

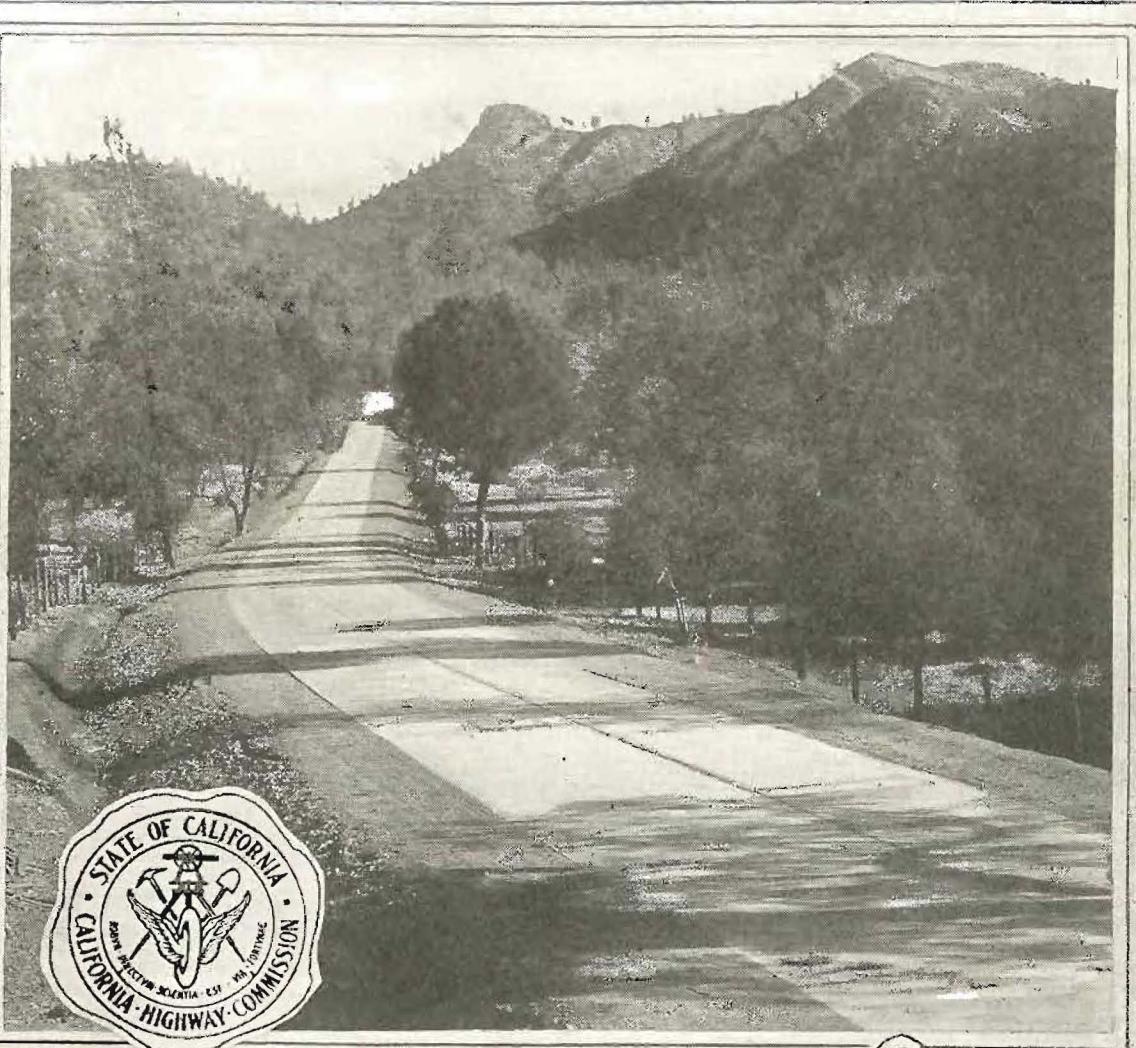
# CALIFORNIA HIGHWAYS

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NEW PAVEMENT ON THE PACIFIC HIGHWAY—View on the new ten-mile section of pavement recently opened to traffic just north of Redding, Shasta County. It is of cement concrete, twenty feet wide, with both center and transverse expansion joints. This is the type of pavement which will be extended northward to the Oregon line when additional construction funds are provided. Approximately 100 miles remain unbuilt at the present time. (Div. II.)

*In this issue:* NEW RECONSTRUCTION METHODS TRIED IN DIVISION X—CURING CONCRETE WITH CALCIUM CHLORIDE—RECENT CALIFORNIA EXPERIMENTS.

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## NEW METHODS USED ON IMPORTANT RECONSTRUCTION PROJECTS IN DIVISION X

By J. C. McLEOD, Division Engineer.

TWO important projects that mark a departure from former reconstruction practices in this state were completed during the month in Division X. Both were financed from gasoline tax revenues and involved the use of asphalt concrete for widening and surfacing, including the construction of shoulders. As it is the first test of this particular type of reconstruction in California, the shoulder work is a feature of particular interest.

Between Vacaville and Batavia, Solano County, an old fifteen-foot concrete slab was widened to twenty feet and thickened, and in western San Joaquin County, an oil macadam roadway, fourteen feet wide, was similarly improved.

The Solano project is located on the trunk highway between the Bay cities and Sacramento, beginning at the east city limits of Vacaville and extending to a point  $2\frac{1}{2}$  miles west of Dixon, a total of 8.3 miles. Due to the adobe soil sub base on portions of this section, the existing concrete pavement, placed in 1916, was rough and fast becoming a serious maintenance problem. It also was too narrow to adequately handle present traffic.

The first 2000 feet, immediately east of the city limits of Vacaville, was improved with a second story concrete construction twenty feet wide with nine-inch edges, the edges being reinforced. This type of pavement was used where the highway crosses a low elevation. The remainder of the widening was done entirely with asphalt.

### New Methods Developed.

Some features of this work called for the development of new methods. The grade was widened by hauling in new earth from approved borrow pits furnished by the state. Adobe sections were thus covered with a loam soil which has proved preferable as a sub base.

Paving operations began with the trenching out of the earth shoulders on each side of the concrete slab to a width of  $2\frac{1}{2}$  feet and to about the depth of the existing pavement. Outside header boards were placed to a true grade regardless of the inequalities of the old pavement, and the trench filled with an asphalt concrete base mixture which was thoroughly compacted.

The contractor developed spreader boxes which received the base mix directly from the trucks and mechanically placed it in the trench with a proper allowance for roller compaction. Following the construction of the shoulders, a leveling course of base mixture was laid over the resulting twenty-foot width, removing both the excess transverse crown and longitudinal irregularities of the old pavement. Over this was placed a  $1\frac{1}{2}$ -inch top mixture, and lastly a hot asphalt seal coat and hot screenings were applied and rolled in.

### Mechanical Spreaders Used.

A feature of the placing of these top courses was the use of two steel mechanical spreaders of the Galion make which were operated a short distance apart, as shown in the illustrations.

A level, attached to the strike-off plate of the spreader, permitted an operator to raise or lower the plate and thus deposit larger or lesser amounts of the mix as required by the irregularities of the old concrete slab. The result was an exceptionally smooth job.

A minimum of separation of aggregates in the asphalt mixture was noted and it is evident there was a considerable saving to the contractor. Three rakers and four shovels were able to handle, with the aid of the mechanical spreaders, a plant output that ran as high as 400 tons per day.

The contractor also worked out a wooden spreader box for spreading the two-foot crushed rock shoulders, placed at the edges of the completed pavement. The illustrations will indicate how uniformly it was possible to spread the rock by this method.

Corrections in alignment were made and curves were widened and superelevated with a minimum radius of 500 feet. As there was no superelevation of the old pavement, this improvement was accomplished by building up the outer side of the grade with new loam soil and crushed rock, thoroughly wetted and rolled before the new pavement was placed.

### Cost of Solano Improvement.

The total cost of the grading, new drainage structures and pavement widening and thickening on the Vacaville job was approximately \$242,500 for 8.3 miles. Force and Curriigan, former Oregon contractors, made special efforts to complete the job under unfavorable weather conditions. H. O. Ragan was resident engineer in charge for the state. Grading began early in the summer, paving started August 16th, and the job was finished January 14th.

### San Joaquin County Project.

The 8.1-mile project in San Joaquin County, between a point two miles east of Tracy and the Alameda County line, was similar in nature to the Solano County contract, except that in San Joaquin County a county built oil macadam road, fourteen feet in width, formed the base for the new pavement. While the old road had given many years of service, it was inadequate for present traffic and expensive to maintain.

In anticipation of its reconstruction, six-inch waterbound macadam shoulders, four feet wide, were placed on this section during the fall of 1923 and early spring of 1924. These



VACAVILLE WIDENING CONTRACT--Views on the Force and Curran asphalt contract, Solano County, where a new plan for widening the fifteen-foot concrete pavement with asphalt concrete is being tried out. Upper left, method used to spread asphalt concrete mix in shoulder trench for widening the pavement to twenty feet. Upper right, spreading the two-foot gravel shoulders along completed pavement. Lower views show spreader used in placing asphalt concrete mix over old concrete pavement and new shoulders. Use of labor-saving devices has been a feature of this job. (Div. X.)

shoulders serve as a base for the outer edge of the new surfacing.

The contract for the work was awarded to the Valley Paving Company during July, 1924. The contractor's paving plant was located at Tracy and was capable of producing 400 tons of asphalt concrete mix per eight-hour day. Modern equipment, including mechanical spreaders of the roller type, was used on this project. The contract was completed January 3, 1925. C. O. Dingle was resident engineer.

#### Shoulders Feature of Project.

A total of 24,470 tons of asphalt mixture were required for the 8.1 miles. The thickness of the new surfacing averages about  $2\frac{1}{2}$  inches at pavement center line with a uniform thickness of five inches at the outer edge.

The pavement was placed in two courses; first, a leveling course to remove inequalities in the old oil macadam; and second, a top surfacing of a uniform thickness of two inches with a seal coat of hot asphalt and screenings.

Compacted gravel shoulders along the edges of the new pavement have been the subject of favorable comment. These rock shoulders serve as a protection to the pavement edge and are an added safety factor in that they prevent the tracking of treacherous adobe soil across the highway.

The cost of the work, including the widening of the grade to state highway standards, was approximately \$194,000. San Joaquin County has many miles of oil macadam highway, built by the county, which must be widened and thickened before the state highway system within the county can be considered completed.

#### THE BIENNIAL

We have received a copy of the biennial report of the State Highway Commission and to one who has made a study of the highway question and is familiar with many of the routes it is mighty interesting reading. To the author of that report we extend our sincere congratulations.

—Placerville Mountain Democrat.

# CURING CONCRETE WITH CALCIUM CHLORIDE— RECENT CALIFORNIA EXPERIMENTS

By C. L. MCKESSON, Research Engineer, Construction Department.

ONE of the difficulties attendant upon the construction of concrete pavements in the drier regions of California is the expense of securing water for curing the concrete. It has long been known that calcium chloride, under favorable conditions, will absorb moisture from the air, and, during 1924, a number of experiments were undertaken by the Construction Department of the California Highway Commission in an effort to utilize this chemical as a substitute for the ordinary water method of curing.

Illinois, with a rather high relative humidity and precipitation throughout the year, has reported considerable success by distributing  $2\frac{1}{2}$  pounds of calcium chloride per square yard of pavement soon after the concrete is finished.

During last year, the California highway department conducted extensive field and laboratory experiments in an endeavor to ascertain whether this substitute can be used safely in this state in sections where humidity is low, temperature high, and precipitation absent during summer months.

#### Location of Field Experiments.

Field experiments were conducted on paving jobs in Los Angeles, Ventura, Sacramento and Humboldt counties.

Preliminary experiments, made early in the season, indicate a slight reduction in strength probably would result from substitution of the calcium chloride treatment for the usual water curing. All of the field tests made during the summer bore out this conclusion.

On two of the projects, concrete specimens  $6 \times 6 \times 12$  inches were cast from the concrete actually used in the pavement. In each case, half the specimens were cured by placing on one side, the morning after they were made, flake calcium chloride (dry) at the rate of  $2\frac{1}{2}$  pounds per square yard of surface. On three jobs, a portion of the pavement was treated in a similar way with calcium chloride and the remainder was cured with water in the usual manner. Upon completion of the work, cores, cured by both methods, were drilled from the pavement and sent the state highway laboratory at Sacramento for test.

#### Summary of Tests.

The following is a summary of the results and relative

efficiency of calcium chloride curing, as indicated by these tests:

Location of experiment	Number of samples	Average compressive strengths				Efficiency of calcium chloride, per cent	Remarks		
		$6 \times 6 \times 12$ " moulded specimens		$4\frac{1}{2}$ " cores from pavement					
		Water cured	Calcium chloride	Water cured	Calcium chloride				
Div. X—Sac.-4-B; Sacramento Stockton highway near Sacramento.	24	-----	-----	4,292	4,218	98	Hot and dry. (Water cured concrete 57 days old; calcium chloride cured concrete 70 days old.)		
Div. VII—L. A.-2-BC; Ventura-Los Angeles highway near Calabasas.	32 28	3,064 -----	2,783 -----	4,057 -----	3,294 -----	91 81	Hot and dry.		
Div. VII—Vent.-2-A; Ventura-Los Angeles highway near Newbury Park.	12	-----	-----	3,491	3,093	88	Hot and dry.		
Div. I—Hum.-I-CH; Eureka - Arcata highway at Arcata.	72	3,887	3,545	-----	-----	92	Experiment in October weather; cool humidity high (70-90). Some rain.		

\*Efficiency of calcium chloride curing assuming water curing to be 100 per cent efficient.

The above tests indicate calcium chloride is from 80 to 90 per cent efficient and that it might be used as a substitute for water curing where water is scarce. Some of the strength appears to be sacrificed, but the cores showed a minimum average strength of better than 3000 pounds in the most unfavorable case, and this strength indicates a fair factor of safety.

#### More Data Later.

An extensive series of curing tests, not included in the above discussion, was conducted at Sacramento during the summer and fall of 1924 by the California Highway Commission in cooperation with the Structural Materials Research Laboratory of the Lewis Institute. Calcium chloride and many other methods of curing concrete pavements were included in this series, the results of which will be given to the public in a report now being prepared.

It is possible that the results of these experiments, together with the tests discussed above, will result in some changes in present highway construction methods.

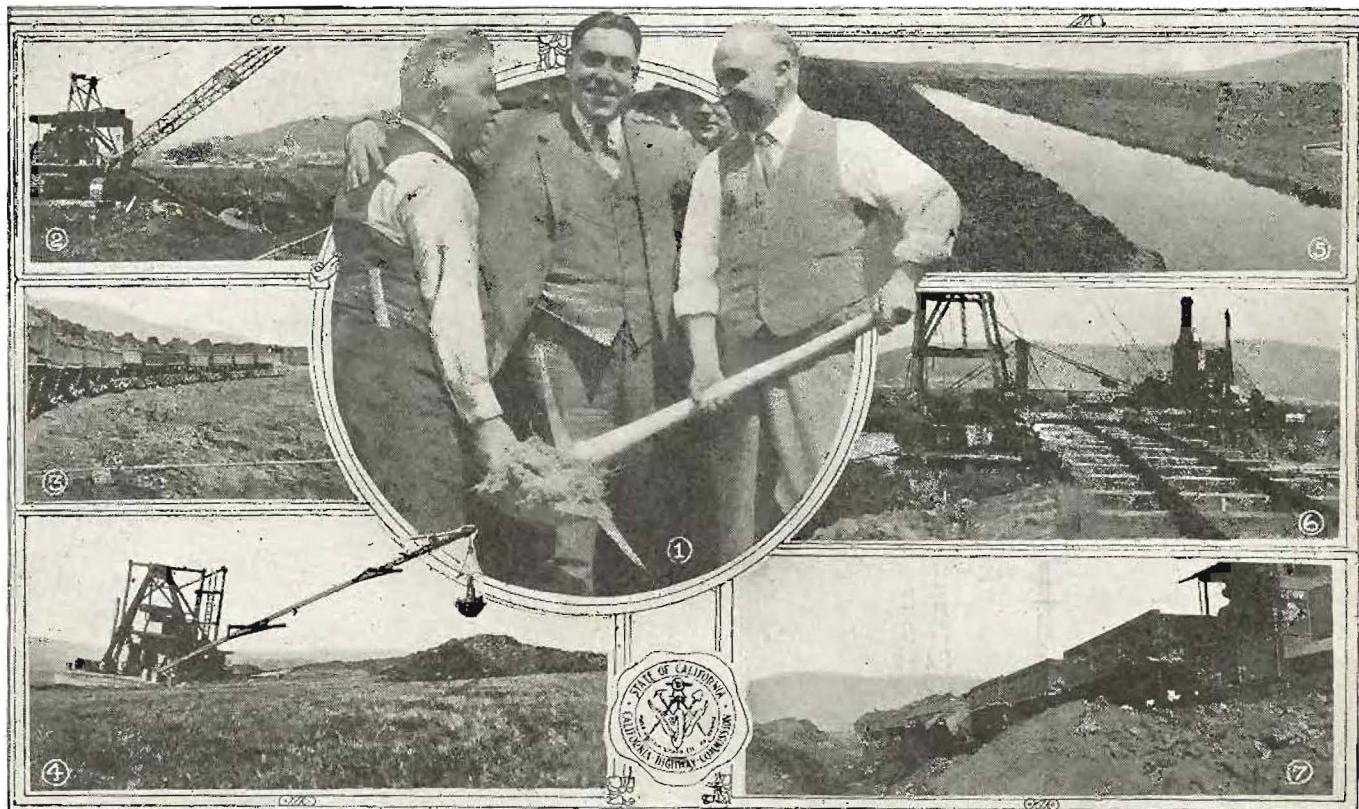
## GRAND JURY COMMENDS COMMISSION

THE Inyo County Grand Jury, in a recent report, had the following to say regarding the action of the California Highway Commission in taking over for maintenance the state highway between Mojave and Independence:

We most earnestly desire to express our thanks and appreciation of the action of the California Highway Commission wherein such commission recently took over, with a view of immediate maintenance and future

construction, the highway between the towns of Independence and Mojave, and feel that this commendable action on the part of the California Highway Commission will not only result in the best interest of the State of California, in general, but of the county of Inyo, in particular.

Let us travel over all the countries of the earth and whenever we shall find no facility of traveling from a city to a town, or from a village to a hamlet, we may pronounce the people to be barbarians.—Abbé Reynal.



BAY SHORE HIGHWAY CONSTRUCTION NEAR SOUTH SAN FRANCISCO—(1) The first shovel full of earth at the ground breaking ceremonies; Supervisor Ralph McLaren of San Francisco with the shovel; Mayor James Rolph, Jr., with the pick; Chairman Harvey M. Toy, center; (2) caterpillar dragline leveling fill; (3) trainload of dirt leaving borrow pit at South San Francisco; (4) floating dredge making highway fill; (5) drainage canal, highway fill on right; (6) driving piles with floating driver for pile trestle; (7) constructing highway fill with industrial railway. Funds for this work were supplied by the city and county of San Francisco. (Div. IV.)

## CONSTRUCTION WORK UNDER WAY ON BAY SHORE HIGHWAY

STATUTES enacted by the legislature of 1923 (chapter 181, laws 1923) provide authorization of law for the building of a highway in San Mateo County under state supervision with funds supplied by the city and county of San Francisco. Other counties are authorized to contribute funds, but to date San Francisco is the sole contributor to the general fund created by the act, \$400,000 having been advanced to finance the work now under way.

The Bay Shore highway, the name by which this project is generally designated, under the terms of the present law, extends from the southern limits of the city and county of San Francisco, along the bay shore, to and through San Mateo County. The initial contract, which was approved by the commission in August, 1924, provides for the grading of a 5.2-mile section between South San Francisco and Burlingame.

### Ceremonies Mark Start of Work.

The ground breaking ceremonies took place at South San Francisco on September 11th before a large crowd with Chairman Harvey M. Toy, Mayor James Rolph, Jr., of San Francisco, Supervisor Ralph McLaren and others taking part.

D. A. Foley and Company, of Los Angeles, the contractors, have several types of machinery engaged in building the

grade across the salt marshes adjacent to the west shore of San Francisco Bay. The unique character of the project from a highway standpoint is attracting widespread attention throughout the San Francisco peninsula.

The peninsula cities look upon the road as an ultimate solution of traffic problems. It is planned as a wide, commercial highway with no obstructions, sharp curves, or grades of more than 4 per cent. The initial grade is being built sixty feet wide on a 100-foot right of way.

### History of the Project.

Only one bid was received when the work was first advertised and it was rejected by the commission in May, 1924, and a revision of the plans undertaken in an effort to lower the cost. Contractors were permitted to submit alternate bids under several different schemes for doing the grading. The change in plans resulted in sixteen bidders and much lower bids. Dredgers are being used to excavate drainage canals through the marsh and an industrial railroad is in service in the construction of the roadway embankment. Material is being secured from Belle Air Island.

The contractor's bid for the first 5.2 miles under the revised plan was \$298,610. Culverts and other necessary work probably will bring the cost of the contract to nearly \$400,000.

## IMPRESSIONS OF THE CHICAGO CONVENTION AND ROAD SHOW

By R. H. STALNAKER, Equipment Engineer.

**T**HE increased attention given maintenance problems and equipment was the outstanding feature of the annual convention of the American Road Builders Association and road show recently concluded in Chicago. The attendance was representative of the country and a number of interesting papers were presented which will be published in the engineering journals.

In connection with the convention, two meetings of the equipment committee of the American Association of State Highway Officials were held for discussion of equipment problems. These meetings also were attended by members of the War Material Board of the Bureau of Public Roads, and the question of the possibility of the distribution of additional surplus war equipment was pretty well threshed out.

### Machinery Exhibit Larger.

The road show, held in the Coliseum, was more extensive and better than last year. While the major part of the space was devoted to exhibits of construction equipment, there were many exhibits of purely maintenance equipment; and the displays of signs, traffic signals, warning lights, etc., included a number of new developments.

It was noted that the number of snow plows of various types exhibited is increasing. The display included two rotary plows, one of which had twin rotors driven by an eighty-horsepower six-cylinder gasoline engine, designed for attachment to a tractor similar to the ten-ton Holt or Best Sixty.

A number of well designed gasoline engine driven hoists were shown, and it seems evident this style of hoist has reached the point where it may be depended upon for heavy duty work.

### Small Road Rollers Displayed.

Several small road rollers, utilizing the Fordson power plant, were on exhibit. One of them which had a grader blade mounted between the front and rear rolls and a well designed scarifier appears to possess considerable merit.

Several new gasoline shovels, including four small shovels, were inspected. However, none of the extremely light shovels, using the Fordson tractor power plant, was seen, and it is understood that at least one of the three exhibited last year has been withdrawn from the market.

In spite of this, however, one of the striking features of the show was the number of different machines which utilize the Fordson tractor. A number of Fordson shovel loaders were on display.

The displays of other tractors, both of the wheel and track-laying types, were exceedingly interesting. A number of new features were in evidence.

### New Truck Runs Both Ways.

Nearly all the standard makes of motor trucks were represented. One rather interesting development was a truck designed for operation in either direction. While this truck was designed primarily to obviate the necessity of turning

around on the subgrade, it undoubtedly has possibilities for use on some shovel jobs.

A number of dump bodies and hoists, both hand and power, were shown. However, outside of the development of some mechanical hoists, there has been little change in these lines.

Manufacturers of graders generally exhibited their products. The outstanding features in this line were the growing popularity of rubber tires and roller bearings, and better provisions for protection of wearing parts, particularly in the control mechanism.

Taking the show as a whole, the outstanding feature in new road building equipment was the great increase in the use of the gasoline engine as a power plant.

## SUPERVISORS APPROVE SUGGESTED POLICIES OF COMMISSION

**D**ISCUSSING future state highway construction, the California Highway Commission, in its recent biennial report, outlines certain changes in policy which it believes desirable when additional funds are provided.

These suggested policies were discussed before the recent convention, in Sacramento, of the County Supervisors Association of California and were approved in the following resolution presented by Supervisor Frank L. Roohr, of Butte County:

WHEREAS, The California Highway Commission, in its biennial report for the period ending June 30, 1924, filed with the Governor, proposes, when sufficient funds have been placed at its disposal, to adopt and put into practice the following policies, to wit:

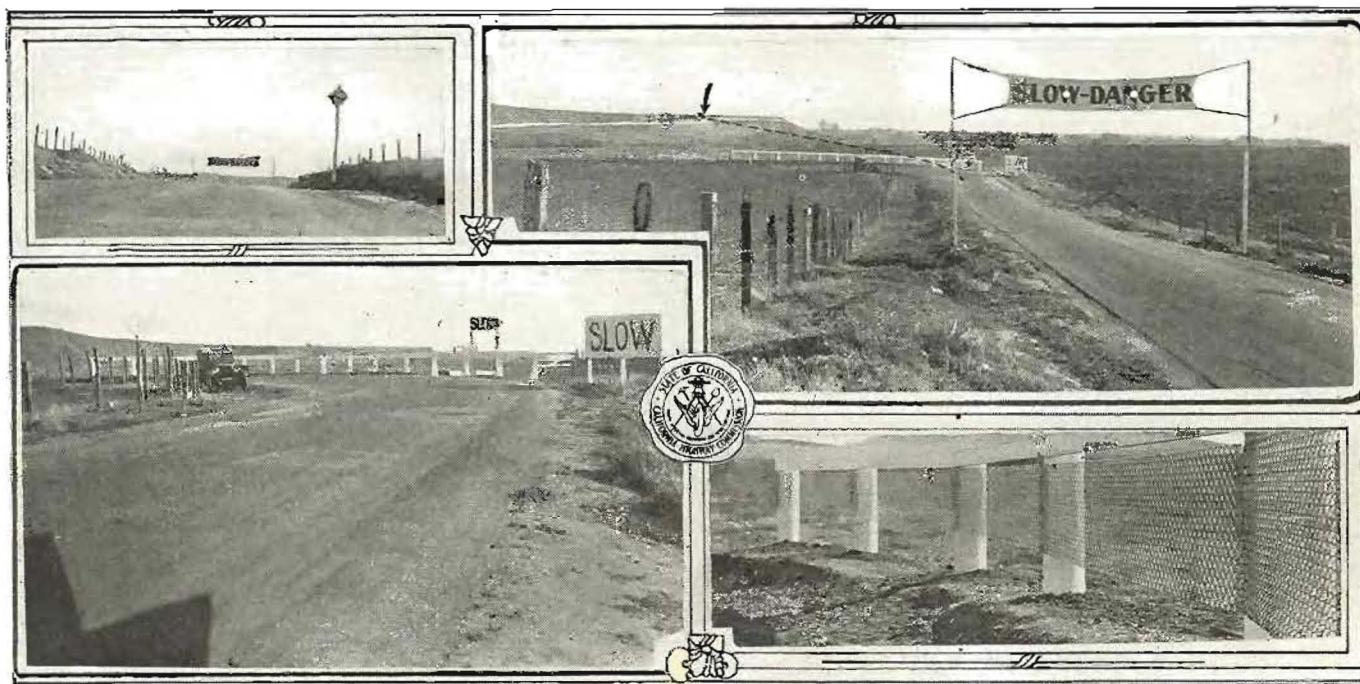
1. Maintenance of travelable state highway routes whether construction has been commenced or completed;
2. The design, supervision, and construction of all bridges on the state highway system;
3. The acquiring of all rights of way necessary for state highway purposes;
4. The construction and maintenance, to such an extent as may be necessary to serve the traveling public, of highway routes through the smaller cities and towns; and

WHEREAS, We believe these suggested policies to be proper functions of the state highway commission, embodying the just obligations of the state when the commission is in a position to undertake the additional activities outlined in its report; now, therefore, be it

*Resolved*, By the State Association of County Supervisors, in convention assembled at Sacramento, California, January 16, 1925, that we do hereby approve the suggested policies of the California Highway Commission, as above set forth, and urge their adoption at the earliest opportunity; and, be it

*Resolved, further*, That we commend the California Highway Commission for its constructive attitude toward these problems as manifested in its report.

## WARNINGS PLACED IN EFFORT TO STOP DEATH TOLL IN SOUTH



DANGER WARNINGS IN SAN DIEGO COUNTY—Measures taken by Division Engineer S. V. Cortelyou to warn and protect motorists at the sharp curve approaching the San Mateo Creek bridge, northern San Diego County, where many deaths have occurred recently. The dotted line in the view at the upper right shows the new direct line on which the state highway will be built during the coming summer, using gasoline tax funds. All dangerous curves will be eliminated. (Div. VII.)

## MORE IMPROVEMENTS FOR SAN DIEGO COAST ROUTE

THE next big undertaking of the highway commission in San Diego County will be the reconstruction of the state highway in the vicinity of San Mateo and San Onofre creeks, in the northern part of the county.

New bridges will be constructed across both streams, a considerable distance nearer the ocean than at present. This will permit a new section of highway to be built, on a straight line across the low lands bordering the mouths of these streams, eliminating the dangerous curves at the approaches to the present bridges.

Division Engineer S. V. Cortelyou of Division VII has been working on the plans for some time and the recent granting of the necessary rights of way by Jerome O'Neill, owner of the property, will make it possible to do the work during the coming summer. Plans for the two new bridges are being finished by the bridge department.

Division Engineer Cortelyou has the highest praise for Mr. O'Neill for his action in granting the new rights of way, which were deeded without cost to the state. Mr. O'Neill also has signed deeds for other line changes in the same vicinity which will add greatly to the safety of the highway.

Pending completion and opening of the new road, Division Engineer Cortelyou has erected large warning signs and a heavy guard fence on the curves at the northern approach to San Mateo Creek in an effort to prevent accidents until the line change is ready for traffic.

Standard guard rail, flashing signal and warning signs on the roadside having failed to eliminate accidents at this point, a special type of fence was constructed, using pile

posts and Page Hiway Guard fencing, with a wide wooden rail above the wire to increase visibility. Taking advantage of the brow of a hill on the approach to the curve, a 4-foot by 20-foot canvas sign reading, "SLOW—DANGER," was stretched overhead across the roadway. To approaching motorists this sign appears to be a barricade across the pavement. It is easily visible day or night and results in the checking of speed of vehicles before the sharp curve is reached.

The work planned, including the bridges, will be one of the important reconstruction projects on the commission's southern California program for 1925. It will be financed with gasoline tax funds.

## DOWELL BILL PASSES

The Dowell Bill, authorizing the expenditure on the federal aid highway system in cooperation with the states of \$75,000,000 a year for the next two fiscal years, passed the United States Senate early in February. It had previously passed the House. Opposition was reported from New York, Pennsylvania and the New England states that argues none too well for the future of the federal aid program.

The bill also carries an authorization of \$7,500,000 a year for the next two years for highways in the National Forests.

This is evidently another detour or "Dangerous but Passable" sign:

Rastus: "I see your mule has 'U. S.' branded on his hindquarters. Was he in the army?"

"No, boss, dat 'U. S.' don't stand for 'Uncle Sam,' it means 'Unsafe!'"

## WIDENING OF THE PENINSULA HIGHWAY TO BE CONTINUED

**WIDENING** of the Peninsula highway through San Mateo County, Division IV, inaugurated by the California Highway Commission during the latter part of 1923, will be resumed during the coming spring and summer, when the congestion on the "bottleneck" will be attacked between San Bruno and Daly City.

Plans and specifications are now being prepared for the section between Cypress Lawn cemetery and San Bruno, a distance of 4.39 miles; and studies are being made by Division Engineer J. H. Skeggs of possible solutions of the situation existing in the immediate vicinity of the cemeteries, where improvement is hampered and the highway badly congested by the presence of street car tracks of the United Railroads.

### New Pavement Forty Feet Wide.

The San Bruno-Cypress Lawn improvement will conform in every way to the work completed south of San Bruno. Eight-foot concrete shoulders eight to ten inches in thickness will be laid on either side of the present twenty-four-foot pavement and the latter will be resurfaced with several inches of asphalt concrete, making the new pavement forty feet in width. If the situation regarding the car lines on the highway right of way can be worked out, this improvement will be carried northward to Colma.

In Daly City, three-foot concrete shoulders seven inches thick will be placed on either side of the present pavement, extending it the full width of the street to the curb line. This work already has been authorized.

The most recently completed improvement on the Peninsula route was the Freeman and Whiting contract between Redwood City and the southerly boundary of San Mateo County, a distance of 3.46 miles. The old pavement was widened and thickened to a width of thirty feet, and macadam shoulders provide a clear roadway width with a

minimum of thirty-six feet. This project cost in excess of \$130,000.

### Financed from Gasoline Tax.

The contract of the Pacific States Construction Company for the work between San Bruno and Beresford was completed some time ago at a cost of over \$300,000. The pavement here was widened to forty feet with an additional width of several feet of macadam shoulder, providing a clear roadway width of fifty feet. The concrete for the shoulders was delivered from a central mixing plant at Burlingame and the asphalt concrete came from a central plant at Belmont.

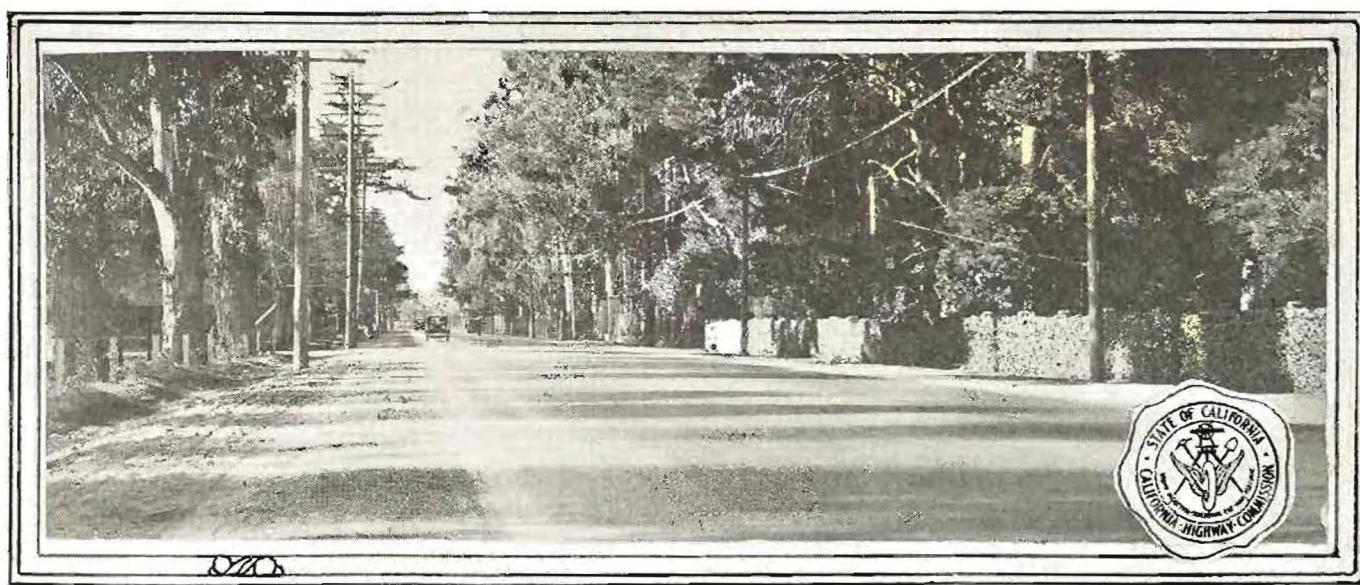
These improvements have been made necessary by the tremendous traffic which the Peninsula route, the only completed state highway into San Francisco, is compelled to carry. The work is being financed from the state's share of the motor vehicle fees and gasoline tax fund.

## INDIANA HOLDS ROAD SCHOOL

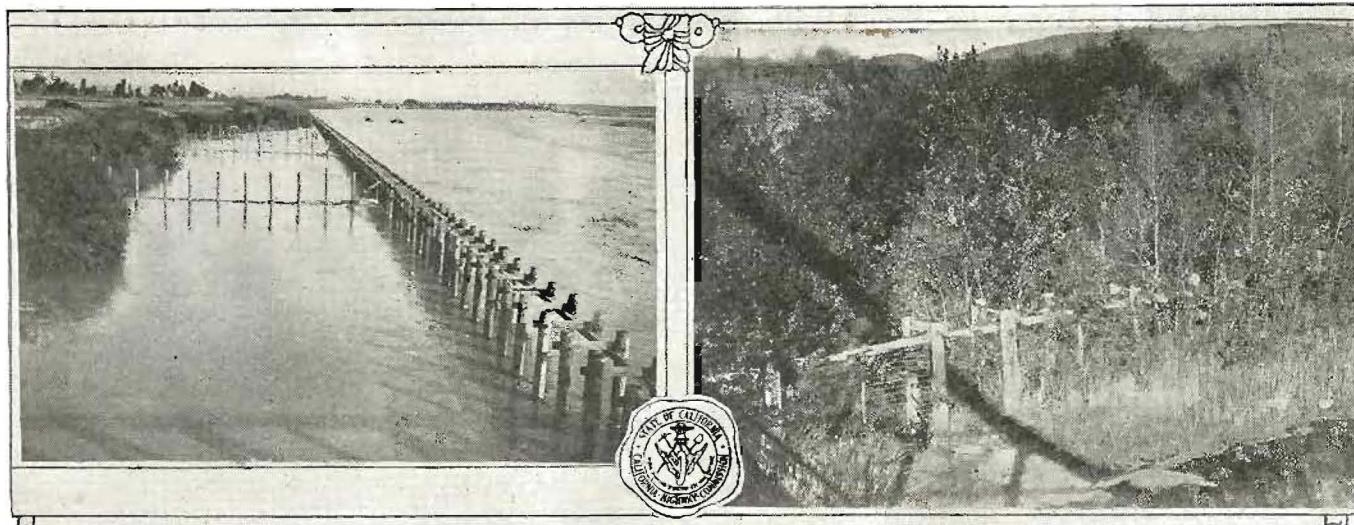
ONE of the unique schools of the country is the Indiana Annual Road School, conducted under the auspices of the Department of Civil Engineering of Perdue University. Attendance upon the part of county road superintendents has been made compulsory by state law. Expenses are paid by the various counties.

The 1925 session, which has just closed, had an attendance of 433 and is declared the largest and best of the eleven so far conducted. The plan is similar to that under which public school teachers attend institutes.

The Indiana school, this year, took up such subjects as construction, maintenance, drainage, equipment and road law. The sessions are closely allied with the extension service at Perdue.



**THE WIDENED PENINSULA HIGHWAY**—View of the reconstructed state highway through Atherton, San Mateo County, on the San Francisco Peninsula. The old highway has been widened and thickened with asphalt concrete. Waterbound macadam shoulders were placed to protect the pavement edge. A gasoline tax job. Division IV.



PROTECTING THE HIGHWAY FROM FLOODS—Jetty work along the Salinas and Santa Ynez rivers, Division V, to protect the river bank and adjacent state highway bridges from being undermined. The jetty deflects the current away from the bank.

## DIVISION V PLAN FOR PROTECTING STREAM BANKS SUCCESSFUL

**P**ROTECTING river banks from erosion during flood times on certain California rivers, where the sandy loam of the banks is easily washed away, has been a difficult problem for property owners, counties and the state highway commission. The necessity for protecting improved state highways along river banks and expensive bridges across streams has resulted in much study of the problem by highway engineers.

Several years ago, the California Highway Commission developed a type of bank protection which has thus far proved satisfactory in overcoming the difficulties experienced with earlier types. Two of the installations of this type of protection has been made in Division V, one at the Santa Ynez River bridge, near Buellton, Santa Barbara County, and the other at the King City bridge, across the Salinas River in Monterey County.

## COLTON BILL SUPPORTED

**T**HE Colton Bill, pending in congress and proposed as a means of making the federal aid plan more workable, particularly in its application to western conditions, has gained the support of the County Supervisors Association of California and the California legislature.

At its Sacramento convention, the supervisors' association unanimously adopted resolutions urging favorable action by congress, and during the first half of the legislative session, Senate Joint Resolution Number 19, by Senator Roy Fellom of San Francisco, was passed and forwarded to Washington.

The supervisors' resolution reads as follows:

**W**HEREAS, There is now pending in congress a bill known as the Colton Bill, being H. R. 6133, and

**W**HEREAS, This bill is of great benefit to all the states of this country in that it permits the federal government to participate in the entire cost of the construction of highways which must be built to a better

### Tree Planting Part of Plan.

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By F. W. HASELWOOD, Division Engineer.

**A**BOUT three months ago a new program of shoulder maintenance was started in Division III, covering territory north and east of Sacramento, and marked improvement on many roads in the division is now in evidence.

The work is being done in two stages. The first stage, which is about finished, consists of elaborating somewhat on the usual fall grading and building up the shoulders so that two or three feet adjacent to the pavement lies in approximately the plane of the pavement. Sufficient rock to keep the traffic out of the mud is being placed. Ruts, when formed, are refilled with rock and the shoulder is kept smooth with a drag. Work of distributing rock on the shoulders has been in progress for about three months with beneficial results on the Placerville road (Route 11) between Mills and Shingle Springs, where some twelve miles of shoulders already have been covered. As the pavement beyond Folsom is but twelve feet wide, this additional width is exceptionally useful.

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Where local material is available, it has been used, instead of imported rock at much higher prices, with the idea that as long as the material distributed is likely to be mixed with the earth of the shoulder, quantity is more important than quality. Material passing a one-inch ring is insisted upon, but the percentage of sand is not limited.

Although this program of shoulder work has resulted in temporary inconvenience in a few cases, the general improvement is quite marked; and, while the rock on the shoulders is not as deep as might be desired, it contributes much to the serviceability and safety of the road and can be renewed or increased in thickness as funds are available.

Distribution during wet weather is advantageous since the material packs more readily. The fact that the soil on the shoulder becomes mixed to some extent with the gravel is not serious and, in fact, is expected to make the shoulder more stable and less easily rutted in the summer.

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It is anticipated this plan for shoulder work will eliminate the necessity for most of the fall and spring grading that has been customary, and that the money heretofore spent for these purposes will be used for distribution of additional rock at the appropriate season and for maintaining the shoulder with a drag.

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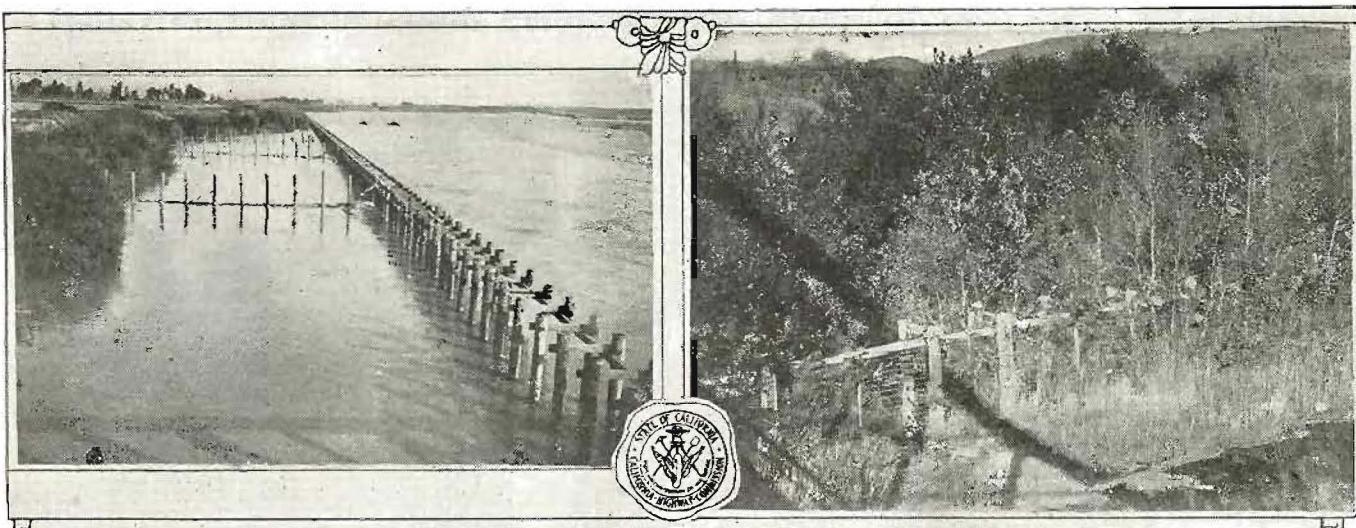
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Myers Creek bridge at the foot of the Mountain Springs Grade, Imperial County, on the state highway between San Diego and El Centro.



PROTECTING THE HIGHWAY FROM FLOODS—Jetty work along the Salinas and Santa Ynez rivers, Division V, to protect the river bank and adjacent state highway bridges from being undermined. The jetty deflects the current away from the bank.

## DIVISION V PLAN FOR PROTECTING STREAM BANKS SUCCESSFUL

### PROTECTING river banks from erosion during flood

times on certain California rivers, where the sandy loam of the banks is easily washed away, has been a difficult problem for property owners, counties and the state highway commission. The necessity for protecting improved state highways along river banks and expensive bridges across streams has resulted in much study of the problem by highway engineers.

Several years ago, the California Highway Commission developed a type of bank protection which has thus far proved satisfactory in overcoming the difficulties experienced with earlier types. Two of the installations of this type of protection has been made in Division V, one at the Santa Ynez River bridge, near Buellton, Santa Barbara County, and the other at the King City bridge, across the Salinas River in Monterey County.

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## COLTON BILL SUPPORTED

THE Colton Bill, pending in congress and proposed as a means of making the federal aid plan more workable, particularly in its application to western conditions, has gained the support of the County Supervisors Association of California and the California legislature.

At its Sacramento convention, the supervisors' association unanimously adopted resolutions urging favorable action by congress, and during the first half of the legislative session, Senate Joint Resolution Number 19, by Senator Roy Fellow of San Francisco, was passed and forwarded to Washington.

The supervisors' resolution reads as follows:

WHEREAS, There is now pending in congress a bill known as the Colton Bill, being H. R. 6133, and

WHEREAS, This bill is of great benefit to all the states of this country in that it permits the federal government to participate in the entire cost of the construction of highways which must be built to a better

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Myers Creek bridge at the foot of the Mountain Springs Grade, Imperial County, on the state highway between San Diego and El Centro.

# WHAT THE DIVISIONS ARE DOING

## SIXTY INCHES OF RAIN BRING WORST SLIDES IN YEARS IN DIVISION I

**A**RRAINFALL of forty-five inches in the vicinity of Willits and over sixty inches in the Crescent City section has made road patrol and slide removal the chief activities of Division I during recent weeks. Both the railroad and the state highway have been blocked, and only the most strenuous efforts have kept traffic moving north of Willits.

The worst slides have occurred between Willits and Eureka, in the vicinity of Cummings, and along the coast between Requa and Crescent City. Near Cummings, large slides of several thousand cubic yards have completely filled cuts. Maintenance crews are constantly engaged in constructing temporary roadways around these slides. In many places it is not safe to use a power shovel because of the danger of a sudden movement of earth pushing it over the embankment.

In Del Norte County, seven miles south of Crescent City, for several hundred feet the highway has slipped down the mountain side into the ocean. Traffic is being handled over the old road until a new grade can be constructed. Bad slides also are feared on the new grading in the vicinity of Trinidad.

Paving between Eureka and Arcata, delayed due to continued rainy weather, is about done and sometime in March should see the completion of the contract.

## DIVISION III REPORTS SEVERAL CONTRACTS COMPLETED DURING MONTH

**D**ESPITE heavy rains, Division III reports several contracts completed and accepted during the month. The grading between Truckee and Boca, 7.3 miles, the first unit of the Truckee River highway, has been finished by Irey and Holden, contractors, but can not be put into use until three necessary bridges are completed. A contract for one of these, the Polaris Crossing, has been awarded, but construction has been suspended during the winter.

Paving of 1.72 miles of the Chico-Orland lateral, near Chico, has been completed and opened to traffic. The recent storm did some damage to this lateral in the vicinity of Mud Creek, west of Chico, where repairs are under way.

Irey and Holden are making fair progress on their grading contract between Boca and Floriston, where a power shovel is being worked double shift with a crew of 21 men.

Wet weather has made necessary suspension of grading operations west of Williams on the Tahoe-Ukiah highway.

### Grading Continues.

C. R. Adams has continued operations between Colfax and Gold Run during the winter months and the eight miles of grading is now reported about 50 per cent complete. The commission already has taken over 1.7 miles of the new grade.

A suction dredge has been at work on the fill at the north approach to the American River bridge, north of Sacramento, on the first part of the improvement, which eventually means a ground level road and underpasses under the two railroad lines between Sacramento and North Sacramento. Sand for the fill is being pumped from the American River.

Work of lengthening culverts on the trunk lines through the Sacramento Valley and on several other routes in Division III has been completed. This has permitted removal of short sections of guard rail and the improvement of the appearance of the highway.

Sections of the Chico-Orland lateral in Butte and Glenn counties have been reshaped recently and resurfaced with a layer of fine crushed rock.

## DIVISION V TO CONTINUE ROCK SHOULDER WORK SOUTH OF KING CITY

**D**IVISION V has been authorized to continue the placing of rock shoulders along the highway through the Salinas Valley. The specific section next to be undertaken extends from King City to San Lucas, a distance of some 8.5 miles. Maintenance of earth shoulders through the Salinas Valley always has been a diffi-

cult problem because of the sandy nature of much of the soil. Several years ago rock shoulders were built on a ten-mile section south of Salinas and the results indicate the work was well worth while. During the last year and a half, the construction has been pushed southward until the forty-five miles between Salinas and King City have been improved.

These rock shoulders provide a protection for the edge of the pavement, are an added factor of safety, and will be an excellent sub base for future widening when funds are available.

## DIVISION VI ACQUIRES SITE FOR FUTURE SHOPS AND HEADQUARTERS

**L**OOKING to the future, the commission has acquired a site of several acres near Roeding Park, at the northern approach to Fresno, for the construction of division shops and warehouses and a division office building. At the present time, the site is being graded and leveled by Thompson Brothers, contractors of Fresno. Division shops will be the first building erected on the site. It is hoped this may be accomplished during the coming summer.

A second camp is being erected at South Fork on the Yosemite lateral to accommodate a gang of convicts engaged in the construction of the highway through the Merced River canyon. Due to lack of funds, the number of convicts employed on this project is not as large as was planned when the work was first authorized.

The survey and report on the Madera-Yosemite Big Trees road, known as the Wawona route, authorized by the legislature of 1921, has been completed and forwarded to headquarters in Sacramento. The distance covered by the survey is sixty-one miles. The road is not a part of the present state highway system.

## CONTRACT AWARDED FOR BIG GRADING PROJECT ON LOS ANGELES COAST

**A**FTER long delay due to litigation over rights of way, a contract has been awarded by the commission for the grading of the Coast boulevard through the Malibu Ranch on the Los Angeles coast. S. Wright Jewett of Los Angeles submitted the lowest of the nineteen bids offered for 16.1 miles of grading between Las Flores Canyon and Arroyo Sequit. Completion of the work will open a graded road along the coast from Santa Monica to Oxnard.

A special maintenance crew has completed grading approaches to the new Santa Ynez Creek bridge north of Santa Monica and paving is now in progress.

McCray Brothers, contractors on the Corona Del Mar-Laguna Beach grading contract, in Orange County, are now at work on the last mile of their contract. Culvert work on this project is about finished.

Repairing of oil macadam shoulders between Fullerton and Santa Ana is now in progress under the direction of the maintenance department.

A concrete bridge on the Coast highway near Oceanside across the Santa Margarita is being waterproofed by maintenance forces with Petrolastic cement and Stone Tex liquid.

## CONTRACT AWARDED FOR BUILDING OF NEW SAN BERNARDINO SHOPS

**T**HE commission has awarded a contract to Houghton and Anderson of Los Angeles for the construction of the new shops to be located on the recently acquired division headquarters site in San Bernardino. A division office building will be a later development.

Paving between Redlands and Beaumont, on the Imperial Valley trunk line, has been begun by Basic Brothers. The seven miles will be paved with cement concrete, twenty feet wide. R. L. Young is resident engineer.

Surfacing the highway for a mile easterly from Westmoreland, Imperial County, has been completed by state forces.

Grading of 2.3 miles of the highway in the vicinity of Barstow, San Bernardino County, is now under way. H. S. Payson is the resident engineer and M. Henning of Los Angeles is the contractor.

## DIVISION ACTIVITIES

### BIDS ASKED ON TWO RECONSTRUCTION PROJECTS IN DIVISION X

BIDS have been asked on two big reconstruction projects in Division X, the largest jobs in the division for 1925—building of a new bridge across the San Joaquin River at Mossdale and the paving of 11.55 miles of the San Joaquin Valley trunk line from the Stanislaus River to Turners, both in San Joaquin County.

Practically all of last year's contracts in the division have been completed. Another month will see the Suisun-Denverton grading contract finished. Approaches to the Dry Creek bridge, Amador County, have been completed by state forces; likewise, placing of guard posts on fills between Mossdale and Tracy.

A steam shovel has arrived at Jackson and work has been begun on the Jackson-Pine Grove grading contract. R. N. Murdock is the contractor.

Maintenance crews are widening earth shoulders between Banta and the westerly boundary of San Joaquin County.

An order has been issued for the rebuilding of the decks on two bridges over the South Fork of the Tuolumne River on the Big Oak Flat road.

## BRIDGE DEPARTMENT NEWS

POURING of the concrete arch has been completed on the new Sycamore Creek bridge, north of Oceanside, on the Coast highway in San Diego County, a part of the reconstruction program.

Construction is progressing rapidly on the two new bridges on the state highway in Glenn County, work on which must be completed before the irrigating season. The bridge on the main highway at the Willows city limits will support a welcome arch, the cost of which is being met by local interests.

Despite high water, work is progressing satisfactorily on the concrete arch bridge over the Van Duzen river in Humboldt County.

#### Rincon Work to Start.

After many delays due to a shortage of water of a quality which would pass laboratory tests, pouring of concrete on the Rincon seawall, in Ventura County, was scheduled to start February 19th. Machinery and materials are on the job.

The new concrete bridge over the Cherokee by-pass, in Butte County, has been completed and opened to traffic. The structure has been highly commended by users of the highway.

Construction is being rushed on the creosoted pile trestle bridge under construction over the main canal of the Yuma irrigation project in Imperial County. It is hoped the bridge may be completed in time for the celebration of the opening of the new highway between Yuma and the Sand Hills, scheduled for February 28th.

Bids have been asked for the approach to the Ventura River bridge, in Ventura County; San Juan Creek bridge, Orange County; and the Mossdale bridge across the San Joaquin River in San Joaquin County.

## MILEAGE UNDER MAINTENANCE GAINS

THE mileage of state highways under maintenance by the California Highway Commission is steadily increasing and now totals nearly 5000 miles. State highway under state maintenance, January 1, 1923, totaled 3926 miles; on January 1, 1924, it had increased to 4550 miles; and at the beginning of the 1925 period it was 4900 miles.

At present there are approximately 1240 miles of designated state highway not under state maintenance. About 260 miles of designated state highways are on routes where there are no existing highways.

A bill is pending before the legislature directing the commission to take over for maintenance, on January 1, 1926, all travelable state highway routes.

## TREES PLANTED IN SAN JOAQUIN

WITH the approval of State Forester M. B. Pratt and under the direction of W. E. Glendenning, shade tree expert for the California Highway Commission, 800 black locust and honey locust trees are being planted on the state highway in southern Kern County, Division VI. After considerable study the State Forester has determined that this variety is the most suitable for planting in the arid sections approaching the Grapevine grade, where strenuous efforts have been made by the commission to save plantings made in past years.

Improper planting methods and the selection of unsuitable varieties are given by the forester as reasons for the loss of trees on this section. Mr. Glendenning is confident this will not occur with the new trees now being planted under state direction.

#### Tree Trimming Approved.

Arizona cypress and Arizona ash have been planted near Tulare, also in Division VI, and some locust trees have been set out between Livingston and Turlock.

Topping of poplar trees lining the state highway between Fresno and Kingsburg, undertaken last year by order of Division Engineer J. B. Woodson, has been approved by the State Forester after an investigation. Complaints, voiced at the time, were made with a lack of understanding of the need for the work, Mr. Pratt said, pointing out that the trees had become top heavy and were a menace to the safety of those using the highway.

The topped trees, he predicts, will have ample foliage next summer, will show a big improvement and will live longer.

## DIVISION IV PRAISED IN POEM

Those engaged in public work so seldom receive thanks for their efforts that Division IV was both surprised and pleased recently to receive a lengthy poem written in praise of the widening and thickening work done in the California Redwood Park, in Santa Cruz County. The writer, a resident of the region, graphically describes the work of the engineers in the transformation of the old wagon road into a modern highway by means of explosives and modern power machinery.

The Bulletin regrets space does not permit its publication.



New cement concrete pavement on the Jahn and Bressi contract, in San Diego County, showing center expansion joint. A gasoline tax job.

# CALIFORNIA HIGHWAYS

OFFICIAL PUBLICATION OF THE  
CALIFORNIA HIGHWAY COMMISSION  
SACRAMENTO, CALIFORNIA

HARVEY M. TOY, Chairman;  
N. T. EDWARDS and LOUIS EVERDING, Commissioners.  
ROBERT M. MORTON, State Highway Engineer.  
W. F. MIXON, Secretary.

We are pleased to permit publication of any of the matter contained herein or to loan cuts and this privilege is extended newspapers and periodicals without restrictions.

FRANK B. DURKEE Editor  
P. O. Box 1103, Sacramento, California.

Vol. 2.

FEBRUARY, 1925

No. 2

## JUST AMONG OURSELVES



### HIGHWAY NEWS NOTES

#### Redding Welcomes Division II.

THE entire staff of Division II and their families were welcomed to Redding by the local Chamber of Commerce, which arranged a get-acquainted luncheon for the highway folks who recently were moved from Dunsmuir. Division Engineer H. S. Comly responded to the welcome of Judge A. F. Ross.

#### Assistant Cashier Resigns.

Helen A. Edwards, assistant cashier and stenographer in Division III, has resigned to enter the insurance business in Sacramento.

E. L. Craun, Walter Blum and Richard Fifield, rodmen, have been laid off due to the reduction in forces.

Following the completion of the Chico paving contract, F. R. Baker, resident engineer, and H. B. La Forge, assistant resident engineer, have been temporarily assigned to the division office.

W. A. Smith, Division III office engineer, is reported to have joined the ranks of the Sacramento golf fans.

#### Engineer From Division V Loses Life in Fall Over Bluff.

DIVISION V reports the sad death of B. W. Vinsonhaler, recently chief of party and one of the most popular men in the division. All survey parties in the division having been disbanded for the present, Mr. Vinsonhaler had accepted a position with the Los Angeles County Flood Control Board. In some manner while tramping in the mountains of Los Angeles County, he accidentally fell over a precipitous cliff, at the bottom of which he was found dead.

Earl H. Duclo, bookkeeper in the Division V shops, is the proud daddy of another son who weighed 9 1/4 pounds upon his arrival recently.

W. P. Marshall and L. G. Marshall, until recently resident engineers in Division V, are now employed by the contractor engaged in the construction of the San Marcos Pass Forest highway in Santa Barbara County.

E. B. Brown is working on rights of way at Santa Barbara.

#### News From the San Joaquin.

Maintenance Engineer George R. Winslow recently made an extensive inspection trip over the highways in Division VI.

Division Engineer J. B. Woodson recently visited Redding to inspect the new Division II headquarters, for the benefit of similar contemplated improvements at Fresno.

Phillip Boulton and Leslie Tresidder, former rodmen, have been reappointed to the service for reconstruction surveys.

#### It Was Ever Thus.

HARRY D. JOHNSON, instrument man, and Miss Pearl Fairchild of Oceanside were married January 15th. Harry's friends of Division VII report the cigars were good.

#### Commissioner Visits Division VIII.

Commissioner Louis Everding recently spent some time traveling over the highways in Division VIII, including the interstate connection at Yuma.

Miss Annie L. Porter, formerly head stenographer with Division VII, has transferred from Los Angeles to the accounting department at San Bernardino.

#### Transfers to Bridge Department.

M. E. Whitney, assistant resident engineer, has transferred from Division X to the bridge department and is now stationed in the southern part of the state.

R. W. McCrea, draftsman, has left the department to assume a position with a Sacramento automobile agency.

#### Badger Sees the Slides.

R. S. BADGER, from the office of Maintenance Engineer G. R. Winslow, was a recent visitor to Division I, viewing slide conditions along the Redwood Highway. Piloted by Maintenance Engineer J. J. Stockard, Badger reached Del Norte County after considerable difficulty, but had to return by the valley route.

T. E. Stanton, assistant state highway engineer, and Harlan D. Miller, bridge engineer, accompanied by F. Roland, contractor, and a representative of the Bureau of Public Roads, recently were caught in the high water while waiting to be taken across the Klamath River and had to abandon their car for a launch from Requa, which rescued them from the flats on the south side of the river. The car was not recovered for several days.

The division regrets the inconvenience caused the men from headquarters, but is glad they were enabled to experience some typical winter weather in the Redwood country.

Carl Miller, maintenance superintendent in the northern half of Division I, has elected himself "Daddy." There is a new baby daughter in his home.

Frank Merrill, draftsman, has returned from a vacation in southern California.

#### Headquarters News.

EQUIPMENT Engineer R. H. Stalnaker returned January 26th from a trip to the middle west where he attended the annual convention and road show of the American Road Builder's Association at Chicago and the annual meeting of the Society of Automotive Engineers at Detroit. While in the east, he investigated the snow removal methods of several states, and also visited the shops and equipment departments of the Wisconsin and Indiana state highway departments. Despite the many interesting things he saw, Mr. Stalnaker is glad to be back in California, even if it has been raining nearly all the time since he arrived home.

#### Chapter Party.

The Sacramento Chapter of the American Association of Engineers held its annual dancing party, supper and vaudeville show at the Tuesday Club on the evening of February 14th. Engineers of the highway department were prominent among those making the arrangements. Frank Richardson, L. V. Campbell, F. H. Cushman, H. D. Stover, R. E. Pierce, and Leigh Shoemaker, composed the committee in charge.

#### Aviators Organize.

Several members of the headquarters engineering staff have been active in forming the Sacramento Aviation Club, composed of former air service officers and dedicated to the promotion of aeronautics. L. D. Packard, assistant engineer in the bridge department and former First Lieutenant of the air service, has been elected president of the club. A. B. Willitt, also of the bridge department and former Lieutenant, is treasurer. H. N. Harper is also a member of the club.

D. C. Willett, of the bridge department, was glad to get back home from Ventura County recently to visit his new son, who arrived during his absence.

The real modern parent promises his son an auto if he doesn't smoke or drink until he is twelve years old.—*Columbia Record*.

## MORTON ON COMMITTEE FOR NAMING AND NUMBERING INTERSTATE ROUTES

STATE Highway Engineer R. M. Morton has been appointed a member of the committee of the American Association of State Highway Officials which will undertake the working out of a plan for naming and numbering the important interstate highways of the United States. The appointment was made by President F. F. Rogers, state highway commissioner of Michigan.

Resolutions approving a national system of trunk line road designations and uniform traffic warnings were adopted at the San Francisco convention of the association. To facilitate the work, bills have been introduced in a number of state legislatures, including California, authorizing state and national cooperation through the Bureau of Public Roads, in the naming and numbering of interstate highways.

### Miller on Bridge Committee.

Harlan D. Miller, bridge engineer, has been appointed a member of the committee on bridges and structures of the American Association and his acceptance has been approved by Mr. Morton.

This committee is undertaking the important work of preparing standard specifications for highway bridges which, it is hoped, will be generally adopted and bring about the standardization of state highway structures throughout the country.

### Other Appointments.

Equipment Engineer R. H. Stalnaker has been appointed a member of the committee on equipment of the association; C. L. McKesson has been named a member of the research committee and Assistant State Highway Engineer T. E. Stanton has been serving as a member of the committee on maintenance.

The department is pleased with the recognition given California.

## THE OL' MAINTENANCE MAN

Eacha time heesa come, my boyaa Tonee  
Heesa reada da magazine toa me.  
Me, I noa can reada da Englisha, but,  
Tonee, heesa smart, heesa got da great nut,  
Heesa learn to reada da book in da school,  
An' he read so slick, dat boy is no fool.  
An' I tella you dis, da ol' magazine,  
Heesa maka me glad, heesa one fina ting.  
But Meester Editor, alla da time,  
Heesa reada to mea da story or rhyme,  
'Bout da brave engineer, or some oder man,  
An' not a dam ting 'bout da maintenance man.

Who is ita builda da base so fine,  
An maka dis road onea finea line?  
Who is it fixa da bridge an da pipe,  
An' cutta de grass when he getta too ripe,  
An' keep da roada looka so grand?  
I tella you who, it da maintenance man.

Heesa work an da dig wid da pick and da shovel  
To make onea fine road, deesa work heesa love.  
Heesa fixa him so, because, some day, by gar,  
Bigga boss heesa come in heesa ol' private car.  
If hees lika dat road, heesa wave a da han'  
An' a make him feel good, dees ol' maintenance man.  
So please Meester Editor, jus' onea time,  
When you finds nice place, jus' a stick in da rhyme  
You writes so nice an' so sweet and so gran'  
'Bout disa son of a gun of a maintenance man.

(W. F. Faustman, Division III.)

## WORK OF MAINTENANCE CREW APPRECIATED

C. H. JENKINS COMPANY, INC.

114 Bush Street,

San Francisco, California.

February 7, 1925.

MR. R. M. MORTON,  
State Highway Engineer,  
Sacramento, California.

DEAR SIR: Last Tuesday night the writer was driving from Sacramento to Marysville, and above Wheatland found the highway covered with water. I want to take this opportunity of saying a good word and complimenting the two gentlemen stationed at the bridge, to help all traffic that chanced to get stuck or in trouble at this point. These two gentlemen, I do not know their names, handled the situation wonderfully, and assured each and every motorist they were there to help them out of trouble.

If you have an honor roll, I would certainly be glad to know that these two gentlemen were put on it.

Thanking you for your force, I beg to remain,

Yours very truly,

(Signed) E. F. GEE.

Editor's Note: Division Engineer F. W. Haselwood reports that the maintenance crew mentioned in the above letter was composed of J. E. Stevens, foreman, E. E. Jasper, employees of Division III. They worked for twenty-four hours without relief.

### One-Man Town

Last spring during the hoof and mouth epidemic there was an elderly "native" stationed as quarantine officer on the California-Nevada line up in Mono County.

An inquiring tourist, while getting his automobile "immersed," engaged the officer in conversation:

"Where do you live?"

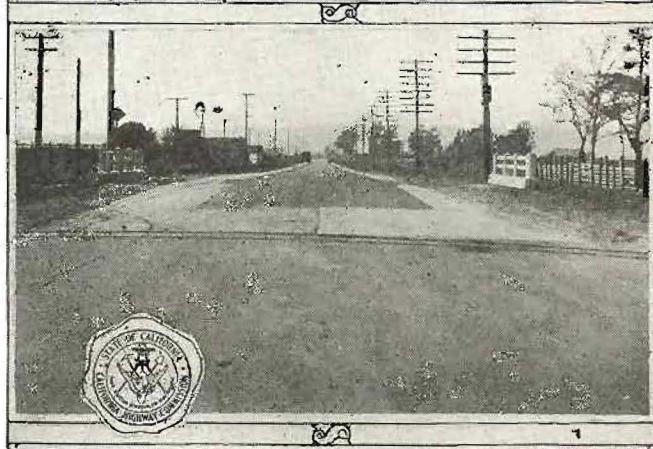
"Over at Aurora."

"What's the population?"

"Well, during the big mining days, there used to be five thousand, but now I guess it's dropped down to about three."

"Three what?"

"Well, there's me and ole Charley Anderson, and—and myself. and—come to think of it, Charley died last winter."



Widening the highway with flush concrete shoulders—a view taken immediately west of Fairfield, Solano County, Division X. The bridge at this point also was widened and a new railing erected. A gasoline tax job.

STATE OF CALIFORNIA  
CALIFORNIA HIGHWAY COMMISSION  
MAP SHOWING  
**FEDERAL AID HIGHWAY SYSTEM**

R. M. MORTON - STATE HIGHWAY ENGINEER

COMMISSIONERS  
HARVEY M. TOY (Chairman)  
LOUIS EVERDING  
N. T. EDWARDS

LAUREL SPRINGS

1924

## LEGEND

Primary Roads  
Secondary Roads

This historical map of California illustrates the Federal Aid Highway System as it existed in 1924. The map shows a network of state routes, many of which are labeled with their route numbers. Key labeled routes include:

- North: ROUTE 3, ROUTE 28, ROUTE 29, SUSANVILLE, QUINCY, GROVELAND, MARYSVILLE, ROUTE 37, ROUTE 17, ROUTE 11, DAVIS, SACRAMENTO, STOCKTON, ROUTE 4, ROUTE 5, SAN JOSE, MERCEDES, GILROY, ROUTE 32, ROUTE 10, ROUTE 18, FRESNO, VISALIA, BAKERSFIELD, SAN LUIS OBISPO, ROUTE 2, ROUTE 6, ROUTE 19, ROUTE 23, ROUTE 63, ROUTE 67, ROUTE 25, ROUTE 26, and ROUTE 58.
- South: LOS ANGELES, SAN BERNARDINO, ROUTE 31, ROUTE 23, ROUTE 2, ROUTE 3, ROUTE 26, ROUTE 2, ROUTE 12, and ROUTE 27.
- East: REDBLUFF, KIAB, WILLOWS, ROUTE 1, ROUTE 15, ROUTE 16, and ROUTE 21.

The map also features a legend in the upper right corner identifying "Primary Roads" with a solid line and "Secondary Roads" with a dashed line. A scale bar indicates distances in miles, ranging from 0 to 100. The title of the map is "STATE OF CALIFORNIA CALIFORNIA HIGHWAY COMMISSION MAP SHOWING FEDERAL AID HIGHWAY SYSTEM".

The map above does not show all of the state highways in California but only those included in the federal aid system, representing approximately 7 per cent of the total road mileage of the state, outside of cities.

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