

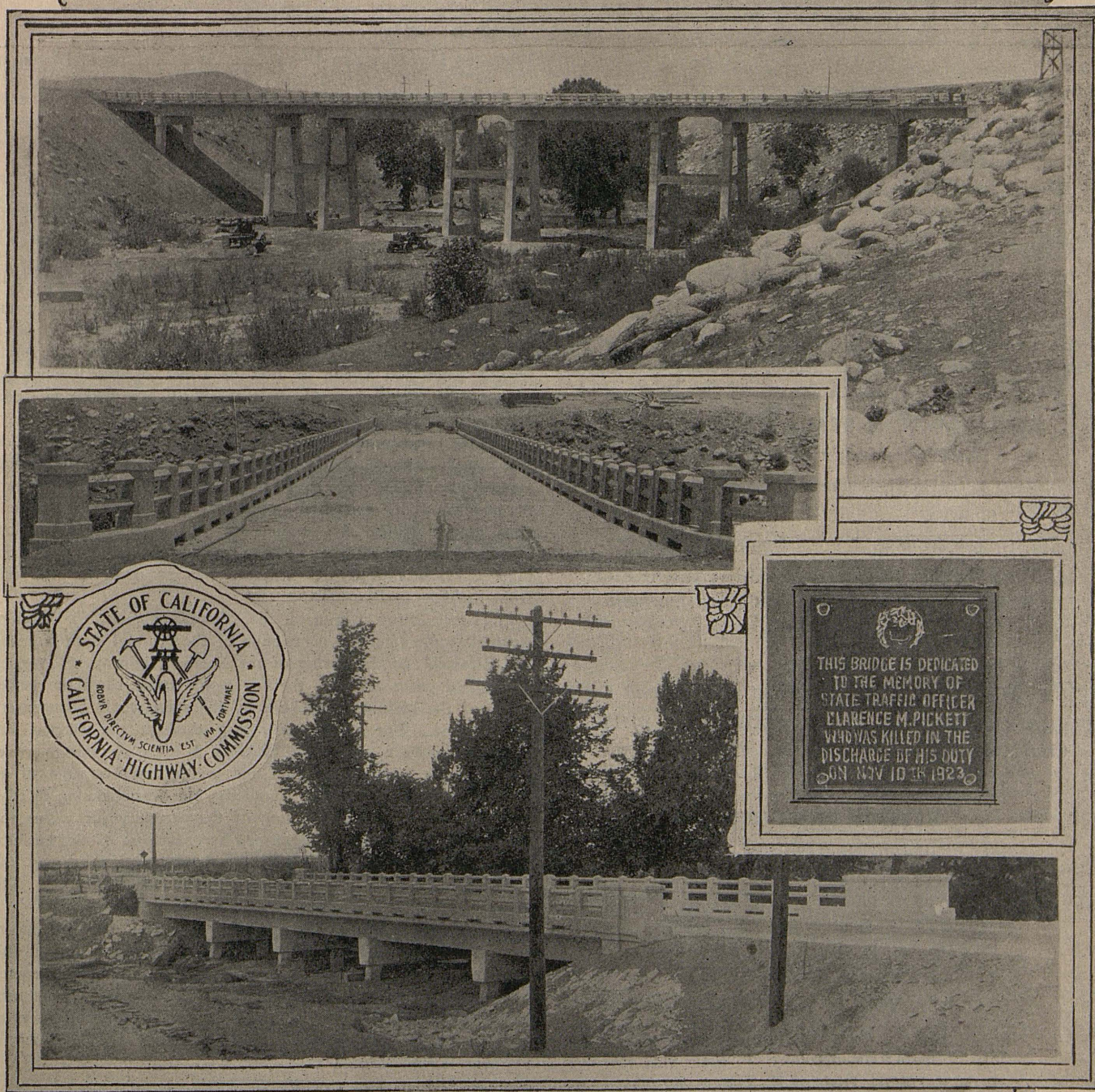
CALIFORNIA HIGHWAYS

A BULLETIN ISSUED BY THE CALIFORNIA HIGHWAY COMMISSION FOR THE
INFORMATION OF ITS EMPLOYEES AND THE PUBLIC

Vol. 2

JULY, 1925

No. 7



NEW STATE HIGHWAY BRIDGES—Above, completed Cottonwood Creek bridge east of Bakersfield, on the Kern River project; Center, another view of the same structure, showing the ample roadway width; below, new bridge over the Chowchilla River, Madera County, on the San Joaquin Valley trunk line; right, bronze plaque placed on the Chowchilla bridge, dedicating it to the memory of State Traffic Officer Clarence M. Pickett, who lost his life in the vicinity in the discharge of his duty.



CALIFORNIA HIGHWAYS

HARVEY M. TOY, Chairman;
N. T. EDWARDS and LOUIS EVERDING, Commissioners.

ROBERT M. MORTON, State Highway Engineer.

W. F. MIXON, Secretary.

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

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THE PACIFIC HIGHWAY— A DREAM COME TRUE

IT IS SELDOM an engineer has the opportunity that has come to Harry S. Comly, the loquacious Division Engineer of Division II, headquarters, Redding. Mr. Comly entered the state service from San Diego in 1912 as Chief of Party, and has advanced by various promotions to the position of Division Engineer. As a member of the staff of Division II in the early days of the highway work, he had an important part in the planning and construction of the first state highway through the Sacramento Canyon. He knew every turn in the old county road before the building of the state highway, at the time when an automobile trip from Redding to Oregon was an unusual undertaking, attempted only by the most daring. Inter-county traffic at that time was insignificant; seven hours was required for the trip from Redding to Dunsmuir.

Engineer Comly witnessed the almost unbelievable development of traffic after the completion of the original state highway in California and the paving of the Pacific Highway in Oregon; he realized years ago that the day would come when the inadequacy of the highway first built by the state would be apparent to everyone. For years every trip through the canyon has wrenched his heart because of inability to make obvious improvements in the highway location and width, improvements to an engineer fascinating in their simplicity, but overwhelming in cost.

The general public recognition of the necessity for wider and straighter state highways, expressed by enactment of the gasoline tax legislation in 1923, has made it possible for him to plan and build the highway of his dreams through the "Canyon." The rebuilt road will reduce the safe driving time to two hours.

Seldom does a highway engineer have such an inspiring opportunity later to correct insufficiencies in early work, beyond his control to perfect in the first construction. The reconstructed Sacramento Canyon highway will stand for years as a monument to the unwavering ambition, engineering skill, and faithful service of Harry S. Comly, Division Engineer, Division II, California Highway Commission.

Netty—"Would you marry for money?"
Letty—"Well, I hope Cupid aims at me with a Pierce-Arrow."
—Judge.

SAVINGS IN DISTANCE WILL MORE THAN PAY FOR RECONSTRUCTION OF PACIFIC HIGHWAY THROUGH SACRAMENTO CANYON

ENGINEER EXPLAINS INTERESTING FEATURES OF PROJECT

By H. S. COMLY, Division Engineer

THE RAPID advancement in the standards of highway construction in California, during the past ten years, is forcibly apparent in the reconstruction of the Pacific highway, now under way between Redding and Dunsmuir, in Shasta County.



H. S. COMLY

ing county roads.

In accordance with the situation then existing, engineers of the department were instructed, if possible, to build a road through the Sacramento Canyon at an expenditure of \$4,000 per mile. It became apparent as soon as surveys were under way that this could not be done, and, after the work was completed to the lowest standard which would come within the meaning of the word "highway," a seventeen-foot graded road had cost an average of \$10,000 per mile. The grading was done between the years 1914 and 1917, and represents the 1915 standard of California mountain road construction.

Increasing Traffic Must be Served.

In 1923, when the commission decided to complete the main trunk lines and interstate connections, it became apparent at once, because of the fact that the traffic had increased so rapidly during the previous eight years, that the Sacramento Canyon section of the Pacific Highway had been built on too low a standard. Placing of pavement on the crooked, narrow grade could not be considered. Decision was made for a bold relocation on standards which would fulfill the demands of present and future traffic.

Surveys for reconstruction of the sixty-five miles of highway grade between Redding and Dunsmuir were started late in 1923. Construction work began in January, 1924. Twenty-one miles already have been completed and thirteen miles more are under construction and will be finished late this fall. On this portion, the distance has been shortened three miles, the new highway measuring only thirty-one miles. A location survey for the remainder of the canyon section is about finished and shows a total saving of 6.5 miles. When the reconstruction is completed, the distance from Redding to Dunsmuir will be reduced from 65 to 58.5 miles, or 10 per cent.

Three

Saving in Distance Pays for Reconstruction.

Assuming the average cost of operating a motor vehicle to be $7\frac{1}{2}$ cents per mile, the shortening of distance will save every vehicle traversing this section of highway about 50 cents per trip. Traffic now averages, throughout the year, about 1000 vehicles a day, thus the shortening of the highway will save the traveling public in operating costs \$500 per day, or approximately \$183,000 a year. Capitalizing this economic saving at 5 per cent, the saving in distance alone would warrant the expenditure of \$3,660,000.

The cost of the reconstruction, including bridges, will be about \$2,750,000. From the standpoint of pure economics, the reconstruction more than pays for itself by the factor of distance saving alone, based on present traffic. The distance to be paved will be about fifty-six miles, and this will cost approximately \$2,000,000. The shortening of distance will not only pay for the reconstruction but also a large part of the paving bill.

These figures are rather startling in view of the fact that they are based only on present day traffic. It may be conservatively estimated that traffic will more than double during the next five years, by which time it is hoped the paving will be completed.

Saving of distance is by no means the only important feature of this work. If it were possible to capitalize the improvement in width, alignment and grade, the figures would be even more surprising. The width of the completed roadway, including drainage ditches, will be twenty-seven feet on sidehill construction and thirty feet where the construction is not so heavy, as compared with seventeen feet on the old grade.

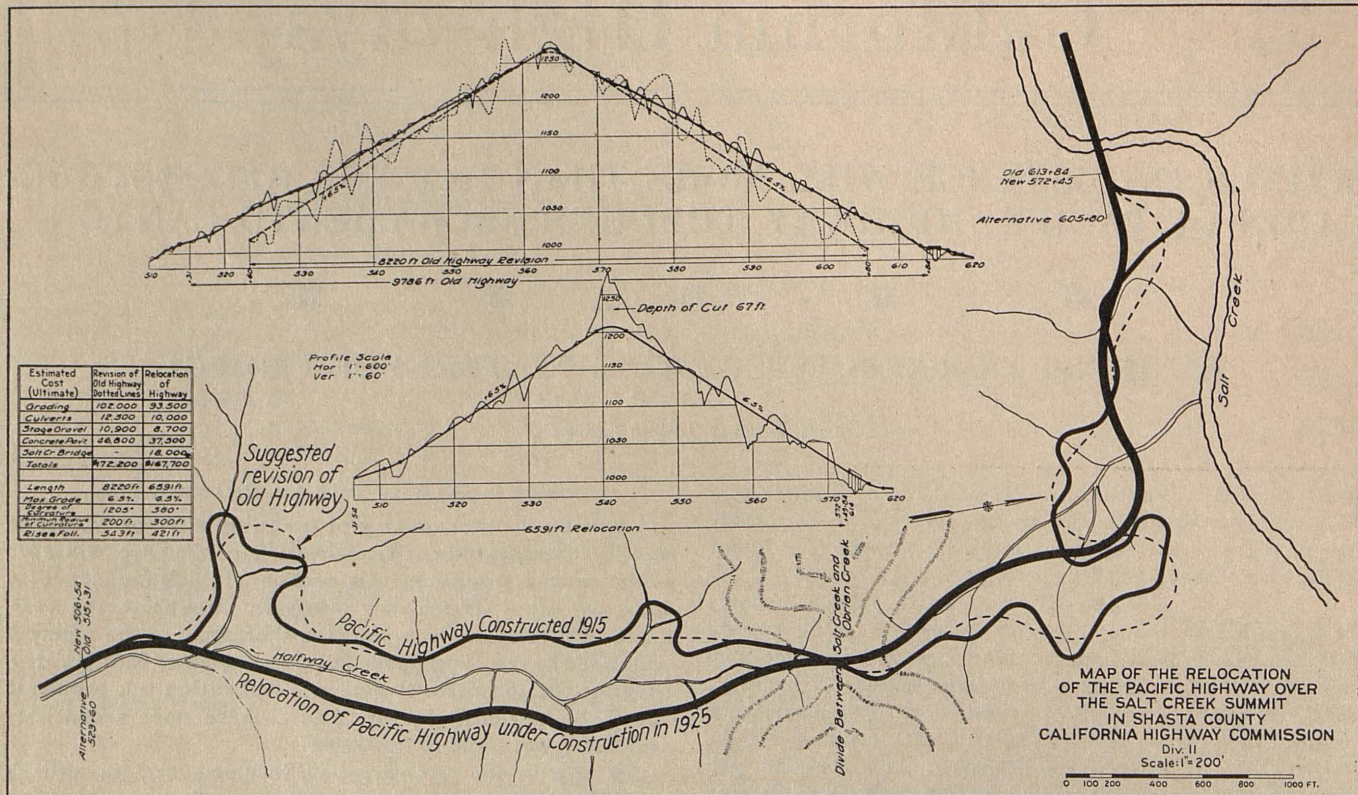
The minimum radius of curvature will be 300 feet, as against fifty feet on the original highway. The number of curves will be reduced more than one-half. While the maximum grade will still be $6\frac{1}{2}$ per cent, several miles of maximum grade will be entirely eliminated, and many more will be reduced to 4 per cent or less. The total ascent and descent will be greatly reduced.

What advantage this means in increased speed, coupled with increased comfort and safety of traffic, in accidents prevented and lives saved, can not be estimated in dollars and cents; the advantage can not be denied, however.

Thorough Investigation Brings Results.

In planning the reconstruction through the Sacramento Canyon, exhaustive investigations were made to insure attainment of the most satisfactory results. Various possible solutions of each problem were considered, preliminary lines run, projections made and comparisons of cost studied. These investigations and the final location, including plans, cost, on the average, \$1,250 per mile, or $2\frac{1}{2}$ per cent of the cost of the work. While it is not possible

(Continued on next page.)



Drawing prepared by Division II showing line change on the Pacific highway in the vicinity of Salt Creek, Shasta County, typical of the bold relocation of the road throughout the Sacramento River Canyon. Estimates of the yardage, in the chart at the upper left-hand corner, show construction on the line adopted to be actually cheaper than the suggested widening and straightening of the original grade, built in 1915.

SAVINGS IN DISTANCE OF PACIFIC HIGHWAY

(Continued from page 3.)

to arrive at an exact saving by reason of the excess preliminary cost, it is probable an expenditure of \$500 per mile, over the minimum cost of surveys and plans, is saving not less than \$2,500 per mile in construction.

Besides this actual saving, we have been able to arrive at the most perfect final location consistent with the standards adopted, and have assurance that the alignment and grades are the best that can be worked out.

While a considerable part of the improvement is brought about by widening the existing roadbed and flattening or eliminating curves, there are many instances where a complete abandonment of the old highway has proved advisable and economical.

Salt Creek Typical Saving.

A typical instance of this is illustrated by the accompanying sketch of the relocation over the Salt Creek divide, now under construction. As indicated in the tabulation accompanying the map, the ultimate cost of the improvement by complete relocation is less than by a simple line revision and widening of the existing highway, as indicated by the dashed line. This is true despite the fact that a concrete bridge across Salt Creek had to be demolished and a larger one on a higher grade line built in its place. The relocation necessitated an eighty-foot cut at the summit, containing about 80,000 cubic yards of excavation.

It also will be noted the use of curves of 300-foot radius was not possible along the old highway, and that the line revision included two bad loops made up of curves of 200-foot radius. The relocation has only two curves of less than 500-foot radius, one of 300-foot radius and another of 325 feet. The total curvature is reduced from 1205 degrees by line revision, to 580 degrees by relocation. It also will be noted the relocation is 1629 feet shorter than the line revision in a distance of a mile and a half.

Many Curves Eliminated.

Compared to the highway of 1915, the relocation saves six-tenths of a mile in a distance of 1.9 miles, and reduces the number of curves from forty to fourteen. The improvement in width is denoted on the sketch which shows the relative width by exact scale. The rise and fall is reduced by 130 feet, and the length of maximum grade by about one-half mile.

It is natural to ask why this location was not used in 1915. The answer is that the 1.9 miles of highway at Salt Creek, as located at that time, cost about \$25,000; this was considered expensive. There was not available the \$100,000 necessary for grading and culverts on the relocated highway between the same two points.

The total registration of motor vehicles in California in 1915 was 190,000; now it is more than 1,350,000. The gasoline tax provides funds for reconstruction.

MAINTENANCE STATION AND SHOPS BUILT AT CRESCENT CITY

THE board of supervisors of Del Norte County recently gave the state a ninety-nine-year lease on a 13-acre parcel of land near Crescent City on which to establish a maintenance station and shop for the repair of equipment.

Construction of a corrugated iron truck shed and shop has been completed. The truck shed is 27 by 72 feet, and the shop 28 by 36 feet.

The site is near the northern city limits of Crescent City, and close to the proposed junction of the Redwood and Roosevelt highways.

The establishment of this camp will greatly facilitate the work of both the maintenance and equipment departments, as considerable activity is centered about this location and transportation to the present shops at Eureka is difficult and expensive because of the time involved.

AND AESOP SAID—"NECESSITY IS THE MOTHER OF INVENTION"

By FRED J. GRUMM, Engineer of Surveys and Plans.

TWO thousand years ago Aesop said (we can credit it to him, at least): "Necessity is the Mother of Invention." Necessity has other children too; she's mother, aunt or other close relation to all of Invention's little brothers, sisters, cousins and kin. Resourcefulness and Expediency are certainly close cousins of Invention; at any rate, Necessity surely is more than a stepmother to them.

The sidehill wampus, the one-man survey party, catching snipe by lantern light with gunny sacks are mythical, entertaining and amusing subjects of discussion familiar to all S I's. That any one of them should be proven a reality is perhaps more than can be accredited. But don't underestimate the power of Necessity who bred Invention, Resourcefulness and Expediency.

The sayings of the wise ancients are merely the terse expressions of truths proved by many experiences. Another proof of the axiom written above has been found.

The Necessity and the Difficulty. Between Ricardo and Little Lake, on the road from Mojave to Independence, there are two existing roads. One, the county road, runs from Ricardo to Inyokern and then follows the railroad up the floor of the valley to Little Lake. The other lies further to the west on the westerly slope of the valley. A location survey has been made following along the general route of the westerly road. No survey of the

valley road is at hand. Certain maintenance and construction work is to be undertaken on this section of highway. A choice of routes is necessary. A comparison of alignment, grades and condition of the two roads is needed to make this choice.

Somner was up against it. He had no survey of the valley route; the department head from headquarters was expected on the evening train; it was noon and he had no survey party. From Ricardo to Little Lake is 35 miles, more or less.

Enter Resourcefulness and Expediency, children of Necessity. He had an automobile with a good speedometer, one of those dollar compasses, a pencil, paper and a book of tables. He organized a one-man survey party. It was complete from locator to axeman; in fact, it even included a division engineer.

The result was a *Triumph over Difficulties*. He made his survey of 20 odd courses tying in just north of Ricardo. Down at Mojave, using the landlady's dining room table, the survey was plotted on the map of the precise location survey. And it checked at the proper point within 200 feet. Two hundred feet in 35 miles! Have you done any better with your stadia surveys? Oh yes, once—maybe! When the department head arrived there was something to offer as a basis for comparison.

In the words of Chester Gump's Chinese servant: It is written that the Resourceful Person will Triumph over Difficulties.

LESSON FROM THE EARTHQUAKE

THE LESSON to be learned from the Santa Barbara earthquake, as far as highway building is concerned, is that stability of construction has proved its worth. Bridges and other highway structures, both north and south of Santa Barbara, built by the county but on state specifications, withstood the shocks of the recent earthquake without consequential damage.

Except for slides in deep cuts, there was no serious interference with traffic; in fact, the highway was not completely closed to traffic at any time while rail transportation was held up for a period of seventeen hours.

It is not contended pavements and bridges built on state specifications will withstand any shock that might occur; but the fact remains that the state bridges in the vicinity of Santa Barbara were practically undamaged by the earthquake, which wrought serious and extensive structural damage within the city.

High Standards—Real Economy.

The state highway department is often criticised, particularly by county authorities, for expenditures for bridges. It is frequently asserted that they are structurally of heavier design than

is necessary and, therefore, more costly than is needed to care for state highway traffic.

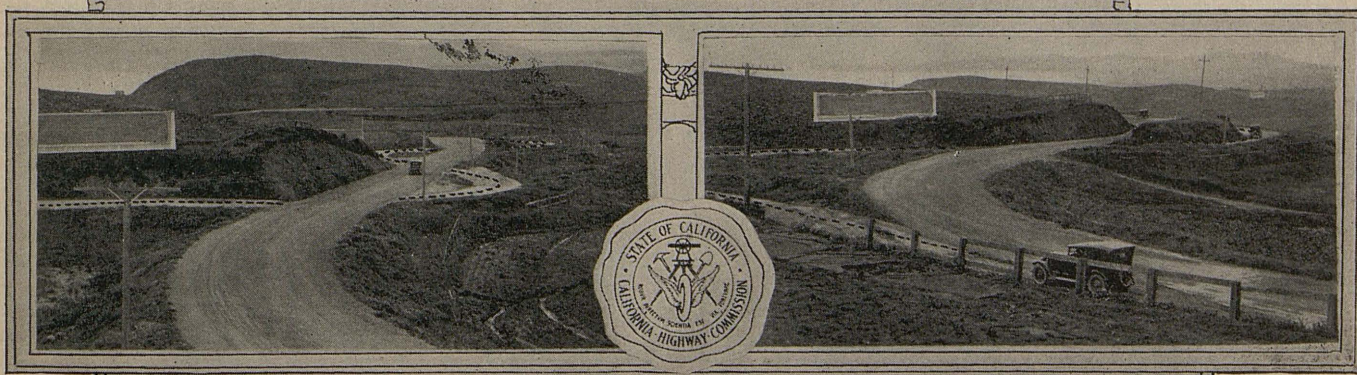
There is every reason to believe that had the state bridges in the vicinity of Santa Barbara been of lighter and less stable design, they would not be standing today. The earthquake has proved the worth, and the necessity for, present high standards for state highway bridges.

There is genuine economy in high standards. Of that, the Santa Barbara earthquake is ample proof.

NEW PLAN FOR PRISON CAMPS.

From August 17, 1923, to May 31, 1925, prisoners in the three road camps had earned a total of \$79,808.90 under the convict pay law, of which \$18,085.02 had been paid to dependents. The average daily net cash earning per man was \$0.294. Permissible earnings under the law are \$0.75 per day.

Superintendent Ben H. Milliken and the Board of Prison Directors have worked out a plan by which men within the prisons, who are eligible to go to the camps, make formal application in anticipation of vacancies that may occur. By examination ahead of time, men are always available for assignment to the road camps and there is no delay in filling requests for men.



VIEWS ON THE SKYLINE BOULEVARD, SAN MATEO COUNTY—Dotted lines show location of the old county road at this point, the sharp curves of which have been eliminated by the new state highway.

CALIFORNIA FOREST HIGHWAY SYSTEM APPROVED



FEDERAL BUREAU MAKES REPORT OF PROGRESS TO DATE

AFTER several years of negotiation with the Bureau of Public Roads and the United States Forest Service, the California Highway Commission several months ago submitted to the Secretary of Agriculture, pursuant to the rules and regulations for administering forest roads and trails under the provisions of the Federal Aid Highway Act, a system of forest highways for California.

This system, in accordance with the recommendations of the Bureau and the Forest Service, has been approved by the secretary and made public by the Forest Service. The importance of this action lies in the fact that the roads in this state upon which forest highways funds may be expended are now definitely determined and construction of the system may proceed as funds are made available by congress.

The public should understand, however, the designation of a road as a forest highway by no means assures its construction, for the reason that, under present appropriations, many years must elapse before the system can be completed.

Forest highways, as defined by act of congress, are roads in or adjacent to the National Forests, beneficial to the forests and nearby communities. That the forest roads may bear their proper relation to the federal aid and state highway systems of the various states (forming a coordinated system of roads), the regulations require that the State Highway Commission, the Bureau of Public Roads, and the Forest Service shall join in designating the routes to be included.

California Selections Difficult.

The large number of routes proposed for inclusion made the selection of the California system difficult. The basis of the final agreement reached provided that all state highways within the forests be included in the system of forest highways, together with a considerable mileage of county roads selected from among those proposed by the Forest Service.

The routes included have a total of 2,045.5 miles, of which 1,321.5 miles are state highways and 724 miles county highways.

The system does not include minor forest roads and trails directly under the jurisdiction of the Forest Service, which are constructed with forest development funds.

In approving the California system, the Secretary of Agriculture did so subject to several conditions; namely, that the final location of the routes selected is subject to surveys and other information which may develop; and that the selection of any routes as forest highways will not bar expenditure of forest development funds on such routes if found advisable by the Forest Service.

Appropriations Meager.

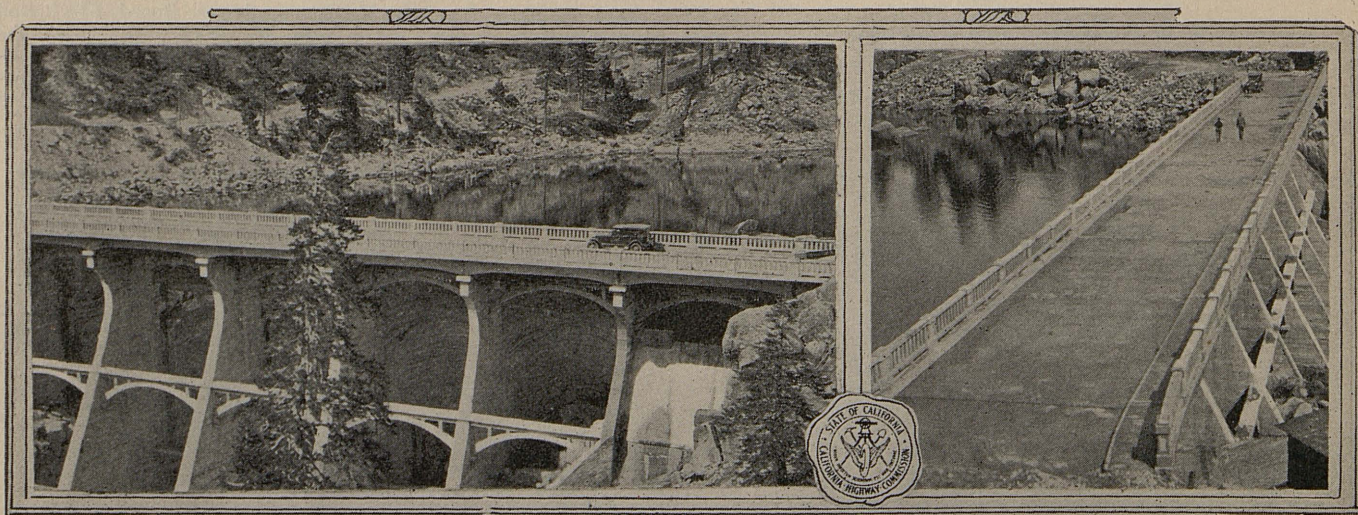
California's allotment of forest highway funds from present congressional appropriations is approximately \$500,000 per year, which is small as compared with the estimate of more than \$30,000,000 for the completion of the system.

Appropriations of funds for the construction of forest highways, however, is a recognition by the federal government of its obligation toward the states, resulting from the withholding in perpetual government ownership of a vast acreage of nontaxable lands within the forests.

The San Francisco office of the Bureau of Public Roads has prepared for the State Highway Commission a tabulation of the routes included in the California forest highway system, together with other information, and including expenditures of federal and state and county cooperative funds disbursed by the bureau. The tabulation shows net federal expenditures on the forest road system, to May 31, 1925, of \$3,166,840. The average cost per mile naturally has depended upon the character of the road and the country traversed. The expenditure in some instances has amounted to only a few thousand dollars per mile, while in many locations it has been \$30,000 to \$40,000, and in one instance exceeded \$100,000 per mile. Similar expenditures undoubtedly will be necessary in the future.

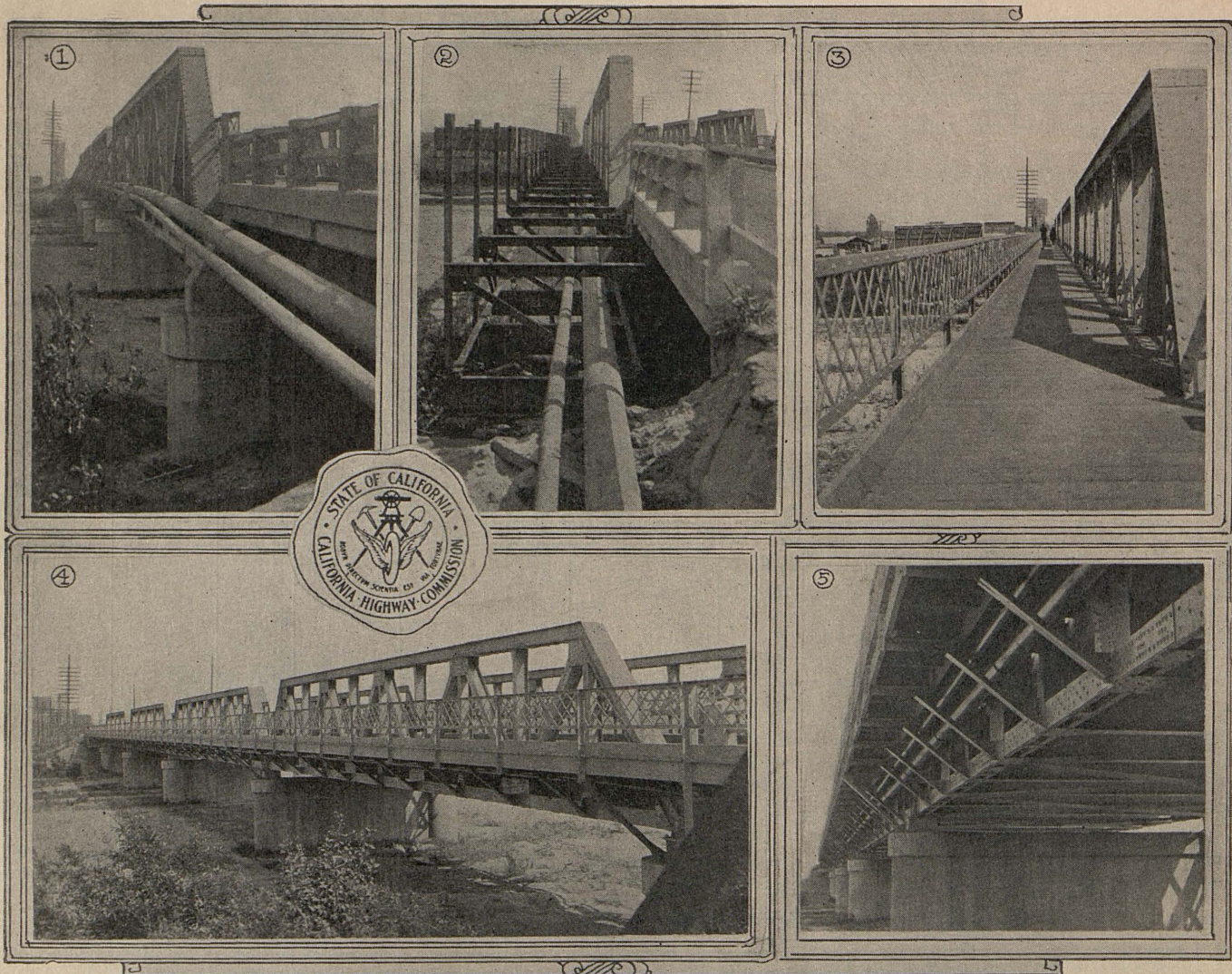
Engineer Furnishes Tabulation.

C. H. Sweetser, district engineer, states that no particular accuracy is to be attached to the estimates of the cost of comple-



BRIDGE AT BIG BEAR LAKE—Reinforced concrete bridge built across the crest of the dam at Big Bear Lake, San Bernardino County, on the route of the Rim of the World state highway. The project was financed by the county and the United States Forest Service as a forest highway project.

MAKING HIGHWAY BRIDGES SAFE FOR PEDESTRIAN TRAFFIC



SIDEWALK ON RIO HONDA BRIDGE, LOS ANGELES COUNTY—(1) Bridge before building of sidewalk; (2) method of caring for service pipes, which are supported by steel framework of pedestrian way; (3) the completed walk; (4) view of the bridge and sidewalk; (5) method used to attach trusses supporting sidewalk to steel framework of bridge. Necessity for sidewalks on state highway bridges is becoming more apparent in many parts of the state. They protect both the pedestrian and the motorist by keeping foot traffic off the traveled way. (Photos by Div. VII.)

INCREASING traffic on Whittier boulevard made it necessary to construct a sidewalk on the Rio Hondo bridge near Montebello, Los Angeles County, to permit pedestrians to cross in safety. The 24-foot width of roadway on the bridge became inadequate to accommodate both vehicular and pedestrian traffic, necessitating

the addition of a 6-foot combination wood and structural steel walk on the north side of the bridge.

The K. O. Wetzel Company of Los Angeles had the contract for the work. W. J. Nelson, assistant resident engineer, supervised construction. Plans were made by the headquarters bridge department.

BAD DRIVING SHOWN AS BIG CAUSE OF HIGHWAY ACCIDENTS

STATISTICS of highway accidents involving motor vehicles, which seem to point clearly to congestion of traffic as the principal cause, have recently been compiled from newspaper reports of accidents in the states of Montana, Oregon and Washington by the Bureau of Public Roads of the United States Department of Agriculture. The bureau's study shows that Montana with the lowest registration has the smallest number of accidents per 1000 cars, while Washington with the largest registration has the most accidents per 1000 cars. This does not agree with

national estimates which indicate that the rate of accidents decreases with increased numbers.

During a period of eight months newspaper reports of 1606 accidents in the three states mentioned were secured, and from the accounts given the causes of accidents classified as follows:

Faulty operation by driver, 1020; faults of others than drivers, 191; faulty equipment, 181; faulty highway conditions, 214.

The detailed statement of the causes of accidents shows that 711, or more than 40 per cent of the total, were caused by reckless or careless driving.

Of the 214 accidents caused by faulty highway conditions, nineteen were caused by narrow roadways and 150 by skiddy surfaces.

INVESTIGATIONS SHOW IMPROVED HIGHWAYS BRING REMARKABLE SAVING TO MOTORISTS IN OPERATING COSTS

A RECENT survey made in Kentucky shows, on the average, a saving of 2½ cents a mile in the cost of operation of a motor vehicle over improved highways as compared with unimproved roads. Sometime ago a similar investigation conducted in Iowa indicated approximately the same saving, and studies now going on in Washington are producing data along this line of interest to all highway engineers.

Data at hand indicate that the average American car travels 6000 miles annually. A saving of 2 cents a mile for 6000 miles amounts to \$150 a year. For seventeen million automobiles, this would mean a saving of \$2,550,000,000 a year on gasoline, tires, parts, upkeep, renewals and all phases of operation.

This would be the total saving if every mile over which an automobile traveled was improved. But of course only 60,000 miles of highway have been improved by federal aid. This 60,000 miles represents slightly more than 2 per cent of the total highway system which amounts to approximately two and a half million miles.

A 10 Per Cent Saving.

Two per cent of \$2,550,000,000 gives \$51,000,000 which can be legitimately credited to federal aid. The total capital expenditure for federal aid was \$500,000,000 which yields \$51,000,000 a year or ten per cent in saving to the user of improved highways.

The study made by the Iowa State College, the Iowa Highway Commission and the Bureau of Public Roads showed that the gasoline consumed on a paved road was only approximately one-half the gasoline consumed on a dirt road per unit of traffic. Inci-

dentally the investigation developed that the gasoline consumed per unit of traffic can be taken as an index of the other costs of motor vehicle operation.

It showed in fact that there is a definite relation existing between the gasoline consumption per unit of traffic and other items of cost in vehicle operation. F. R. White, Chief Engineer of the Iowa Highway Commission, estimated that through improvement of a road surface the gasoline consumption is cut in two, the cost of tires is cut in two, the same applying to other items, including depreciation and repairs.

For the first time these studies make it possible to present in terms of dollars and cents the difference in cost to the motorist and the public in general between improved and unimproved roads.

Iowa Traffic Studies.

According to the Iowa study, traffic equaling 500 vehicles per day over earth roads requires an annual expenditure from both private and public funds of \$25,600 per mile, while a similar amount of transportation over a concrete surface costs \$20,650 per mile.

This means that for a light traffic earth road carrying 500 vehicles a day there would be saved \$4,950 per mile, per year, if the same traffic went over a paved road surface. Assuming the cost of paving a dirt road to be \$25,000 per mile, the saving in transportation cost would actually pay for the capital outlay in from four to six years. The difference between the cost of operation on a gravel road and a paved road would pay for the difference in the cost of construction in three years.

SHOPS TURN OUT ONE-MAN TREE WATERING OUTFIT

By R. H. STALNAKER, Equipment Engineer.

HEADQUARTERS shop has just completed equipping two Davidson III Standard tank trucks with "one-man" tree watering attachments. The idea of "one-man" attachments was not original with the shop, but was developed, it is understood, by Assistant Division Engineer S. T. Corfield in Division VI, a year ago.

However, the arrangement worked out in the Sacramento shop has some new features that may be of interest to the divisions.

Illustration I, shows the outfit in position for traveling. The pipe is swung back against the truck and latched into place so it will retain its position during transit.

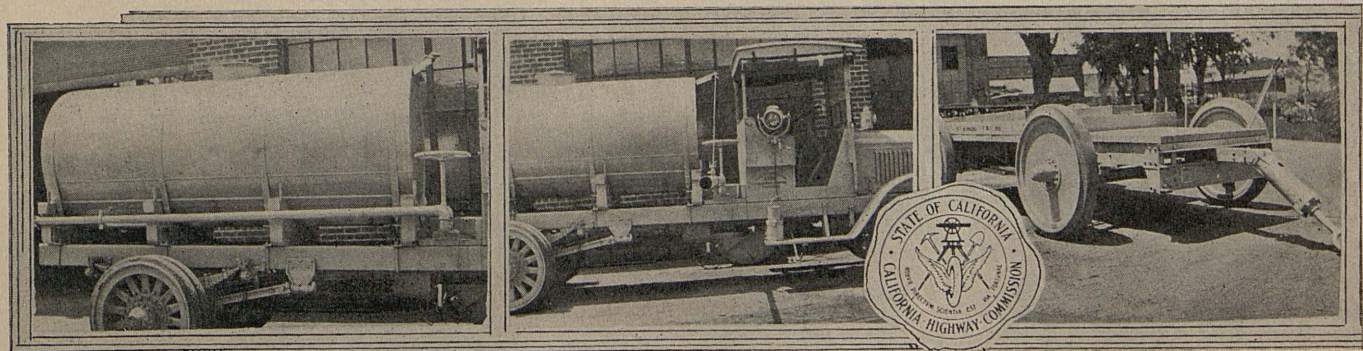
Number II, shows the pipe swung at a right angle to the truck and in position for tree watering. To keep this pipe from swinging back while the truck is in motion between the trees, a short piece of rope is fastened to the end of the pipe and to a convenient point on the driver's seat.

To Water Trees at Night.

It will also be noted that these trucks have been equipped with acetylene searchlights mounted crosswise to the truck on the driver's seat. Division III plans to do its roadside tree watering at night this year and the light is needed for this reason. A forty-five degree ell also was placed on the end of the discharge pipe so as to direct the stream to better advantage.

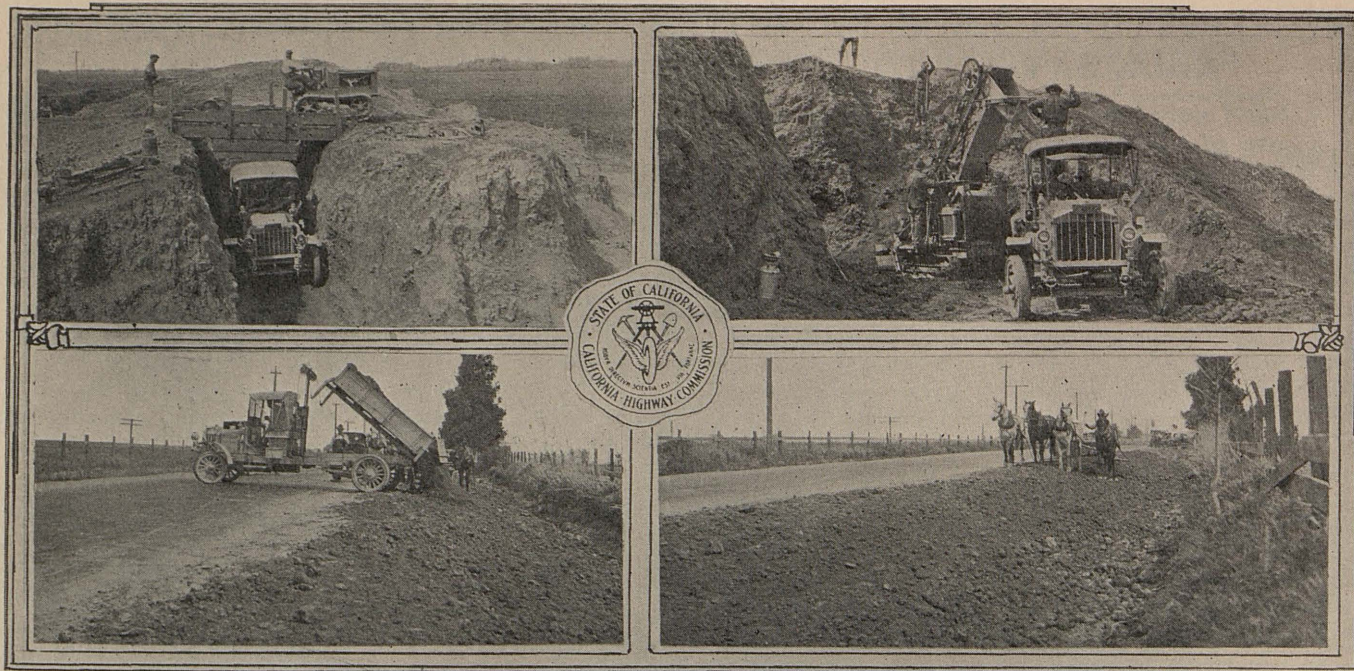
The other illustrations (III and IV) show a remodeled three-ton trailer for Division III's use in hauling a Best 30 tractor, recently purchased. The rail at the back of the trailer is removed when loading and replaced to hold the blocking. The ramps are arranged to hook over the frame at the rear to avoid the possibility of their displacement while the tractor is on them.

Incidentally, the lower ends of the ramp planks were beveled off at an angle of forty-five degrees after the photographs were taken in order to facilitate the running of the tractor on the ramps. The under corners of the planks also were shod with angle iron to prevent chipping.



OUTPUT OF HEADQUARTERS SHOP—Left and center, one-man tree watering outfit for use of Division III; note pipe operated by driver from seat and light for night watering; right, heavy duty trailer built at the shops. It is used for moving tractors and heavy machinery.

CALIFORNIA HIGHWAYS.



BUILDING UP THE SHOULDERS ON THE STOCKTON-OAKLAND HIGHWAY—Betterment work under way near Tracy where material is being secured from an abandoned levee to make fills and widen shoulders at either side of the new twenty-foot pavement. The appearance and safety of this section of the highway is being greatly improved. (Division X.)

IT CAN BE DONE

THE Herculean task of locating and constructing a modern highway through the Truckee River gorge, a gash through the Sierras half in California and half in Nevada, is well under way. When the matter of building a trans-Sierra highway to provide a northern California connection with Nevada and points east came before the California Highway Commission some years ago, it created one of the most contentious controversies over road location ever generated in the state.

Two routes were available across the mountains, one by the Dog Valley grade and the other through the Truckee River canyon. The Commission examined the narrow canyon with its precipitous rock walls, noted the existing railroad, power transmission lines and water flumes and characterized the location as wildly extravagant if not actually impossible. But the scenery was magnificent and the route had the advantage of offering a water grade and those who sponsored it realized what a charming entrance to California it would make for the motoring hordes who were to come.

A change in administration brought a Highway Commission sympathetic to the river road and now both Nevada and California are exerting every energy to complete the project by a year hence. Construction difficulties are enormous and the final story of the building of the road will be an entrancing romance as well as a refutation of the prediction that the project was not feasible. Numerous crossings of the river and the railroad are only a few of the difficulties met and overcome but when the road is eventually opened to traffic it will furnish a magnificent introduction to the Golden State.—*Western Highways Builder.*

Habit Clings. The old-timer who worked his way through college is now working his son's way through.—*Minneapolis Star.*

OLDEST TAX.

The idea of a highway tax is "old stuff." Back in 1661, during the time of King Charles II in England there were 400 hacks that were licensed for operation in London, Westminster and a vicinity of six miles. The money was used to pave the streets.—*New Hampshire Highways.*

A CAPITAL IDEA

(From *Western Highways Builder.*)

THE laconic Mr. Morton, State Highway Engineer of California, who has a faculty for reducing the empyrean philosophical ventures of his confreres at engineering meetings to mundane simplicity, is to be credited with the conception of another capital idea. At the San Francisco regional conference on highway marking and standardization of directional and cautionary signs he advanced the suggestion that a suitable design for markers for the proposed national highways be made the object of a competition in which the leading artists of the republic should be invited to participate.

Such a competition would accomplish two desiderata, i.e., primarily and of greatest moment, stimulate an intensive interest in highway improvement and, secondarily, result in the development of a marker of artistic beauty as well as utility. The publicity that would accrue from a nation-wide competition of this character would rejuvenate a lethargic interest in road construction and serve, perhaps, to impress the importance of this great national activity more forcibly upon the public consciousness.

I trust that the plan will receive the serious attention and support of other regions where no doubt its potentialities for good will be readily recognized.

On the Job.

Despite serious personal loss, Maintenance Foreman W. P. Rothert, stationed at Santa Barbara, was on the job the day of the earthquake and assisted in keeping traffic moving over the state highway.

Funeral Parlor in the Rear.

"How did Black make his money so quickly?"
"He established branch junk shops close to all the important grade crossings in the country."

The Dickens You Don't.

"Did you see Oliver Twist, Aunty?"
"Hush, child. You know I never attend those modern dances."

DEDICATE NEW BRIDGE TO MEMORY OF SLAIN OFFICER

THE recently completed bridge over Chowchilla River, Madera County, on the San Joaquin Valley trunk line, has been dedicated with fitting ceremonies to the memory of State Traffic Officer Charles M. Pickett, who was murdered near the crossing, November 10, 1923, while in the discharge of his duty.

The new structure takes the place of an inadequate county-built bridge which has been a menace to traffic for many years. The commission has a record of nineteen serious accidents at the bridge site, seven of which proved fatal. A clear roadway width of twenty-four feet, provided by the new structure, will remove the probability of additional casualties in the future.

County Makes Contribution.

The need for a new bridge has long been recognized by the commission, and when Madera County in 1924 agreed to contribute \$10,000 towards its cost, the work was immediately authorized. The completed structure, including approaches and ripraping, will cost approximately \$15,000. It has a foundation of reinforced concrete piling and is protected from floods by hand placed granite riprap, nine inches thick, extended to the top of the roadway shoulders.

The bridge was planned and built under the direction of the bridge department. Proctor and Cleghorn, of Santa Rosa, were the contractors.

A bronze plaque embedded in one of the end posts of the bridge reads as follows:

"This bridge is dedicated to the memory of State Traffic Officer Clarence M. Pickett, who was killed in the discharge of his duty on November 10, 1923."

Cottonwood Creek Bridge Finished.

Another bridge recently completed under the direction of the bridge department is the Cottonwood Creek span, east of Bakersfield on the Walker Pass highway, Kern County. The structure is of reinforced concrete, 310 feet long, and forty feet high. It has in all nine spans and is of the concrete tower type of construction.

The bridge is an important unit in the Kern River highway project and was financed through a contribution made the state by Kern County. J. L. Webster of Chico was the contractor. The bridge and approaches cost, including engineering, approximately \$40,000.

On the front cover will be found illustrations of both the Chowchilla River and Cottonwood Creek structures.

McKESSON CONTACT MAN

CHAS. M. UPHAM, Director of the Highway Research Board, Washington, D. C., announces the extension of the board by the appointment of contact men from the various engineering colleges of the country. At the present time, eighty colleges have responded to the call and have signified their willingness and desire for cooperation by the appointment of a member of their faculty to act with the board. The contact man in every case has been one who has done considerable work along the lines of highway research.

Many important research problems are now being studied by the colleges, and it is felt that the activities of these institutions should be correlated with those of other research agencies. The university contact men working in conjunction with the contact men appointed by the state highway departments some time ago, fills a want that has been apparent.

The research agencies of the state highway departments and the engineering colleges are constantly at work to improve not

only the construction of better highways, but also the economic factors that enter into the problem. The Highway Research Board is confident that the linking of these agencies to the board will result in great benefits to the country.

The California Highway Department is cooperating in this important work through its laboratory department represented by C. L. McKesson, research engineer.

We should consider this problem from the standpoint of national defense and military preparedness.—*Senator Oddie*, discussing Federal Aid.

Our highways are built by and under the states with such federal participation as is calculated to assure continuity and articulation.—*President Harding*.

As the result of Federal Aid the great highways have been practically nationalized, they have ceased to serve only the community or the states.—*Senator Simmons*.

This is not a subsidy, because every added facility for the transportation of commerce helps to build up the Nation. It means national wealth, national welfare.—*Senator Sterling* on Federal Aid.

THE OLD ORDER CHANGETH

IT USED TO BE, "Let George Do It"; now the wives do it. Recently, when the commission asked for bids for the construction of three bridges on the California Redwood Park road, in Santa Cruz County, the Wilson brothers of St. Helena, Napa County, sent their wives to Sacramento to present their bid and attend the opening.

The Wilson bid proved the lowest received; the contract has been awarded and the work is under way. The new reinforced concrete structures will replace county-built wooden bridges, inadequate for present traffic into the popular park area.



WOMEN BIDDERS—Mrs. W. S. Wilson and Mrs. J. A. Wilson of St. Helena visited the Sacramento headquarters recently and, representing their husbands, submitted the lowest bid for the construction of three bridges in Santa Cruz County. While in the office, they found time to look over the latest issue of California Highways, the commission's monthly bulletin.

WHAT THE DIVISIONS ARE DOING

DIVISION I.

HEADQUARTERS, WILLITS.

T. A. BEDFORD, DIVISION ENGINEER.

Counties of Del Norte, Humboldt, Mendocino, and Lake.

THE DIVISION has just completed the construction of a combined shop and truck shed on the thirteen-acre maintenance station site, recently leased to the state by the board of supervisors of Del Norte County. The building houses both maintenance headquarters for the division and a shop for the equipment department.

Seventeen miles of surfaced roadway along the Redwood highway have been treated with oil as a dust preventive. The results are being commended by residents of communities through which the highway passes and by proprietors of numerous motor camping grounds.

Butterfield and Sears, contractors, have three power shovels operating on their contract for widening and straightening work in northern Mendocino County and splendid progress is being made.

Slide Removal Expensive.

To date, more than 170,000 cubic yards of major slides, the result of last winter's rains, have been removed from the Redwood highway and its laterals. The estimate of the work remaining to be done is 75,000 cubic yards. Two P and H gasoline shovels and four Insley-Fordsons are in service in addition to hydraulic monitors, pumps, scrapers and hand labor. The expenditure up to the present for slide removal has been \$100,000.

Informal contracts have been awarded by the Commission for the placing of shoulders along the new pavement between Eureka and Arcata. The shoulders will be built up for 2½ feet on either side of the pavement. Hauling and placing of earth embankment will be done by Smith Brothers and the rock surfacing will be furnished by W. S. Elsmore. Both are local contractors. The work is necessary to provide a wider roadbed across the tide flats of Humboldt Bay. The allotment for the work is \$25,000.

DIVISION III.

HEADQUARTERS, SACRAMENTO.

F. W. HASELWOOD, ACTING DIVISION ENGINEER.

Counties of Butte, Colusa, El Dorado, Glenn, Nevada, Placer, southern Plumas, Sierra, Sutter, Yuba, and northern Sacramento and Yolo.

ALL of the Truckee River highway is now under contract and construction is starting on the necessary bridges and grading which will open a highway connection with Nevada through the scenic Truckee canyon. This is the most important work under way in the division. Other grading contracts on the same route, in the vicinity of Boca and east of Colfax, will be completed this year. The Forest Service is building a bridge and doing surfacing at the Donner Summit.

Construction of the subways under the tracks of the Western Pacific and Sacramento Northern railroads, at the northern entrance to Sacramento, has been started by Lord and Bishop. Plans are ready for the pavement to be placed between the American River and North Sacramento.

Grading is now under way east of Camino on the contract of Irely and Holden for the improvement of a section of the Placer-ville route.

Tahoe Highways Improved.

A crew of men with a power shovel is busy continuing the improvement of the state highway in the vicinity of Emerald Bay, Lake Tahoe.

Floors of several bridges on the Eastside highway, in Butte County, have been surfaced with asphalt concrete and a marked improvement is the result.

State forces are about to begin surfacing with asphalt macadam the Auburn-Colfax section, in Placer County.

Crushed rock has been placed on a mile of highway on the Slippery Ford grade, El Dorado County; widening work has been done between Riverton and Kyburz.

A 1000-gallon pressure oiler has been used by the division to place fuel oil on various sections of surfaced mountain roads as a dust preventive, eliminating the necessity for sprinkling. Oil has been tried about Lake Tahoe, and between Placerville and Smith's Flat.

Mountain roads throughout the division are generally reported in good condition.

DIVISION VII.

HEADQUARTERS, LOS ANGELES.

S. V. CORTELYOU, DIVISION ENGINEER.

Counties of Los Angeles, Ventura, Orange, San Diego, and eastern Kern, south of Mojave.

WORK has been begun on the reconstruction of the Whittier boulevard between Montebello and Whittier, Division VII. Kuhn Brothers are the contractors. In cooperation with Los Angeles County, a 56-foot street is being built. Bids have been asked for an additional section of this route between Philadelphia street and Michigan avenue, near Whittier.

Good progress is being made by Jahn and Bressi on the contract for widening and thickening the pavement between San Juan Creek and Galivan, Orange County, on the San Diego trunk line. The same firm has been awarded the contract for similar work north of Oceanside.

The San Onofre-San Mateo Creek line change, in northern San Diego County, also is under way. Grading is being done by R. A. Watson, contractor, and one of the most dangerous places on the highway system soon will be eliminated.

In the mountains east of San Diego, on the Borderland highway to El Centro, a day labor camp has been established near Pine Valley, where construction of a line change to eliminate several bad curves on a 7 per cent grade is under way. The work is being done in the vicinity of Laguna Summit. The same crew will surface about four miles of earth road with disintegrated granite.

Completion of the removal of several slides in the vicinity of La Jolla Creek is all that remains to be done to complete the Hauser contract, on the Coast boulevard.

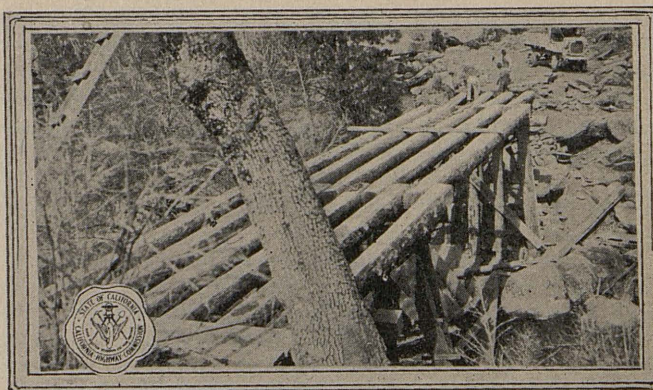
DIVISION IX.

HEADQUARTERS, BISHOP.

F. G. SOMNER, DIVISION ENGINEER.

Counties of Inyo, Mono, and eastern Kern County, north of Mojave.

THE commission has approved an informal contract with George H. Clark for surfacing the state highway in Mono County from three miles north of the Devil's Punch Bowl to Tioga Junction.



A MOUNTAIN BRIDGE—Typical bridge construction on a mountain highway in Division X. Timber cut close by is being used to improve conditions on a summer road.

CALIFORNIA HIGHWAYS.

A similar agreement has been made with Harry Wilson for granite and clay surfacing on the east of the Sierra trunk line between Ricardo and Cinco, Kern County. Both jobs will be under way shortly.

A survey has been authorized for the state highway between Mojave and Kramer, Kern County, the county having agreed to grade this section of the Mojave-Barstow route. The work will be done on the line of the state survey.

Barstow Gets Offer.

The commission has agreed to pave a strip twenty feet wide through the town of Barstow, if property owners will pave the balance of the street.

The division has completed repairs to a mile of state highway washed out during the recent cloudburst on the desert in the vicinity of Olancho and Red Rock canyon.

Additional favorable comment is being received from users of the state road across the desert from Mojave to Bishop.

DIVISION X.

HEADQUARTERS, SACRAMENTO.

J. C. McLEOD, DIVISION ENGINEER.

Counties of Amador, Calaveras, Alpine, Tuolumne, Stanislaus, San Joaquin, Solano, and southern Sacramento and Yolo counties.

INTERESTING experiments in the curing of concrete are being made on the shoulder widening work now under way in Yolo County. "Celite" has been used in connection with the work being done by the Kaiser Paving Company, which is now nearing completion. The new superelevated curve at the Winters Wye is now in use.

An industrial railway and a complete new paving outfit are being used by Contractor J. F. Knapp on his reconstruction project in southern San Joaquin County. C. M. Butts is resident engineer in charge for the state. Rapid progress is being made.

Murdoch Contract Extended.

The R. M. Murdoch contract for grading a section of the Alpine highway, immediately east of Jackson, Amador County, has been extended to cover surfacing. C. L. Caine is resident engineer in charge. Murdoch also will crush gravel for use on the San Andreas lateral.

The Leventon and Heintze contract for grading and surfacing on the Rio Vista lateral, between Denverton and Suisun, Solano County, has been completed and accepted.

Repair of the trestle work at the Rio Vista bridge has been completed. Special eucalyptus piling, reinforced with sway bracing, was used.

Repairs to the New Hope Landing bridge, also in the Delta section, are under way.

EQUIPMENT DEPARTMENT NOTES

The commission has approved an expenditure of \$6,000 for the enlargement of the office of the headquarters shop, Sacramento, and to do certain necessary street paving.

The new division shop at San Bernardino has been completed and equipped and is now making necessary repairs to automotive and construction equipment of Division VIII. The shop has been placed in charge of Superintendent of Equipment W. D. Cook. Walter H. Riechel has transferred from Sacramento to be stock clerk at the new plant.

BRIDGE DEPARTMENT NEWS

CONSTRUCTION on the San Gabriel River bridge, near Whittier, Los Angeles County, is well under way. Pier excavation and pile driving are in progress and grading of approaches has been completed.

The San Juan Creek bridge, near Capistrano, on the San Diego route, is progressing rapidly. Farther down the coast, work has been begun on the bridges over San Onofre and San Mateo Creeks where a radical line change is being made.

In the northern part of the state, work is starting on the underpasses at the northern entrance to Sacramento; on bridges in the

Truckee River canyon, and across the San Joaquin River, at Mossdale.

Bids have been asked for the Charlie Creek arch in Shasta County, which will be one of the highest arch type bridges on the state system.

Pismo Work Starts.

Work also is starting on the two bridges at Pismo Beach, which will make possible the closing of the last gap in the Coast trunk highway. A. L. Richardson has been assigned to this contract as resident engineer.

Lord and Bishop, contractors, have completed three bridges east of Susanville in Lassen County, consisting of a 35-foot concrete structure over Robbers Creek, and combination wood and concrete trestles over Baxter Creek and Long Valley Creek, 90 feet and 150 feet long, respectively.

W. E. Whitney will be resident engineer on the construction of three concrete structures on the California Redwood Park road in Santa Cruz County.



IMPROVEMENTS ON THE NATIONAL OLD TRAILS, SAN BERNARDINO COUNTY—Above, old county road near Oro Grande, between Victorville and Barstow; below, recently completed state highway grade, same point. This improvement was financed with state highway funds.

STATE HIGHWAY FUND CONTRACTS (Bond Funds, Including Federal Aid)

Cont. No.	Di- vision	County	Route	Sec.	Location	Miles	Type	Contractor	Estimated cost	Date contract awarded	Contract time, days
COMPLETED AND ACCEPTED SINCE JUNE 3, 1925.											
450	II	Lassen	29	A-C-E	Robbers, Baxter and Long Valley Creeks		Three Bridges	Lord and Bishop	\$21,967 88	Aug. 22, 1924	
453	VI	Kern	57	E	Across Cottonwood Creek		R.C. Bridge	J. L. Webster	32,962 50	Sept. 22, 1924	
455	X	Solano	53	A	2 miles east of Suisun to Denverton	6.91	24 ft. grading	Leventon and Heintze	32,000 00	Sept. 22, 1924	
462	VI	Madera	4	C	Across Chowchilla River		R.C. Girder Bridge	Proctor and Cleghorn	13,348 13	Dec. 13, 1924	
AWARDED SINCE JUNE 3, 1925.											
469	III	Nevada	38	B	Across Southern Pacific Railroad at Hinton		R.C. Girder Bridge	T. H. and M. C. Polk	21,178 13	June 17, 1925	150
470	III	Nevada	38	A	Across Truckee River at Prosser Creek		R.C. Girder Bridge	T. H. and M. C. Polk	25,981 88	June 17, 1925	150
471	III	Nevada	38	A	Across Truckee River near Boca		R.C. Bridge	Rocca and Caletti	33,964 88	June 17, 1925	150
472	II	Tehama	7	A	Through Corning	1.00	P.C. Concrete Pavement	E. A. Burns	41,537 48	June 17, 1925	75
473	V	San Luis Obispo	2	E	At Pismo Crossing		Bridge	J. L. Webster	50,401 69	June 17, 1925	175
474	III	Nevada-Sierra	38	B-A	Floriston to Nevada State Line	5.96	Grading	Nevada Contracting Co.	311,321 25	June 17, 1925	250
475	VIII	Imperial	27	C	El Centro to Holtville	8.57	Grade and Gravel	S. Y. Faucett	129,262 65	July 13, 1925	225
						Sub-total	15.53		\$613,647 96		
PENDING AWARD—None.											
						Total State Highway Fund Jobs Awarded and Pending Award	15.53		\$613,647 96		

NOTE—Primary construction covered by the above contracts does not include funds obligated on cooperative forest highway projects, prison road camp activities, or day labor jobs not being done under contract.

STATE HIGHWAY MAINTENANCE FUND CONTRACTS (Including Gasoline Tax Fund)

Cont. No.	Di- vision	County	Route	Sec.	Location	Miles	Type	Contractor	Estimated cost	Date contract awarded	Contract time, days
COMPLETED AND ACCEPTED SINCE JUNE 3, 1925.											
None											
AWARDED SINCE JUNE 3, 1925.											
M-86	V	Monterey	2	H-I	1 mile north of Bradley to San Ardo	12.10	Rock Borders	Fred Nighbert	39,600 00	June 17, 1925	80
M-87	V	Monterey	2	G	San Ardo to San Lucas	11.00	Rock Borders	Fred Nighbert	34,880 63	June 17, 1925	75
M-88	VI	Merced	32	C	6 miles east of Los Banos to San Joaquin River	10.00	Rock Borders	Kaiser Paving Co.	26,289 00	June 17, 1925	75
M-89	III	Placer	39	A	Tahoe City to Nevada State Line	11.60	Crushed Stone Surface	Bishop and Brooks	26,901 00	June 17, 1925	75
M-90	IV	Sonoma	1	B	Healdsburg to Mark West Creek	8.79	P.C. Concrete Pavement	Galbraith & Jones	314,414 82	June 17, 1925	150
M-91	IV	Santa Cruz	44	A	Across High Bridge Creek		Bridge	A. J. and W. S. Wilson Co.	14,629 50	July 13, 1925	100
M-92	VII	Los Angeles	9	A	Sunland to La Canada	8.14	P.C. Concrete Shoulders	Dewey and Rawson	74,499 84	July 13, 1925	125
M-93	VII	San Diego	2	C-D	Oceanside to San Onofre	13.10	P.C. Pavement and Shoulders	Jahn and Bressi	364,381 31	July 13, 1925	200
						Sub-total	74.73		\$895,596 10		
PENDING AWARD.											
	VI	Fresno			Fresno		Maintenance Shops and Truck Shed		\$32,953 50		
						Total State Highway Maintenance Fund Jobs Awarded and Pending Award	74.73		\$928,549 60		

NOTE—The above obligations charged against the State Highway Maintenance Funds do not include funds from these sources obligated for general maintenance and for specific betterments not being done under contract.

Fourteen

CALIFORNIA HIGHWAYS.

HIGHWAY NEWS NOTES

A conference of division engineers and head of departments from headquarters will be held in Los Angeles, July 21, 22, and 23. Work under way in the south will be inspected and on the final day of the conference a joint session will be held with the County Surveyors' and Engineers' Association of the state.

F. C. Silson of the Division VII staff, has resigned to accept a position with a Hollywood development company.

Captain Charles R. Blood, of the maintenance department, and Captain E. J. Murray, of the bridge department, were among the officers attending the National Guard Encampment at Del Monte. Other highway employees at the camp were Sergeant Claude S. Simpson, and R. S. Badger. A letter from Simpson reported the "eats" excellent and the boys working hard.

Friends Surprise Mrs. Barrett.

Mrs. Fay Barrett, who recently gave up her position as stenographer after seven years in the service of the commission, was presented with a handsome silver flower bowl by her friends at headquarters, upon the occasion of her leaving Sacramento for a vacation in the mountains.

F. R. Baker, resident engineer, Division III, has recovered from a severe illness, and, during the month, had charge of placing of an asphalt floor on several bridges in Butte County.

Members of the commission and State Highway Engineer R. M. Morton recently made an inspection trip over highways in Divisions I and II, going as far north as the Oregon line.

Division VIII News.

L. T. Norlen has left the drafting room to take a position as maintenance foreman under Assistant Maintenance Engineer J. E. Stanton.

Miss Annie L. Nelson, stenographer, has transferred from the Industrial Accident Commission to Division VIII.

Those who have been complaining about the warm weather of recent weeks should consider Division VIII. Sullivan reports the temperature on the desert hovering between 120 and 130 degrees for several days.

Engineer Returns From East.

Assistant Division Engineer R. E. Pierce studied activities of Divisions VII and VIII on his way home from the New Orleans convention of the American Association of Engineers, where he represented the Sacramento chapter.

C. M. Butts, resident engineer, Division X, spent his vacation building a cabin on his forest service lease near Kyburz, on the Placerville route to Lake Tahoe. Jess W. Cole is again employed by Division X.

Arthur E. Shaffer, attached to the equipment department in Division I, recently took unto himself a wife, in the person of Miss Carrol Stewart of Sacramento.

While the remainder of the state has sweltered, Frank Symms, resident mechanic at the Smith River convict camp, has been in high spirits over four consecutive days of sunshine.

Miss Hellen Hendrickson, clerk in the headquarters shop, was presented by the office force with a handsome floor lamp upon the occasion of her recent marriage. She is now known as Mrs. Molander.

Paul Dunkhorst and family are spending their vacation in the American River canyon.

EXAMINATIONS SCHEDULED

For the purpose of renewing eligible lists for engineering draftsmen and civil engineers, the State Civil Service Commission announces examinations for these positions will be held in the fall, probably during the month of October.

Persons interested may obtain further information by applying to the headquarters of the commission, room 333 Forum Building, Sacramento.

Lesson Well Learned.

"Hello, the club? Is my husband there? Not there, you say? But wait—I haven't even told you my name."

"Say, lady! There ain't nobody's husband here never!" was the darky's reply.—*The Northern.*

Fifteen

PRISONER FACING RELEASE FROM KERN RIVER CAMP WRITES LETTER GIVING IMPRESSIONS OF SYSTEM

WHAT DO MEN in the road camps think of the California plan for using prison labor in highway construction, is a question often asked those in charge of this branch of the Commission's activities. The following letter, received by Superintendent Ben H. Milliken from a man who was then about to be released from the Kern River camp, will be of interest to all students of California's penal system. It is evident the writer has given the subject intelligent thought.

He writes as follows:

BEN H. MILLIKEN, ESQ.,
Superintendent of Prison Road Camps,
Sacramento, Cal.

DEAR SIR: Now that I am, so to speak, on the threshold of my departure from the custody of the California state prison at Folsom, and ready again to resume my battle with life, it is but natural that my thoughts should turn to the future rather than to the past, which has not been altogether bitter.

From every indication at present, I have nothing but good fortune to look forward to in the year to come, and in the years which are to follow, and I can honestly say in all sincerity, that never before since I left college have I felt so optimistic about the future, nor felt so well fortified to combat the vicissitudes of life. While that may sound like an unusual statement from a man emerging from the gates of prison, when one analyses it carefully, as well as the character of the writer, he will be obliged to admit that California's penal system is *not* a failure, and that the work of the California Highway Commission in its rehabilitation program to build character as well as roads, is one of the most beneficial and Christianlike works ever attempted in the many years of reform.

I feel that my opportunity in life today is due nearly 100 per cent to the kindness and efficiency of the *California Highway Commission*, and I only hope and pray that some day, in my humble way, I will be able to repay them in some small part for all that they have done for me as well as thousands of others. It is rather difficult for a man in a position similar to mine to realize that what he finds rather irksome and perhaps even unpleasant is for his own good; but nevertheless, it is the truth and I thank God that my eyes are open and I am capable of discerning the truth of the statement that honest productive work under favorable conditions is the universal panacea for illness of mind as well as body.

The sum of money I have earned through employment on the highway has given me financial independence for a time at least. The opportunity of being self-supporting has enabled me to retain my self-respect and has brought home, better than millions of sermons, the value of work as an antidote to crime.

Therefore in conclusion, now that my time is nearly spent, and I expect and ask for no more favors, I can truthfully say to you, Mr. Milliken, Mr. Julian H. Alco and Mr. Ralph W. Brown, that, one man at least, will leave this highway camp with his heart filled with happiness at the privilege he has enjoyed and a full determination and resolve to prove that Mr. Alco's theory is an established fact, by making an honest and useful living for myself.

Most sincerely and gratefully,

(Signed)

The writer has now returned to civil life and is filling a responsible position. His name for this reason is withheld.

Stalled.

Bus Conductor—"One seat on top, ma'am, and one inside."
Lady—"You surely wouldn't separate a mother from her daughter."

Conductor (ringing bell)—"Never again, lady. I did it once and I have regretted it ever since!"—*Humorist* (London).

