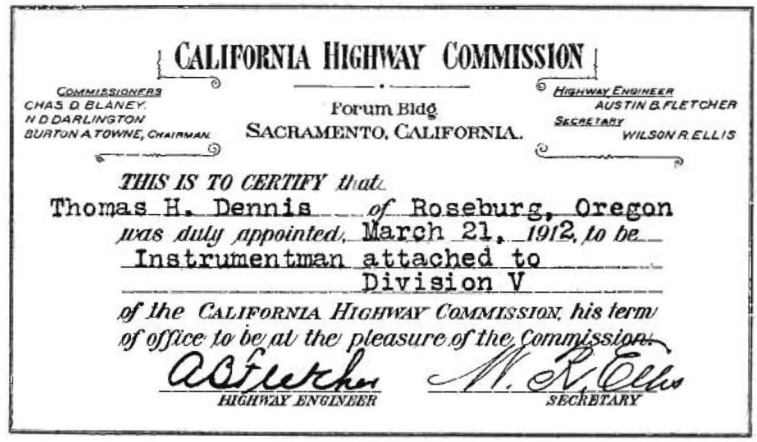
THE honor of being head man in the Old Timers' Club of the State Division of Highways, originally the California Highway Commission, goes this month to Thomas H. Dennis, Maintenance Engineer of the Division.

Membership requirement is possession of one of the identification cards issued by the old California Highway Commission to every man appointed on the staff of a division engineer. Mr. Dennis produced two such cards. One certifies to his employment as instrument man attached to Division V, San Luis Obispo, under Division Engineer W. S. Carruthers, on March 21, 1912. Mr. Dennis worked five months in this capacity and then was transferred to Division III, which then embraced Sacramento and Stockton, as Chief of Party, August 26, 1912. His second card bears this date.

This same date appears on the card sent to the California Highways and Public Works last July by E. H. Cameron, Construction Engineer of District 1, who, on August 26, 1912, was appointed a transitman. Mr. Cameron expressed a wish to hear from any old timer who had a card antedating his.

M. E. Tozer, 702 West 8th Street, Santa Ana, assistant bridge construction engineer of the Division of Highways in District 7, promptly sent in his application for membership in the Old Timers' Club in the shape of an identification card issued to him as a draftsman in District 5 by the Highway Commission, and bearing the date June 24, 1912. That placed him ahead of Mr. Cameron.

And now comes forward Maintenance Engineer Dennis and tops them both.



CALIFORNIA HIGHWAY COMMISSION

COMMISSIONERS
CHAS. D. BLANEY.
N. D. DARLINGTON
BURTON A. TOWNE, CHAIRMAN.

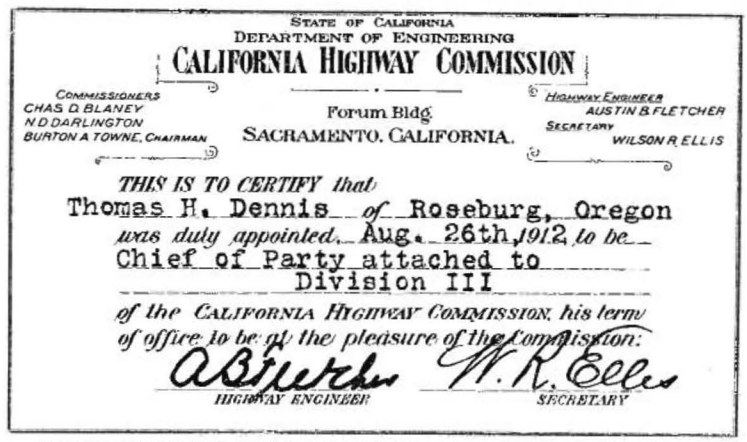
Forum Bldg.
SACRAMENTO, CALIFORNIA.

HIGHWAY ENGINEER
AUSTIN B. FLETCHER
SECRETARY
WILSON R. ELLIS

THIS IS TO CERTIFY that
Thomas H. Dennis of Roseburg, Oregon
was duly appointed, March 21, 1912, to be
Instrumentman attached to
Division V
of the CALIFORNIA HIGHWAY COMMISSION, his term
of office to be at the pleasure of the Commission.

A B Fletcher — HIGHWAY ENGINEER
W. R. Ellis — SECRETARY

FIRST CARD issued to T. H. Dennis, August 26, 1912



STATE OF CALIFORNIA
DEPARTMENT OF ENGINEERING
CALIFORNIA HIGHWAY COMMISSION

COMMISSIONERS
CHAS. D. BLANEY
N. D. DARLINGTON
BURTON A. TOWNE, CHAIRMAN

Forum Bldg.
SACRAMENTO, CALIFORNIA.

HIGHWAY ENGINEER
AUSTIN B. FLETCHER
SECRETARY
WILSON R. ELLIS

THIS IS TO CERTIFY that
Thomas H. Dennis of Roseburg, Oregon
was duly appointed, Aug. 26th, 1912, to be
Chief of Party attached to
Division III
of the CALIFORNIA HIGHWAY COMMISSION, his term
of office to be at the pleasure of the Commission.

A B Fletcher — HIGHWAY ENGINEER
W. R. Ellis — SECRETARY

RAPID PROMOTION is shown by this card issued March 21, 1912

These veterans are proud of their state service. They prize their old identification cards highly. They invite other old timers to dig among their keepsakes and produce equally ancient cards.

The original California Highway Commission was appointed in 1911 and on January 2, 1912, the first seven division engineers reported for duty.

The first shovel of earth on the first highway contract was turned in San Mateo County on August 7, 1912, by Burton Towne, chairman of the Highway Commission. Contract Number One under the original bond issue called for a highway between South San Francisco and Burlingame.

California and Nevada Join in Dedication at Montgomery Pass

By **S. W. LOWDEN**, Acting District Engineer

CALIFORNIA participated with Nevada in paying tribute to the efforts of early pioneers and present day boosters of the all-year highway across Montgomery Pass on Sunday, October 6, 1935, when ceremonies held at Mount Montgomery Summit officially and formally opened the new oiled highway extending from Tonopah and central Nevada to Bishop and southern California.

Approximately 300 people attended the dedication under the clear blue skies at the little mountain community which faces the White Mountains, no less majestic in their rugged grandeur than the Sierra barrier on the west.

State Controller, Henry Schmidt of Nevada officially represented Governor Kirman of that state, while California was represented by a group of citizens, among whom were G. W. Dow, G. W. Savage, William Chalfant, W. A. Crosby, Joe Riley and others.

NATIONAL HIGHWAY LINK

Many letter and telegrams were read congratulating and praising the completion of the work as an important link in the national highway system.

The speakers included E. C. Brown of the U. S. Bureau of Public Roads; William Davis, manager Nevada State Automobile Association; Forest Lovelock, prominent Tonopah business man; L. F. Deckelman, representing the American Legion; S. W. Lowden, acting District Engineer, Division of Highways, Bishop; W. A. Crosby, representing the Automobile Club of Southern California and G. W. Dow, president of the Three Flags Highway.

The road has an historic past, and many persons now residing in Owens Valley had a hand in the long struggle to secure the route over the mountains. Marked increase in tourist travel over this pass more than justified the efforts put into this project, which is the last link of the U. S. Highway No. 6 transcontinental system in the State of Nevada. It was pointed out that this route is the only transcontinental highway carrying the same route number for the entire distance. With the completion of this link, the present transcontinental traffic is expected to increase still more.

The improvements recently completed within Nevada have resulted in a highway comparable to the present day standards and permitting a high degree of speed, safety and comfortable travel to the public.

MORE IMPROVEMENTS PLANNED

California is soon to make many improvements between the state line and Bishop in the way of reducing curvature, widening of travelable way, and the betterment of several dangerous railroad crossings.

State Controller Henry Schmidt severed the gold and silver ribbon which was held by two queens, Miss Dorothy Nell Birdsong from Lone Pine, the gold queen representing California, and Miss Isabel Naismith from Tonopah, the silver queen representing Nevada.

After the ceremonies many of the participants enjoyed picnicking at various scenic spots along the pass.

Two Units of New Sepulveda Highway Yet to be Improved

(Continued from page 18)

nando Valley greets the eye; one descends then along the north slope of the Santa Monica Mountains to meet Ventura Boulevard at the community of Sherman Oaks.

Upon the completion of two and one-tenth miles of new road and the improvement of three and three-tenths miles of existing traveled way, the entire Sepulveda Highway will be open as a unit. Finances have been provided out of the 1935–37 state highway budget for the grading, paving and completion of these final short, connecting links, making Sepulveda Highway the new gateway and shortcut route between San Fernando Valley and the sea, and a major travel artery linking main coast and inland thoroughfares and serving to bypass future through traffic around the more congested metropolitan areas.

CALIFORNIA ROAD SYSTEM

Development of California's highway system during the last three decades is revealed in an interesting survey published recently in California Highways and Public Works, publication of the Department of Public Works. * * *

It goes without saying that it is a system of which every California resident may well be proud, in the realization that it comprises one of the State's greatest economic assets.—*Eureka Standard.*

Highway Bids and Awards

for October, 1935

ALAMEDA COUNTY—U. Gr. Xing of Peralta, Adeline Sts. & San Pablo Ave. in Oakland and Emeryville. Rein. conc. rig, fr. U. P. strs, & ret. wall apprs. & paved street connections. District IV, Route 5, Section Oak Emv. Union Paving Co., San Francisco, $419,012; Clinton Construction Co., San Francisco, $382,300; Eaton Smith, San Francisco, $429,936; Bates & Rogers Construction Co., Oakland, $375,790; Bodenhamer Construction Co., Oakland, $449,390; Peninsula Paving Company, San Francisco, $439,965; Lindgren and Swinerton, Inc., San Francisco, $385,318; Macdonald Kahn Co., Ltd., San Francisco, $406,463; Barrett & Hilp, San Francisco, $399,786. Contract awarded to J. F. Knapp, Oakland, $359,932.

ALAMEDA COUNTY—Furnish and apply crusher run base and liquid asphalt surface between Scotts Corner and Arroyo Del Valle Bridge, about 2 miles. District IV, Route 108, Section A. Jones and King, Hayward, $11,696; J. A. Casson, Hayward, $10,560; Healey-Moore Co., Oakland, $11,217; Lee J. Immel, Berkeley, $11,416. Contract awarded to Independent Construction Co., Ltd., of Oakland, $10,128.

ALAMEDA COUNTY—Between the foot of Folger Ave., and Gilman Street in Berkeley. About 2 miles to be graded by dredging. District IV, Route 69, Section Ber. San Francisco Bridge Co., San Francisco, $203,430. Contract awarded to American Dredging Co., San Francisco, $172,313.30.

ALAMEDA COUNTY—Planing existing asphalt concrete pavement between easterly boundary and Greenville, about 4.6 miles. District IV, Route 5, Section A. Asphalt Pavement Planing Co., Oakland. $3,125; A. Teichert & Son, Inc., Sacramento, $2,500. Contract awarded to Ransome Co., Emeryville, $2,250.

IMPERIAL COUNTY—Between E. Highline Canal and Midway Wells, about 12.5 miles to be graded and surfaced with pl. mix. surf. (Med. curing type). V. R. Dennis Constr. Co., San Diego, $165,573; Oswald Bros., Los Angeles, $167,990; Mundo Engr. Co., Los Angeles, $176,318; Daley Corp., San Diego, $177,706; Gibbons & Reed Co., Burbank, $177,852; Sharp & Fellows Const. Co., Los Angeles, $194,817; J. A. Casson, Hayward, $195,611; Griffith Co., Los Angeles, $221,239. Contract awarded to R. E. Hazard & Sons, San Diego, $151,293.50.

KINGS COUNTY—Between Hanford and 1½ miles easterly. About 1½ miles to be graded and paved with A. C. District VI, Route 10, Section A. Union Paving Co., San Francisco, $45,592; Stewart & Nuss, Inc., & John Jurkovich, Fresno, $52,685; Basich Brothers, Torrance, $51,961; Hanrahan-Wilcox Corporation, San Francisco, $49,597. Contract awarded to Southern California Roads Company, Los Angeles, $43,404.25.

LASSEN COUNTY—Between Litchfield and 5.3 miles Easterly, about 5.3 miles in length, to be graded. Dist. II, Route 73, Section B. Hemstreet & Bell, Marysville, $14,960; Claude C. Wood, Stockton, $14,995; Harms Bros., Sacramento, $16,805. Contract awarded to Isbell Construction Co., Reno, Nevada, $14,275.

LOS ANGELES COUNTY—Between Mabel Street and Atlantic Blvd., about 0.6 mile P. C. C. curb and gutter to be constructed mix. surf. to be placed on adjacent shoulders. Dist. VII, Route 26, Section D. Oswald Bros., Los Angeles, $7,232; J. L. McClain, Los Angeles, $6,392. Contract awarded to Paul P. Hughes, Long Beach, $5,851.

LOS ANGELES COUNTY—Between Verdugo Road and Flintridge Country Club; 1.5 mile, Grade and A. C. Pave. District VIII, Route 9, Section B. C. O. Sparks, Los Angeles, $120,198; Griffith Co., Los Angeles, $124,621; Oswald Bros., Los Angeles, $128,499; F. L. McClain, Los Angeles, $128,597; Gibbons & Read Co., Burbank, $139,571; P. J.Akmadzich, Los Angeles, $140,098. Contract awarded to Geo. R. Curtis Paving Co., Los Angeles, $116,452.15.

LOS ANGELES COUNTY—San Fernando Road through Newhall, between Railroad Ave. and Placerita Road, 0.8 mile, asphalt concrete pavement. District VII, Route 23, Section H. Griffith Company, Los Angeles, $35,582; Oswald Bros., Los Angeles, $28,740. Contract awarded to George R. Curtis Paving Co., Los Angeles, $24,504.10.

MONTEREY COUNTY—King City to 2 miles south of Greenfield, 8.7 miles seal coat to be applied. District V, Route 2, Sections E, F. Granite Constr. Co., Ltd., Watsonville, $6,443; Oilfields Trucking Co., Bakersfield, $8,215; L. A. Brisco, Arroyo Grande, $6,834; Ernest L. Yaeger, San Bernardino, $7,412. Contract awarded to Pacific Truck Service, Inc., San Jose, $6,412.50.

RIVERSIDE COUNTY—On Iowa Avenue between East Eighth Street near Riverside and La Cadena Drive, about three (3.0) miles in length, shoulders to be treated with liquid asphalt (SC-2). Dist. VIII, Route 43, Section C. Square Oil Company, Los Angeles, $1,821; Paulsen & March, Inc., Los Angeles, $1,769; Morgan Bros., Huntington Park, $1,786; Gilmore Oil Co., Los Angeles, $1,790. Contract awarded to Lambs Transfer Co., Long Beach, $1,692.

SACRAMENTO-YOLO COUNTIES—Between M Street subway and M Street Bridge, and between Ben Ali subway and Ben Ali station; 1.2 miles; water supply system, irrigation system, concrete curbs and gutters, and grading portions of roadway. District III, Routes 6 and 2, Sections C and B. A Teichert & Son, Sacramento, $17,665; J. R. Reeves, Sacramento, $19,073; Robt. B. McNair, Oakland, $19,924. Contract awarded to L. C. Seidel, Oakland, $16,753.40.

SAN BENITO COUNTY—Between Lonoak and San Benito about 17.8 miles to be treated with liquid asphalt. District V, Route 119, Section B. Gilmore Oil Co., Los Angeles, $5,450; Lamb Transfer Co., Long Beach, $6,870; Pacific Truck Service, Inc., San Jose, $6,705; Tiffany Constr. Co., San Jose, $7,750; Oilfields Trucking Co., Bakersfield, $6,625. Contract awarded to L. A. Brisco, Arroyo Grande, $4,985.

SAN BERNARDINO COUNTY—Between Klinefelter and easterly county boundary about 15 miles in length, liquid asphalt to be furnished and applied. District VIII, Route 146, Sections E & F. Paulsen & March, Inc., Los Angeles, $1,440; Morgan Bros., Huntington Park, $1,249; Oilfields Trucking Co., Los Angeles, $1,797; Gilmore Oil Co., Los Angeles, $1,417; Lambs Transfer Co., Long Beach, $1,320. Contract awarded to Square Oil Co., Los Angeles, $1,224.

SAN BERNARDINO COUNTY—In San Bernardino County between Camp Angelus and So. Fork Santa Ana River, about ten and one-half (10.5) miles to be treated with liquid asphalt. District VIII, Route 190, Section F. Gilmore Oil Company, Los Angeles, $4,621; Paulson & March, Inc., Los Angeles, $4,455; Morgan Bros., Huntington Park, $4,720; Lamb Transfer Co., Long Beach, $4,405. Contract awarded to Square Oil Co., Los Angeles, $3,825.

SAN BERNARDINO COUNTY—Between east city limit of Redlands and Calimesa, about 4.8 miles in length, shoulders to be treated with liquid asphalt (SC-2). District VIII, Route 26, Section E. Paulsen & March, Inc., Los Angeles, $1,210; Morgan Bros., Huntington Park, $1,178; Square Oil Co., Los Angeles, $1,240; Gilmore Oil Co., Los Angeles, $1,298. Contract awarded to Lambs Transfer Co., Long Beach, $1,168.70.

SANTA CLARA COUNTY—Between Sunnyvale and Saratoga, grade and surface with creek gravel base about 0.22 miles. District IV, Route 114, Section A. Lee J. Immel, Berkeley, $8,976; A. J. Raisch, San Jose, $8,859; Pacific Truck Service, Inc., San Jose, $8,394; John Jurkovich, Fresno, $9,905; Tiffany Constr. Co., San Jose, $9,304. Contract awarded to Earl W. Heple, San Jose, $8,001.50.

SIERRA COUNTY—Furnish and stockpile surfacing material at Downieville. District III, Route 25, Sec-

(Continued on page 32)

Trucks Must Display Night Warning Lights

Changes in the Motor Vehicle Code, relating to warning signals that must be displayed by trucks and tow cars, which became effective September 15, 1935, read as follows:

Flares—Section 590. Every truck or commercial vehicle operated on any highway outside the corporate limits of any city or town shall be equipped with and at all times carry at least two flares or two red lanterns or two warning lights or reflectors which shall be placed on the highway displayed continuously during the hours of dark- at a distance of 200 feet to the rear and 200 feet to the front of such commercial vehicle when it is disabled on the highway, and which shall be ness while such vehicle remains disabled on the highway. Approval of flares is not required, but the reflectors used for the purpose must be of approved types as prescribed by the Department.

Warning Signals—Tow Cars—Section 586.5. The operator of a motor vehicle used for the purpose of rendering assistance to other vehicles shall, when the rendering of assistance necessitates the obstruction of any portion of the highway, place warning signals on the highway which will be visible both day and night. Such signals shall be of a uniform type described by the Department.

HIGHWAY CREW FIGHT FIRE IN MALIBU HILLS

(Continued from page 26)

stayed to protect their property are entitled to a great deal of praise. I personally know what they had to endure and the risk they ran because Apperson and myself investigated the fire as it was approaching the school and knew that it would be very severe.

"We tried to induce these people to come out and offered to haul their furniture and belongings on our trucks, but they declined, feeling they could save their places if they remained with our crew."

PRAISED BY SUPERIOR

In his report to Director Kelly, forwarding Superintendent Gallagher's account of the Decker Canyon fire fighting, District Engineer Scott said:

"In rendering services to the residents of the Decker Canyon Settlement at such a time, when without aid they would have lost their homes and perhaps the lives of some of their dear ones, the employees of the State Division of Highways have done a fine piece of work and have received many words of praise."

Teacher: "My goodness, Willie! How did you get such dirty hands?"

Willie: "Washin' my face."—*Atlanta Constitution.*

Truss Sections Moved Ahead on Rollers

(Continued from page 28)

the centering. After the concrete was poured and had obtained sufficient strength, the wedges were removed and the truss section allowed to rest on rollers.

FALSEWORK MOVED AHEAD

By means of jacks this section was moved ahead and again raised to the required elevation by wedges, the entire operation taking about eight hours. Under the temporary trestle of the Pacific Electric this method could not be used as the piling penetrated through the deck and this falsework had to be constructed in place.

Back fill of the tunnel arch is progressing at the rate of 300 cubic yards per day and it is expected that the intersection of Ocean and Colorado Avenues will be ready for pavement by the first of December.

Much of the paving and sidewalking on Ocean Avenue is to be done by the city of Santa Monica. The suspension of the SERA has delayed this work and it is hoped that the work can be reinstated under the WPA in time to open the intersection of Colorado and Ocean Avenues by Christmas.

HIGHWAY BIDS AND AWARDS FOR THE MONTH OF OCTOBER

(Continued from page 31)

tion A. Contract awarded to Beerman & Jones, Stockton, $4,095.

SIERRA COUNTY—At Downieville, 0.12 miles to be graded. District III, Route 25, Section A. Contract awarded to Charles Kuppinger, Lakeport, $16,943.90.

SOLANO COUNTY—Between 3.7 miles north of Fairfield and 0.6 miles south of Vacaville, 3.8 miles. Grade and surface with A. C. or P. C. C. District X, Route 7, Section C. M. M. Ball Sons, Berkeley, $182,728; A. G. Raisch, San Francisco, $204,989; Fredrickson Watson Construction Co., Fredrickson Bros., Jones & King, Oakland, $191,152; Hanrahan Wilcox Corporation, San Francisco, $184,918; Peninsula Paving Company, San Francisco, $195,728; A. Teichert & Son, Inc., Sacramento, $194,199. Contract awarded to Union Paving Co., San Francisco, Alt. "A," $178,696.10.

STATE HIGHWAY MAPS MADE AVAILABLE TO MOTOR PATROL

Officers of California Highway Patrol today have complete and detailed knowledge of every highway and byway in the State, regardless of whether or not it is under their jurisdiction.

This great store of road information was made possible for the patrol by cooperation of Earl Lee Kelly, Director of Public Works, in presenting department of motor vehicles with bound maps for each police squad room in the State.

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

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CALIFORNIA HIGHWAY COMMISSION

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PHILIP A. STANTON, Anaheim
CHARLES D. HAMILTON, Banning
RAY INGELS, Ukiah
C. H. PURCELL, State Highway Engineer, Sacramento
JULIEN D. ROUSSEL, Secretary

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A. D. EDMONSTON, Deputy in Charge Water Resources Investigation
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Port of Eureka—William Clark, Sr., Surveyor

CALIFORNIA STATE PRINTING OFFICE
GEORGE H. MOORE, STATE PRINTER
SACRAMENTO, 1935

26048 11-35 10,600


MAP
SHOWING
STATE HIGHWAY SYSTEM
LEGEND
Primary Roads
Secondary Roads
See Detail Map
See Detail Map
SAN FRANCISCO AND VICINITY
LOS ANGELES AND VICINITY