

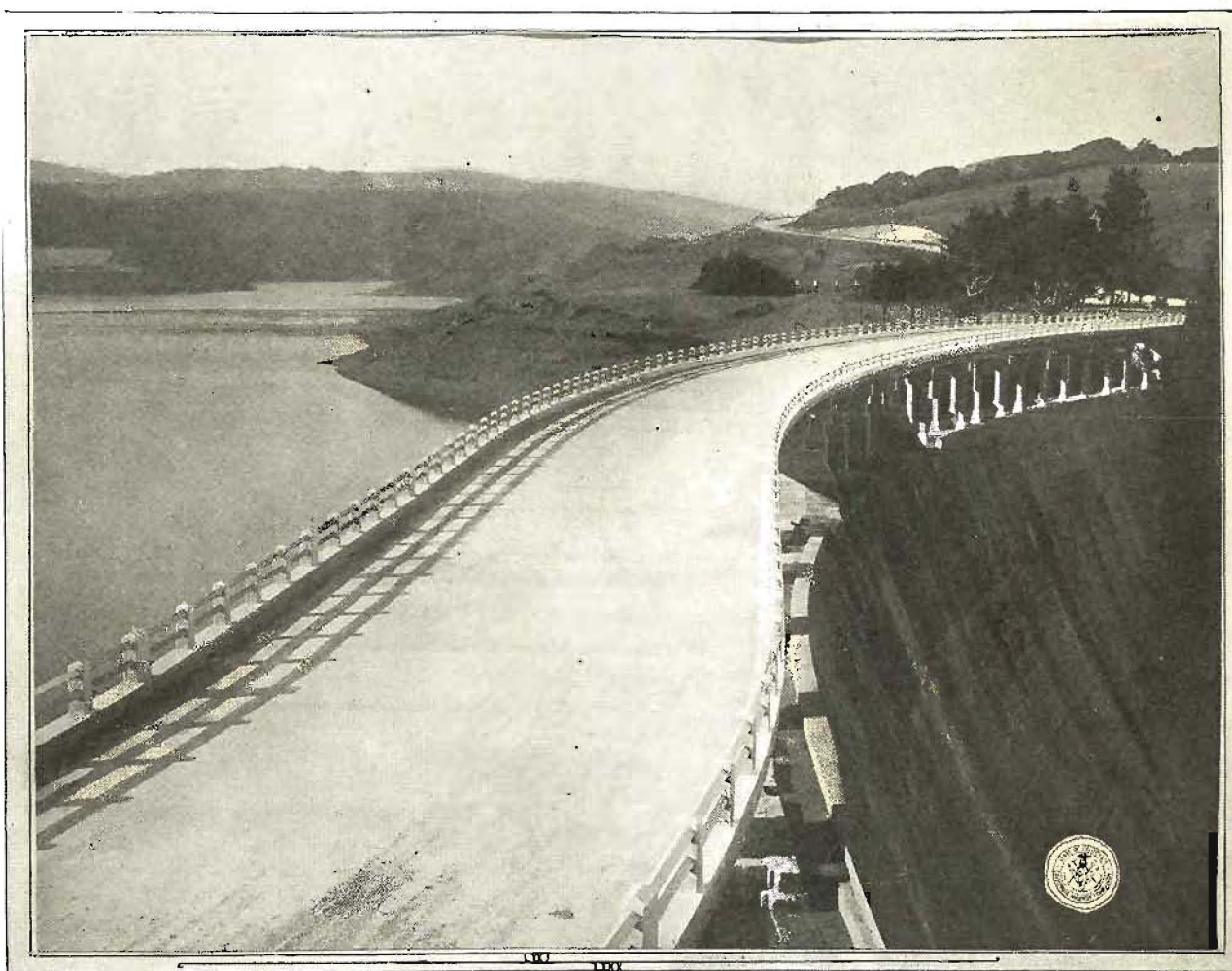
CALIFORNIA HIGHWAYS

OFFICIAL PUBLICATION OF THE CALIFORNIA HIGHWAY COMMISSION

Vol. 1

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BRIDGE ACROSS THE CRYSTAL SPRINGS DAM—A beauty spot on the Skyline Boulevard, south of San Francisco, opened to traffic Christmas Day, 1923. The bridge is 608 feet long and has a clear width of roadway of thirty feet.

In this issue: Reorganization—Surveys and Plans—Construction—New Divisions.

CALIFORNIA STATE PRINTING OFFICE
FRANK J. SMITH, Superintendent
SACRAMENTO, 1924

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California Highway Commission

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TABLE OF CONTENTS

FRONT COVER, Crystal Springs Dam Bridge.....	Page 1
Roster of the Department.....	Page 2
Recent Reorganization of State Highway Work.....	Page 3
A Statement by MR. MORTON.	
"You Have to Move Dirt to Build a Road".....	Page 5
By FRED J. GRUMM, Office Engineer in Charge of Surveys and Plans.	
Governor Appoints Advisory Committee.....	Page 5
Marsh Estimates Highway Revenue.....	Page 6
Purposes of the Construction Department.....	Page 7
By C. S. POPE, Construction Engineer.	
Reasons for Creation of New Divisions.....	Page 9
By T. E. STANTON, Assistant State Highway Engineer.	
"Just Among Ourselves".....	Page 10
Division Engineers' Conference.....	Page 11
Table of Contracts Awarded.....	Page 12
Division Reports	Pages 13-15
Highway Map	Page 16

Recent Reorganization of State Highway Work

A Statement by Mr. Morton

THE program of highway construction and maintenance, constantly under way in California for the past ten years, makes necessary careful organization, for problems encountered by the executives are as much administrative as they are engineering. Any group of employees engaged on the same project are commonly considered as an organization, but in the real meaning of the work, the organization must function to turn out the greatest production.

No one man can engage himself with the vast detail which encumbers the administrative work of the State Highway Department without wasting much of his effort, handicapped by the lack of personal knowledge of points which he is called upon to decide.

This condition has dictated a subdivision of the work at the Sacramento office and the creation of department heads, each of whom deals with his own specialty.

DEPARTMENTS CREATED.

The Department of Surveys and Plans has been created under the direct charge of Fred J. Grumm, office engineer. All matters relating to surveys and locations, approval and cooperation by the Bureau of Public Roads and details of the preparation of plans in the office are handled by this department. Recommendations are prepared for the approval of the State Highway Engineer.

Standardizing and simplifying office methods is one of the main responsibilities. The work of this department constitutes the first step in highway construction.

The Bridge Department has been established to handle the design and construction of bridges and is in charge of H. B. Miller, acting bridge engineer. In addition to the scores of bridges constantly under construction by the State, plans prepared by counties for bridges on state highways

must be checked. The designs for the separation of grade crossings alone, beneath or overhead, keep a considerable force constantly busy.

The Construction Department, under the supervision of C. S. Pope, construction engineer, is in direct charge of the design and construction of the highways. This department supervises the preparation of all specifications, makes detailed study of each job and draws specifications suitable to the location and available materials.

SPECIAL FEATURES STUDIED.

Standardized requirements are all right in theory, but hardly a construction job comes up that does not have some special features which, from the construction standpoint, make embarrassing the enforcement of some of the provisions of standard specifications.

The Construction Department endeavors to iron out all of these points in advance of construction so that the specifications under which the contract is advertised are suited to the work. The Construction Department also has charge of the testing laboratory and is always in a position to report on the acceptability of materials.

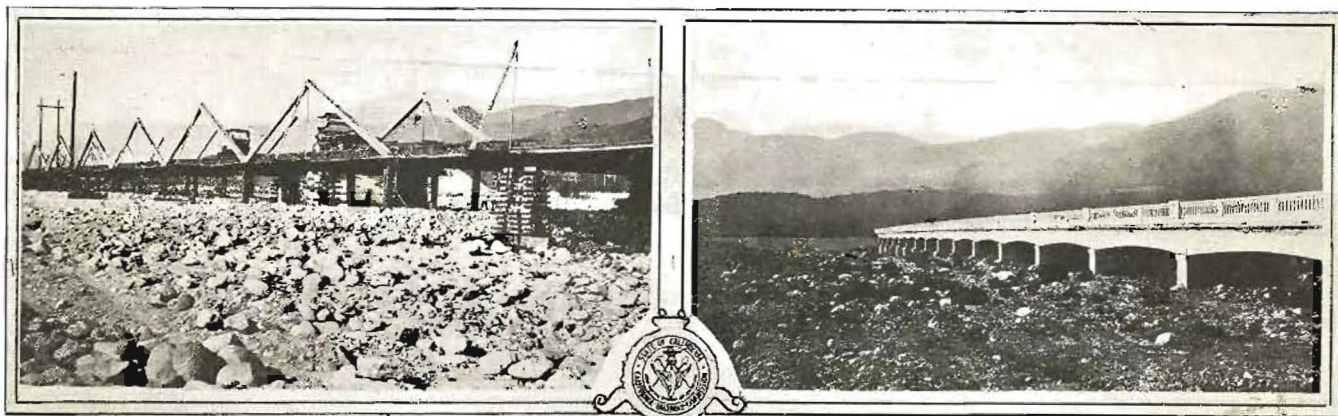
MAINTENANCE INCREASINGLY IMPORTANT.

The maintenance of state highways each year is becoming a larger feature of the work. The need for maintenance becomes greater as our pavements become older and traffic increases. Betterments are constantly under way such as widening grades, rocking shoulders, extending culverts, installing tile drains, constructing drainage ditches, thickening pavements, etc.

All of these requirements are first studied by the Maintenance Department, in charge of A. J. Wagner, maintenance engineer, and new projects must receive his sanction. Work

THE OLD

THE NEW



The old San Gabriel River bridge, Los Angeles County (left), being dismantled as a protective measure, and the new concrete structure which has taken its place.

REORGANIZATION

passing under the direct scrutiny of this department in 1923 amounted to upwards of \$3,500,000, expended for actual maintenance and for small jobs of betterment.

State-owned equipment is in charge of the Equipment Department, under the direction of R. H. Stalnaker, equipment engineer. The distribution of surplus war equipment has been a tremendous asset to the State of California. About twelve hundred motor vehicles have been placed at the disposal of the State; also large amounts of other road-building equipment, shop equipment and many small tools.

Some of the items received by the State include five and ten ton caterpillar tractors, a steam shovel, two railroad pile drivers, a locomotive crane, narrow gauge gasoline locomotives, concrete mixers, etc. Ninety-five per cent of the equipment received has been devoted to good use and has saved the State hundreds of thousands of dollars in the road building and maintenance program.

EQUIPMENT CARED FOR.

For the care of this equipment, the State has constructed repair shops at Sacramento and in each of the divisions. The State is constantly purchasing new equipment for use in convict labor camps and particularly for maintenance work. The quality, price and suitability of each article is approved by the equipment engineer before purchase.

The administration of the Equipment Department and the shop operation is a highly specialized and essential part of the highway construction program.

ACCOUNTING SYSTEM REORGANIZED.

In addition to these departments dealing with the physical features of the work, there is also the Purchasing Department, in charge of L. R. Smith, and the Accounting Department, in charge of H. B. Weaver. During 1923 the number of purchases for the state highway totaled over 18,000 separate orders.

Considerable reorganization of the accounting system is now under way, under Mr. Weaver's direction, with the object of more definite segregation between overhead and construction accounts, and the analysis of overhead expense into various classifications.

The efficiency of the accounting system constitutes the foundation for the efficiency of the entire State Highway Department. The State Highway Engineer and the Commission must know the costs of work as it proceeds in order to properly direct their employees and determine policies. Correct figures on any detail must be available quickly.

PURPOSE OF REORGANIZATION.

In establishing the new departments, in September, 1923, the general instructions issued contained the following:

"The purpose of these departments is to keep headquarters closely in touch with the work throughout the State. We desire to coordinate, systematize, and standardize the work as far as possible, and bring to each

DONNER SUMMIT BLAST



Within hearing of the graves of members of the famous Donner Party, who perished amid Sierra snows for lack of a road, the state is now building an improved highway. Thirty-three tons of powder recently were used to blast away a granite cliff. The pictures show powder being placed in the tunnels, fuses connected up, the blast, and some of the results. The new location will eliminate steep grades between Donner Lake and Donner Summit on the Victory highway.

division engineer the advice of engineers who have opportunity to study the work in all divisions.

"Under this new organization plan the division engineers will not be relieved of any of their present responsibility. Work of coordination, which will fall to the various headquarters departments, will supplement and benefit the work of the division engineers.

"The heads of departments will directly represent the State Highway Engineer and have authority to issue instructions."

The new organization plan has been in operation for the past four months and under it a smoothly functioning organization is being built up for the general betterment of the state highway work.

"YOU HAVE TO MOVE DIRT TO BUILD A ROAD"

By FRED J. GRUMM,

Office Engineer in Charge of Surveys and Plans.

I WOULD like to recommend that every locator, in fact every one of us, put this slogan in a place where it often will be called to his attention. It sounds, perhaps, like a creditable motto for the Construction Department to adopt; but, it is even more important, that those of us who are connected with Surveys and Plans continually bear in mind its import.

We work away at our particular duty, accomplish a very creditable location, turn out a wonderfully neat plan, design a complicated structure, work out and solve some trying problem; and, soon, our particular duty becomes the important operation to us. We forget our work is only to the end that the road may be *built*.

The California Highway Commission does not exist for the purpose of making fine surveys and beautiful maps, but to *build roads*.

LOCATION FUNDAMENTAL.

This is not to be construed as detracting from the importance of the work involved in our department, for we always have the comfort of knowing that the most important, fundamental and permanent feature of any road is the location. It probably means more than comfort; it means pride to know that we have accomplished a difficult location, satisfying all the requirements good locations should satisfy: the demands of traffic, not only of the present but the future as well, the greatest possibilities for development of the country, safe and easy alignment, reasonable grades, adequate drainage, proper exposure, shortest length and lowest cost.

Because location is the permanent feature, it must be done well, and the more so, when we realize it is to be made more permanent by actual construction.

It is not possible, nor within the scope of this article, to deal with all the details which necessarily must be considered in this work. However, a few principles of good location may be set down for general guidance.

GOOD LOCATION PRINCIPLES.

Drainage, soil and climatic conditions influence and control location. It is desirable that unnecessary stream crossings, flooded areas, slides, swamps, excessive rock excavation and snow be avoided.

The expenditure of any money, necessary to provide alignment and grades satisfying all requirements, is warranted.

Safety of traffic should be the principal guide in the adoption of alignment. Poor or dangerous alignment should not be used to hold grades below the adopted maximum; rather, good alignment with a higher rate of grade is better than poor alignment and a lower rate.

Where rolling grade can be adopted, as in fairly flat or rolling country, longer tangents and easy curves are desirable. By fitting the grade to conform to the undulations, excavation quantities can be held down.

A rolling grade is economical, satisfactory, pleasing in appearance and not objectionable to traffic. Long straight grades, which probably are a result of railroad training, have no advantage over the rolling grades; in fact, are less desirable in easy country.

Five

EXCEPTIONAL OCCASIONS.

There are exceptional occasions when increased distance is warranted; when, by the use of improved alignment, danger to traffic is eliminated, or when it is necessary to obtain a reasonable maximum grade. The saving in yardage, by increasing distance to escape heavy work, is usually offset by the increased cost of future surfacing and operation.

Introduction of adverse grades is permissible to eliminate dangerous alignment, but its use to shorten distance is only warranted when the advantage of such shorter distance over the extra rise is definitely apparent.

In mountainous country, where most of the location is along side hill, excessive grade does not effect saving over a more reasonable rate. A five per cent grade hardly will involve more yardage than an eight per cent on side hill construction.

The use of short stretches of higher rate than the adopted ruling grade often is advantageous. Where a five per cent grade has been adopted, as the ruling grade, it may be economical to use short lengths of six or seven per cent. For instance: When the line is running up a valley with easy slopes on an easy grade and must leave the bottom land, climb a side hill and cross a saddle, it usually is better to make the climb quickly; that is, use a steeper grade, because side hill alignment is usually poorer and its construction more expensive than valley location.

CURVES AND TANGENTS.

In general, simple or compound curves are to be preferred to two curves in the same direction connected by a short tangent. The use of the simple or compound curve results in longer radius and greater sight distance, is easier to drive,

(Continued on page 6.)

COMMITTEE APPOINTED

ON February 2d, Governor Richardson announced the appointment of the special advisory committee which will undertake a comprehensive study of the state highway system for the purpose of making recommendations to the 1925 session of the legislature.

The committee was authorized by the legislature last year and will serve without compensation. It will take up such matters as the inclusion in the state system of additional roads which should be state highways, but which are not now included, exclusion of roads which have no place in the state system, and means of financing highway construction in the future.

The members of the committee are: A. H. Breed, of Alameda County, representing the state senate; Elmer Bromley, of Los Angeles, author of the act, representing the assembly; George G. Radcliff, representing the state board of control; Louis Everding, of Arcata, state highway commissioner; Robert M. Morton, state highway engineer; A. E. Loder, engineer for the California State Automobile Association; F. E. East, engineer for the Automobile Club of Southern California; J. B. Gill, of San Bernardino, former county highway commissioner; and J. H. Newman, of Tulare County, former supervisor.

Marsh Estimates Road Revenue

By WILL H. MARSH,
Chief, California Division of Motor Vehicles.

THE first automobile was registered in California in 1905. Last year we registered approximately 1,115,000 cars; an increase of more than 25 per cent over 1922. During 1924 we expect to register 1,300,000 automobiles—nearly enough to form a solid line clear around the State of California, if placed end to end.

Under our present laws all moneys collected for motor vehicle registrations go to the upkeep of the highways, after deductions are made for administrative expenses. One-half goes to the State Highway Commission for maintenance and rebuilding of state highways while the other half is prorated to the counties according to registration. The gasoline tax, imposed by the last legislature, is distributed similarly.

GAS TAX ESTIMATE.

Our estimates indicate that California motorists will pay, during the current year, an approximate total of \$19,050,000 in fees and gasoline taxes. Of this sum, \$13,000,000 will be from the gasoline tax, \$3,900,000 from flat registration fees, \$1,700,000 from weight fees and \$450,000 from transfers.

After making deductions for the expenses of this department there probably will still be left more than \$9,000,000 to be spent on the state roads by the California Highway Commission for maintenance and reconstruction, a like amount going to the various counties for road work.

A total of \$9,756,614.43 was turned over by me to the state and county road funds from this department in 1923. Half of this sum went to the highway commission. The last installment was diverted on February 1st, the state's share amounting to \$225,222.07.

TO MAINTAIN TREES

THE appropriation for tree maintenance on the state highways for 1924 is approximately \$41,000. Survival of 90 per cent of the trees planted last year under state supervision is reported by State Forester M. B. Pratt.

Under plans approved by the advisory tree planting committee, composed of the state forester, state highway engineer, John W. Gregg, head of the landscape department at the University of California, and William Vortreide, state gardener, communities wishing to make plantings on the state highways are now required to deposit with the commission \$234 for each mile to be planted.

REASON FOR NEW RULE.

For this sum the commission will see that trees are properly planted and maintained for the first year. After that, maintenance will be done at the expense of the state. Heretofore, much haphazard tree planting has been done by inexperienced persons with the result that many trees have died and an unnecessary expense has been entailed in saving others. This is the reason for the new planting regulation.

Until the requirements for widening state highways can be more definitely determined, tree planting is not being encouraged. It has been found almost impossible to protect young trees in many places where it has been necessary to lay new and wider pavements.

Stalnaker After More Equipment

THE exchange among the states of surplus government road building equipment was discussed at a meeting in Chicago during the latter part of January and attended by the equipment engineers of various state highway departments. California was represented by R. H. Stalnaker, equipment engineer. He also attended the National Road Builders' Convention, and the display of the latest road building machinery which is always an educational feature of the gathering.

May Exchange Equipment.

The meeting of the equipment engineers made possible a discussion of the desirability of exchanging surplus equipment among the states.

Surplus war materials have been distributed in large quantities by the federal government and some states are in possession of equipment which they do not need and can not use. Mr. Stalnaker's trip may result in additional equipment being secured for California at a great saving to the state.

"You Have to Move Dirt"

(Continued from page 5.)

makes superelevation uniform and continuous and simplifies construction.

Tangents between reverse curves are desirable but should not be insisted upon in difficult location where increased cost will result.

We are continually encountering locations where peculiar and exceptional conditions exist; where accepted rules or principles will not uniformly apply. Our reputations as locators are established by our treatment of such cases.

It is the location that follows most closely these accepted principles, on which, after careful office study, a minimum of change is required. Too often the office study reveals opportunities for improvement and economy. In the final analysis, however, it is only on the ground that the real and final adjustments can be made with true economy. Nevertheless, office studies are necessary, for it is here that the full details of the road design are developed and the final polish given to the work.

PLANS FINAL PRODUCT.

The plans are the final product of all this industry. It seems only reasonable they should show complete and necessary information pertaining to the work to be done. There is no better place than in the plans to record all the data that have been so laboriously gathered and evolved.

It serves a multiple purpose; it furnishes the resident engineer with the notes and data concerning the line and grade, the ideas of the designer relative to section, drainage and structures; it acquaints the contractor with the nature and character of the work, the quantities involved, and the desired result; and it becomes a record for the future.

A skimpy plan means incomplete engineering study or a lack of appreciation of its importance.

So the necessity becomes evident of ordering and planning our work to the end that the completed plans will not only reflect the labor and study involved but will insure the final result: a well built road located on a standard satisfying all the demands of traffic, today and tomorrow.

PURPOSES OF THE CONSTRUCTION DEPARTMENT

By C. S. POPE,
Construction Engineer.

ANNOUNCING the division of the work at headquarters into five departments, the state highway engineer, last September, in his letter to the division engineers, had the following to say concerning the Construction Department:

"The Construction Department will consult with the division engineers regarding proposed new work and specifications therefor, suitability of materials to be used, progress of work under way, and modifications of specifications on work in progress."

In conformity with these instructions, the Construction Department is now carrying on its work, adding to its organization as the need arises, bearing in mind the department, is, in no sense, to take over the duties of the division engineers, but to supplement them.

STATEWIDE SURVEY.

The view of the department on all problems of construction is statewide and its usefulness is largely derived from this fact and special sources of information at its command.

For both construction and reconstruction problems, a careful study is necessary of all projects, which, either through legislative action, commitments of former or present administration, or present physical condition, require the earliest construction or reconstruction.

This has required a statewide study, not only of the projects themselves, but of their probable cost, as affected by the type of construction or reconstruction most suitable for conditions to be met.

PRELIMINARY REPORTS.

Ordinarily, division engineers submit preliminary reports on work which seems to them essential in their divisions. It is desirable that these reports be reviewed and discussed with the heads of the divisions to insure the most economical expenditure of funds, and construction of units most necessary.

It is essential that these reports cover all of the features which should enter into a properly conceived and executed project, and this, in itself, requires a great deal of categorical study of various details by the Construction Department.

SPECIFICATIONS OUTLINED.

At the present time, outlining of specifications is a duty of the Construction Department. In the future, however, it is proposed that the general form only be outlined, and details filled in or suggested, as a part of his preliminary report, by the division engineer.

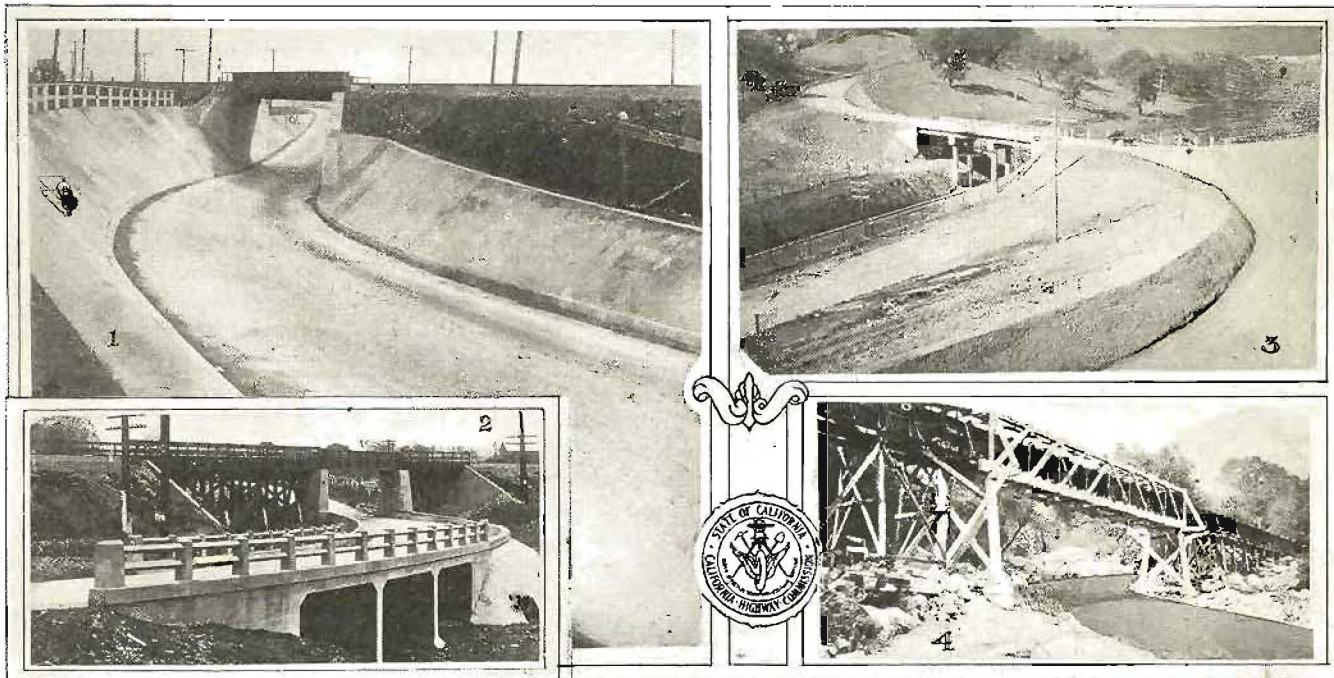
The specifications, eventually, will be reviewed in the light of most recent information regarding improved construction. To assure the best type of construction, as regards structures and materials specified, the specifications also will be reviewed on the ground with the division engineer.

MATERIALS.

Writing of the specifications naturally includes the kind and quality of materials to be used. It is considered an essential part of the construction program that all sources

(Continued on page 8.)

Making the Highways Safe



GRADE SEPARATIONS RECENTLY COMPLETED ON THE STATE HIGHWAY SYSTEM: 1 and 2 are underpasses just opened to traffic on the Pacific highway near Redding; 3 shows the Lytton overhead crossing in Sonoma County; and 4 is a flume carrying a power ditch across the Sequoia Park lateral.

H. E. WARRINGTON RESIGNS

THE resignation of H. E. Warrington, for four years chief bridge engineer in the California Highway Department, became effective February 1st. The Department is now in charge of Harlan B. Miller, assistant bridge engineer, pending the appointment of a successor to Mr. Warrington.



H. E. WARRINGTON

Previous to his work for the state he was bridge engineer for Los Angeles County for eight years. It is probable that he will enter private practice in a consulting capacity with Los Angeles as a likely field.

Mr. Warrington's genial disposition has made him well liked among his associates at headquarters.

Construction Department

(Continued from page 7.)

of materials be investigated and their suitability for the work determined. This information is placed at the disposal of contractors proposing to bid on highway work that as many hazards as possible may be removed from bidding.

This requires statewide and continuous investigation of soils, rock and sand deposits, and other natural materials which may be used in building the roads.

ESTIMATES.

In order to insure a correct allotment of funds, and that costs are not excessive, it is necessary to prepare preliminary estimates with considerable care. This no doubt, eventually, will become a function of the Construction Department. Necessarily, this carries with it the duty of accumulating cost data and a study of special conditions affecting every contract.

There are a vast amount of cost data on particular jobs that have no value or application to other work, but, by a judicious selection of work under construction, much valuable information can be obtained. It is the purpose of the Construction Department to make these analyses wherever it seems advisable.

EQUIPMENT FOR WORK.

A great deal of contention, arising from time to time on various pieces of work, is due to faulty equipment and misunderstanding between resident engineers and contractors' employees.

It will be the endeavor of the Construction Department to forestall such disagreements by discussing with the contractor, in company with the division engineer, details of

the equipment proposed to be used. This will be done to make sure the equipment is of such a character that it will adequately perform the service required, furnish the materials or products needed, or properly do the work in a manner conforming to the specifications.

Proper equipment often will expedite construction, whereas a job improperly equipped will be a source of trouble to the contractor and the engineers having its supervision in charge.

Methods employed by contractors on different kinds of work can be advantageously reviewed by the Construction Department. Due to the fact that the department head visits all parts of the state, he, often, is able to offer suggestions and to convey from one section to another valuable information regarding methods of construction in use at any given point.

In the future, as in the past, this, no doubt, will be a very considerable advantage to division engineers and contractors doing state highway work.

LABORATORY CONTROL.

It is the purpose of the department to install an even more complete laboratory control of materials and manufactured products than has occurred in the past. Much information has been available at headquarters concerning the cost of work, how much the contractor made or lost, but records regarding the character of the work and the materials that went into it are not so complete.

The laboratory is under the control of the Construction Department. It is fully equipped to make almost any test required for highway construction.

ADDITIONAL OR EXTRA WORK.

Practically every contract or other construction activity requires the doing of a certain amount of additional or extra work.

In general, this is an indication of incomplete planning, originally. By special attention to preliminary details, undoubtedly, a considerable part of this additional and extra work may be eliminated. At the present time, it is necessary for the department to investigate these requests for special or additional allotments, and this, in itself, constitutes a large amount of the office and field work.

SPECIAL INFORMATION.

All spare time of the department available is spent on special examinations of new construction, new methods of doing work, and innumerable details connected with field and laboratory investigations. This is necessary to improve construction.

Much highway research work is being done throughout the country, and, in order not to duplicate this work more than purely local conditions make necessary, the results are being accumulated for ready reference. However, a considerable amount of research work is being carried on at all times in the laboratory and in the field and it is proposed to continue this work on even a larger scale.

Investigations of raw materials and manufactured products, such as cement, concrete, asphalt concrete, and culvert metal pipe, are constantly underway, as well as studies of methods of construction differing from those usually in use. The results of these investigations and studies are disseminated to the various divisions.

Reasons for Creation of New Divisions

By T. E. STANTON, Assistant State Highway Engineer.

CALIFORNIA is the second largest state in the Union, with an area of 159,949 square miles. The length of the state from north to south is nearly 800 miles.

At the time of the organization of the California Highway Commission in 1911, and before any work was started, the state was divided into seven divisions for the handling of the highway work over this great area. An engineer was placed in charge of each division.



T. E. STANTON

The highway system, as originally outlined and for several years thereafter, contemplated the construction of approximately 3082 miles of state highways.

As construction proceeded, public sentiment demanded more roads, and subsequent bond issues, voted by The People, and legislative act roads turned over to the com-

mission, increased the mileage in the state highway system from 3082 to approximately 6400 miles.

While maintenance always was anticipated, the fact that the number of motor vehicles registered in the state would increase from 60,779, in 1911, to over 1,000,000, in 1923, and that the earlier built pavements would demand premature reconstruction was not anticipated.

MANY NEW PROBLEMS.

Increased mileage, increased expenditures, maintenance and reconstruction problems, research, employment of convict labor, the relations of the department with the United States Bureau of Public Roads in connection with the expenditures of Federal Aid and Forest Highway allotments to California have demanded that the organization be expanded.

To meet this need, three new division offices have been created, making ten in all, as follows:

Division VIII with headquarters at San Bernardino; Division IX at Bishop; and Division X at Sacramento.

In Division III, with headquarters at Sacramento, there were 680 miles proposed in the original system, which was increased to 1,593.30 before the formation of Division X. The district mileage in the original system was not excessive but subsequent bond issues and the addition of many miles of legislative act roads across the Sierra Nevadas so increased the work that it was deemed imperative to divide the territory into two parts with a division engineer in charge of each section.

NEW DIVISION LINES.

An east and west line passing through Sacramento City makes the most equitable division of the work.

Hereafter Division III will be composed of the counties of Glenn, Colusa, Butte, most of Plumas, Sierra, Nevada, Placer, El Dorado, Yuba and Sutter, and the northern parts of Sacramento and Yolo counties.

The new Division X includes the southern parts of Sacramento and Yolo counties, and in addition, the counties of Amador, Calaveras, Alpine, Tuolumne, Stanislaus, San Joaquin and Solano.

In Division VI the original mileage of 565 was increased to 1,111.59 before the formation of Division IX, which is composed of the counties of Mono and Inyo and eastern Kern, the eastern part of the original Division VI.

In making the round trip from his headquarters in Fresno to Bridgeport, the county seat of Mono County, the Division Engineer of Division VI was compelled to travel over 900 miles. In the Fall and Spring and even in Summer at least a week's time was required in order to visit the territory east of the Sierra Nevada Mountains.

CLOSER INSPECTION DESIRED.

For the above reasons, and in order that the work may receive more frequent inspection and closer supervision, the establishment of a division office at Bishop was considered advisable.

In Division VII the original system included 455 miles of highway, which mileage was increased to 1,280.24 before the formation of Division VIII which now includes the counties of San Bernardino, Riverside and Imperial.

The astounding growth of Los Angeles and adjacent communities made it necessary that the division engineer devote more and more of his time to the solution of the vexing highway and traffic problems brought about by such conditions.

The long mileages through the desert country of eastern San Bernardino, Riverside and Imperial counties, in addition to the important work adjacent to Los Angeles, made it necessary to establish a new division to be known as Division VIII, with headquarters at San Bernardino.

TABULATION OF MILEAGE OF CALIFORNIA STATE HIGHWAYS BY DIVISIONS

Division	Mileage in	
	Original System	Ultimate Mileage
I (Willits)	304	607.55
II (Dunsmuir)	506	795.78
III (Sacramento)	680	1,593.30
IV (San Francisco)	306	480.58
V (San Luis Obispo)	276	523.37
VI (Fresno)	565	1,111.59
VII (Los Angeles)	455	1,281.24
VIII (San Bernardino)		616.14
IX (Bishop)		718.36
X (Sacramento)		430.95
		742.65
Totals	3,082	6,393.41

CALIFORNIA HIGHWAYS

OFFICIAL PUBLICATION OF THE
CALIFORNIA HIGHWAY COMMISSION
 SACRAMENTO, CALIFORNIA

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

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

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

Vol. 1 FEBRUARY, 1924 No. 2

JUST AMONG OURSELVES



HIGHWAY NEWS NOTES

M. E. Sparks Resigns.

THE resignation of M. E. Sparks, secretary to State Highway Engineer R. M. Morton, will become effective March 1st, after exactly twelve years' service in the department. Sparks first entered the employ of the highway commission March 1, 1912, as chief clerk in Division III. On July 15, 1912, he transferred to Division V at San Luis Obispo, and on January 1, 1919, he came to headquarters as assistant chief accountant. He was promoted to the position of secretary to the state highway engineer, February 1, 1920, a position which he has held since that time.

At the recent dinner in Sacramento, given by the members of the commission, L. H. Gibson, division engineer at San Luis Obispo, expressed, feelingly, the regret of the entire staff at Sparks' leaving.

Headquarters wishes him the best of luck in San Francisco where he will become private secretary to Harvey M. Toy, chairman of the commission.

Fred R. Seymour, formerly of Division II. Dunsuir, is now with headquarters in Sacramento as an assistant to Ben H. Milliken, superintendent of prison road camps.

R. S. Badger, formerly assistant division engineer at Bishop, Inyo County, is now with the headquarters maintenance department.

Division II.

Miss Josephine Lever from headquarters has arrived in Dunsuir to accept a position as stenographer in the division office.

Division III Transfers.

The following superintendents and foremen and their maintenance crews have been transferred to Division X:

B. W. Bickler, Sacramento; Clarence Bovey, Stockton; J. W. Bertram, Ione; Richard Brennan, San Andreas; J. H. Gates, Fairfield; S. E. Harris, Jamestown; W. P. Hodgson, Sacramento; W. H. Martin, Groveland; L. P. Laird, Modesto; G. E. Marshall, Rio Vista; G. P. Merrill, Woodfords; F. M. Walker, Pine Grove.

W. A. Smith, resident engineer, has assumed new responsibilities. Thomas George Smith, weight 9½ pounds, reported for duty January 11, 1924.

E. W. Ray, chief of party on survey work, route 37, has resigned and gone to San Francisco. J. B. Kirk, assistant resident engineer in Placer County, is another who has resigned.

A. A. Baker, instrument man on route 37, has resigned to enter private work in Humboldt County.

Carl M. Smith, formerly chief clerk, is now with headquarters.

Division IV Man Gets Medal.

J. W. McNeely, rodman in Division IV, has been presented with a gold medal by the people of Kenwood for bravery shown during a forest fire in that vicinity last Summer.

M. J. Sutton, resident engineer in Santa Clara County, contract 425, has resigned to accept a position with the engineering department of the city of San Francisco. G. W. Thompson is now in charge of this work.

N. H. Nelson has moved from Santa Rosa to Sonoma as resident engineer on the Beltane-Schellville paving and grading contract.

W. Aldrich, assistant resident engineer, has been transferred to Division I.

New Offices for Division V.

Division V is now finally settled in its new offices comprising the entire second floor of the Bank of Italy building, San Luis Obispo. Several large, light, airy rooms now house the staff, after six months of inconvenience dodging workmen while remodeling was under way.

Lester H. Gibson, division engineer, reports he is glad to be back home from a vacation trip that took him as far east as Boston. He returned via Jacksonville and New Orleans.

It is with regret we announce the sudden death of Mrs. Verduin, wife of J. Verduin, resident engineer in charge of bridge painting in Division V.

Woodson Makes Another Speech.

J. B. Woodson, division engineer at Fresno, gave a talk on state highways recently at a luncheon before the West Side Business Men's Club at Taft. Other Division VI news:

Austin Wonacott and W. J. Nelson, assistant resident engineers, are breaking in a couple of concrete inspectors born respectively, December 1, 1923, and January 4, 1924.

J. R. Meskimons, formerly resident engineer on the Mariposa-Yosemite work, has been transferred to headquarters.

Geo. T. Mack, assistant resident engineer at Los Banos, has been transferred to Redding, in Division II.

R. L. Beuthel, chief draftsman, has been promoted to office engineer.

W. K. Reed, resident engineer at Lost Hills, has been promoted to construction engineer on the Yosemite lateral.

Division VI.

The Briceburg convict day labor camp, on the Merced River, is attracting much attention. Representatives of the Stockton Record and the Fresno Bee visited the camp during January and both papers gave the work splendid illustrated writeups.

Division VII Notes.

The employes of Division VII presented their former chief, W. W. Patch, with a gold watch, brief case, and a substantial check upon his resignation recently as division engineer. He thanked them in a letter praising the spirit of the division.

A. N. George has been named resident engineer for the San Diego-Oceanside widening and paving job.

C. S. Grace, acting resident engineer on the Mountain Springs Grade, in San Diego County, has resigned owing to the death of his father. He will make his future home at Downey, Los Angeles County.

W. D. Eaton is serving as resident engineer on the widening job from Quail Lake to the northern boundary of Los Angeles County.

(Continued on page 11.)

Division Engineers Attend Conference



THE MEN WHO ARE BUILDING CALIFORNIA STATE HIGHWAYS.

From left to right, *top row*: A. J. Wagner, maintenance engineer, headquarters; J. C. McLeod, acting division engineer, Sacramento; H. S. Comly, acting division engineer, Dunsmuir; E. O. Sullivan, acting division engineer, San Bernardino; T. E. Stanton, assistant state highway engineer; S. V. Corteyou, acting division engineer, Los Angeles; *middle row*: J. H. Skeggs, division engineer, San Francisco; Robert M. Morton, state highway engineer; Louis Everding, highway commissioner, Arcata; Harvey M. Toy, Chairman California Highway Commission, San Francisco; Nelson T. Edwards, highway commissioner, Orange; J. B. Woodson, division engineer, Fresno; C. S. Pope, construction engineer, headquarters; F. G. Somner, division engineer, Bishop; *bottom row*: Fred J. Grumm, office engineer in charge of surveys and plans, headquarters; L. H. Gibson, division engineer, San Luis Obispo; W. F. Mixon, secretary of the commission, Woodland; G. R. Winslow, division engineer, Sacramento; T. A. Bedford, division engineer, Willits; W. S. Caruthers, assistant engineer, headquarters.

A FINE spirit of cooperation between headquarters and the chiefs of the ten divisions was in evidence at a division engineers' conference held in Sacramento January 22d and 23d when problems connected with the work in various parts of the state were discussed with the state highway engineer, the assistant engineer, and heads of various departments.

The meeting provided an opportunity for clearing up matters which could not be satisfactorily settled by correspondence and all of the engineers went home feeling that much good had been accomplished.

New System Explained.

One important matter of general interest taken up was an explanation by Chief Accountant Herman B. Weaver of the new accounting system inaugurated January 1st under which more detailed analyses of costs and overhead will be made.

The meeting also had its social side which was most

enjoyable. On the evening of the 22d the visiting engineers and the headquarters staff were the guests of the state highway commission at a dinner at the Sutter Club where serious business was mixed with good fun under the able direction of Secretary W. F. Mixon, as toastmaster.

"JUST AMONG OURSELVES"

(Continued from page 10)

Division VIII.

H. O. Ragan is resident engineer on the paving job in Imperial County. A. Achtert is his assistant.

L. M. Ranson has been acting as resident engineer on the Whitewater Wash bridge construction in Riverside County.

The work of resident engineer on the Beaumont paving job has been in charge of R. D. Spencer.

Joseph Stanton is in charge of maintenance work under way on the Barstow-Needles highway which is attracting so much favorable attention throughout southern California.

Commission Launches 1924 Program with Over \$3,000,000 in Contracts Awarded

STATE HIGHWAY FUND CONTRACTS—(Bond Funds)

Cont. No.	Di- vision	County	Route	Sec.	From	To	Miles	Type	Contractor	Estimated cost	Date of award by California Highway Commission	Contract time, days
429	VIII	Riverside	26	A	In the City of Beaumont		0.73	20'x6" Asphalt Concrete Pavement	Southwest Paving Co.	\$23,728.63	Nov. 26, 1923	60
430	VIII	Imperial	26	A	Westmoreland	4 miles West of Westmoreland	3.93	30' Grading, 18'x6" Gravel Surfacing	Pioneer Transfer Co.	39,140.00	Nov. 26, 1923	100
431	II	Shasta	3	B	Redding	Bayha	9.88	20'x6" Concrete Pavement (9" at center and edges)	Kaiser Paving Co.	438,357.69	Dec. 10, 1923	250
432	III	Nevada	38	A	Truckee	Boca	7.24	24'-26' Grading	Irey & Holden	73,536.69	Jan. 9, 1924	300
433	IV	Sonoma	51	B	Beltane	Shellville	11.50	7.2 miles Grading and Gravel Surfacing—4.5 miles 20'x6" Concrete Pavement (9" edges)	Galbraith & Janes	283,119.18	Jan. 9, 1924	250
434	II	Tehama	8	D	Across mill race, Salt Creek, Craig Creek	Salt Creek overflow, Butler Slough & New Creek		6 Concrete Bridges	McKenzie & Pollard	50,105.12	Jan. 10, 1924	300
435	VII	Orange	60	A & B	Huntington Beach	Corona Del Mar	8.2	4.7 miles 30'-40' Grading—3.5 miles 20'x6" Concrete Base (9" edges)	W. F. Beal	193,666.11	Jan. 23, 1924	200
436	V	Monterey	2	F	Across San Lorenzo Creek			Reinforced Concrete Girder Bridge	Rocca & Culetta	27,207.55	Jan. 23, 1924	275
Subtotals							41.48			\$1,129,160.97		

MOTOR VEHICLE FUND CONTRACTS—(Including Gasoline Tax Fund)

M-31	V	Monterey	2	I	Over Salinas River at Nacimiento Station			Repairs to Bridge Floor	Theo. M. Maino	\$18,129.75	Nov. 9, 1923	90
M-32	II	Siskiyou	3	C	3 miles north of Yreka	2 miles south of Hornbrook	11.60	32,340 lineal feet Guard Rail	Calvert & Calvert, Schroeder & Pierce	26,315.06	Nov. 9, 1923	100
M-33	II	Siskiyou	3	C	2 miles south of Hornbrook	Oregon Line	9.75	24'-30' Grading, 20'x6" Gravel Surface	Dunn & Baker	215,035.60	Nov. 19, 1923	150
M-34	VII	Los Angeles	4	D	Quail Lake	Northerly boundary	10.43	Grading (widening present roadway to a width of 30'-32')	Williams & Singletary	47,609.14	Dec. 17, 1923	150
M-35	X	Sacramento	4	B	Old Elk Grove	Sacramento	9.03	6.30 miles 20'x6" Concrete Pavement (9" edges) 2.73 miles 24'x6" Concrete Pavement (9" center and edges)	Kaiser Paving Co.	292,176.50	Dec. 17, 1923	200
M-36	VII	San Diego	2	A & B	San Diego	Oceanside	16.18	11.67 miles 20'x5" to 9" Concrete Slab and shoulders—4.51 miles 24'x6" Concrete Shoulders	Jahn & Bressi	449,126.87	Jan. 9, 1924	250
M-37	II	Shasta	3	B & C	Bayha	Halfway Creek	9.92	24'-26' Grading, 20'x6" Gravel Surface	Nevada Contracting Co.	506,374.98	Jan. 9, 1924	300
M-38	X	Sacramento	4	A	Southerly boundary	Railroad crossing near Galt	1.89	20'x6" Concrete Pavement (9" edges)	Kaiser Paving Co.	55,711.40	Jan. 9, 1924	90
M-39	VII	Los Angeles	2	B & C	Shonp Avenue	Westerly boundary	13.06	1.41 miles Grading—11.65 miles Concrete Shoulders and Slab	Geo. H. Oswald	401,792.81	Jan. 23, 1924	200
Subtotals							81.26			\$2,012,272.11		

BIDS RECEIVED—AWARD PENDING

IV	Santa Clara	32	B & C	Across Cedar Creek and North Fork of Pacheco Creek			Reinforced Concrete Girder Bridges	John Simpson & Co.	\$42,234.10	Pending	150	
Grand totals							122.74			\$3,183,687.18		

WITH seventeen contracts let, a total of practically \$3,150,000 in new work, the California Highway Commission has its 1924 program well under way. Bids are being opened almost weekly and a large amount of additional construction will be placed under contract within the next few months and in time for activity upon the part of

contractors during the coming season. Contracts already awarded are for work in many parts of the state from Siskiyou, on the north, to Imperial County, on the south. Five contracts are under way on the Pacific highway between Redding and the Oregon line. One of these is for paving immediately north of Redding while others cover grading, widening, straightening and

gravel surfacing. One covers the installation of guard rails. Two contracts are under way on the Imperial Valley route in Southern California where improvement of gaps on the main line is under way. TRUCKEE RIVER CONTRACT. A combination grading and paving job has been awarded on the Hunting-

ton Beach-Corona Del Mar unit on the Coast highway in Orange County and a similar award has been made for work between Beltane and Shellville, in Sonoma County. The first unit of Truckee River highway also has been placed under contract, ending the long controversy over contending routes for a primary connection with Nevada.



Division Reports Show Progress



DIVISION I.

HEADQUARTERS, WILLITS.

T. A. BEDFORD, DIVISION ENGINEER.

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

DESPITE unfavorable weather conditions during January, Division I is able to report much activity. The



T. A. BEDFORD

convict day labor camp near the mouth of the Klamath River is pushing ahead its work notwithstanding rainy weather. Extensive graveling is under way throughout the division and crushed rock also is being used to keep the road in good condition. Six Fordson tractors with road planers, recently purchased, are continually at work with interesting and satisfactory results.

Survey Ordered.

A reconnaissance survey of the territory north of Crescent City has been ordered and will be made soon to determine the location of the highway in that place and to ascertain where the Coast highway and the Grants Pass connection may best join.

A projected highway from Crescent City north to the Oregon line, along the coast, is in the California seven per cent system but has not been made a California state highway.

Plans and estimates are being prepared for paving five miles between Eureka and Arcata.

DIVISION IX.

HEADQUARTERS, BISHOP.

F. G. SOMNER, DIVISION ENGINEER.

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

IN order that headquarters might be kept in closer touch with the highway situation east of the Sierra Nevada Mountains, in Inyo and Mono counties, and maintenance in those districts more closely supervised, Division IX has been created. Headquarters were established at Bishop, 181 miles north of Mojave, October 11, 1923.

Residents of the two counties have expressed gratification at the action of the Highway Commission and the State Highway Engineer as they feel that it means closer contact with the State Highway Department in the future.

Thirteen

NEW DIVISION TEN GETS UNDER WAY—OREGON MAN IS CHIEF

THE newly-created Division X, which began functioning January 1st, is now well under way under the direction of J. C. McLeod, acting division engineer, formerly of the Oregon highway department. By the time this is in print, the division will be established in its new headquarters on the fourth floor of the new California State Life Building, Tenth and J streets, Sacramento.

Mr. McLeod, the new division chief, held a similar position in Oregon from 1918 to September, 1923, and previous to that time was resident engineer for a number of years. He had responsible charge of the expenditure of some \$10,500,000 for highways and bridges on the Oregon system in addition to handling of maintenance funds.

PIERCE TRANSFERRED.

R. E. Pierce, formerly of Division III, has been named assistant division engineer in charge of maintenance. L. E. McDougall, also of Division III, will be office engineer. W. K. Wright, another Oregon highway engineer, will be in charge of construction in the new division.

The division's equipment has been placed in charge of R. A. Watkins, formerly of the headquarters shops. C. F. Regan, from headquarters, is chief clerk.

The new division will be in charge of 742.65 miles of highway between Sacramento and the Merced County line.

The total length of state highway in the new district is approximately 311.5 miles of which 16.38 miles have been permanently surfaced.

IMPROVE TIOGA UNIT.

In Inyo County, north of Bishop, the paving of 8.33 miles with asphalt macadam was completed during 1923.

During the past year, a unit of the road between the "Devil's Punch Bowl" and Tioga Pass Junction was surfaced with gravel, converting a rutted, sand subgrade into a smooth road.

Maintenance activities on two sections of the route through Mono County were begun some time ago and those familiar with former conditions report a marked improvement in the highway.

DIVISION II.

HEADQUARTERS, DUNSMUIR.

H. S. COMLY, ACTING DIVISION ENGINEER.

Counties of Siskiyou, Modoc, Trinity, Shasta, Lassen, Tehama, and northern Plumas.

CONSTRUCTION of ten miles of paving between Redding and Bayha, in Shasta County, has been begun by the Kaiser Paving Company, contractors, who promise to complete the job by September of the present year. This pavement will be twenty feet wide and six inches thick, with thickened edges.



H. S. COMLY

Two twelve-man survey parties are staking out the next ten miles, Bayha to Halfway Creek,

which also is under contract for widening and grading, and this work will be under way in the near future.

SURFACING ROAD.

In Sacramento Canyon, four rock crushing plants have been installed and one is in operation furnishing rock for surfacing of the present road to care for the coming Summer's traffic. The division expects to have this work completed by June.

Guard rails are being installed between Weed and Sisson, warning motorists against ice on the pavement at this time of year. Studies are being made looking to the elimination of this danger.

Guard rails also are being placed in the Shasta River Canyon. The work is scheduled for completion within three months.

On the Gazelle-Yreka grading and surfacing contract, excellent progress is being made and twelve miles are now open to traffic.

RUSH GRADING JOB.

Six separate grading outfits and two concrete crews are rushing the grading from the Oregon line south for a distance of ten miles. Rock crushing plants are being installed and there is every indication that this work will be finished in time to handle the bulk of travel during the 1924 Summer season.

Grading operations on the Klamath River lateral have been transferred to a point three miles above Walker. It is expected the highway will be completed to that point by Spring.

The convict day labor camps on the Trinity lateral have been concentrated on the eight miles of this road to be built in Shasta County. The camp is located at the foot of Buckhorn Mountain, three miles from Tower House.

New snow fighting equipment is in readiness to keep open the main line to Oregon and also the Alturas lateral but the snowfall during January did not make its use necessary.

DIVISION III.

HEADQUARTERS, SACRAMENTO.

G. R. WINSLOW, DIVISION ENGINEER.

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

JANUARY marked the actual beginning of the Truckee River highway when a contract was let to Irey and Holden of Lodi for grading 7.3 miles between Truckee and Boca.



During the month, the Auburn-Colfax contract of Gorrill Brothers was completed as was the contract of the V. R. Dennis Construction Company for grading and graveling 11.89 miles on the Oroville-Willows lateral, in Glenn County.

BRIDGE READY.

The principal construction work under way in the division at the present time is the bridge across Stony Creek, in Glenn County, on the Chico-Orland highway. This contract is 85 per cent complete. Concrete approaches are being built.

In cooperation with the Western States Gas and Electric Company, concrete culverts are being built between Sportsmen's Hall and Riverton, on the Placerville route to Lake Tahoe. The road has been relocated at these points by state forces and several sharp curves eliminated.

DIVISION IV.

HEADQUARTERS, SAN FRANCISCO

JOHN H. SKEGGS, DIVISION ENGINEER.

Counties of San Francisco, Marin, Sonoma, Napa, Contra Costa, Alameda, Santa Clara, Santa Cruz, and San Mateo.

THREE important contracts have been completed in Division IV since the last bulletin report. The second unit of the Skyline Boulevard was opened to traffic December 25th as a Christmas gift to the people of San Francisco. In conjunction with this

opening was that of the Crystal Springs Dam bridge, a handsome structure of twenty girder spans, 608.02 feet long. In all, 20.96 miles of the Skyline Boulevard are now open to travel.

In Santa Clara County, a section of the Pacheco Pass highway, between Gilroy and San Felipe, 4.52 miles, also has been completed and opened to traffic. Both roads have wide grades and are surfaced with crushed rock.

Work is progressing on the extension of the widening of the Peninsula highway from San Mateo to Beresford.

CONTRACTORS AT WORK.

Contractors on the Beltane-Schellville grading and paving job, in Sonoma County, have established a construction camp and have begun the erection of three rock crushing plants to furnish aggregates for the paving work. Another crushing plant will be erected between Sonoma and Schellville.

Heavy timber structures have been erected on the Pacheco Pass road over Cedar Creek and the north fork of Pacheco Creek to care for traffic until permanent bridges can be built, bids for which were opened February 4th.

It is expected final surveys will be completed on the Skyline Boulevard shortly. Plans for initial units of the Bay Shore highway are being rushed so that work may be started at an early date.

Maintenance crews are keeping the new road into Lake County, north of Calistoga in first-class condition for travel.

DIVISION V.

HEADQUARTERS, SAN LUIS OBISPO.

L. H. GIBSON, DIVISION ENGINEER.

Counties of San Benito, Monterey, San Luis Obispo, and Santa Barbara.

CONSIDERABLE bridge maintenance and construction on the main Coast highway are now under way in Division V. D. E. Burgess has about half completed a contract for cleaning and painting ten steel bridges.

Theo. M. Maino has a contract for reflagging the Salinas River Bridge at Nacimiento, Monterey County; and a contract has just been let to Rocca and Caletti for the construction of a 240-foot concrete bridge across San Lorenzo Creek at the southern city limits of King City.

Preparation for Winter has been made on the contract of George Pollock Company on the Monterey Coast. Camp has been moved to Partington Canyon, at the mouth of which is a landing, and the contractor has purchased a 62-foot boat to make shipments from Monterey,

the nearest railroad point, obviating the necessity of battling forty miles of muddy road to reach the contract.

Forty miles to the south, the steam shovel of Blake and Heaney is working northward. It has completed ten miles of highway in San Luis Obispo County and is now one and one-half miles across the line in Monterey County. The shovel has almost a mile to go to reach Salmon Creek, terminus of the present contract.

CONNECTING ROADS.

The Granite Construction Company is pushing rapidly construction of three miles of road from San Juan to Chittenden. The rough grading is completed on almost two miles. This road connects the Santa Cruz County system with the main Coast highway at San Juan.

Reconstruction surveys are now under way south of Santa Barbara, and in the vicinity of Summerland, where a new location is being made, replacing with light curves and grades a portion of road containing many sharp curves and grades up to 8.8 per cent. Other improvements are contemplated, eliminating bad curves south of Santa Barbara.

A survey is being made of the San Juan grade, looking to its reconstruction. Radical improvements in alignment are contemplated before the new pavement is laid.

Two city lots and a residence have just been purchased in Santa Maria for a permanent maintenance station.

DIVISION VI.

HEADQUARTERS, FRESNO.

J. B. WOODSON, DIVISION ENGINEER.

Counties of Fresno, Madera, Merced, Mariposa, Kings, Tulare, and Kern, north of the Tehachapi.

EXCELLENT progress is reported by the convict day labor camp, recently established at Briceburg on the Yosemite lateral, and the placing of a second convict camp and additional steam shovels at the upper end of this job is now under consideration.

Another highway of interest to national park enthusiasts is the six-mile unit just completed by the Nevada Contracting Company, between Three Rivers and the Sequoia National Park boundary, in Tulare County.

This road is graded along a new right of way, following the Kaweah River, and is surfaced with five inches of decomposed granite. High praise for the road was expressed by Stephen T. Mather, superintendent of national parks, who inspected it immediately after its opening.

COALINGA WORK DONE.

C. Miles has completed a grading contract between Parkfield Junction and Coalinga, seven miles, on the Sierra to the Sea highway. Fresno County has completed four concrete bridges across Waltham Creek on this route.

Extensive curve widening is now under way on the San Joaquin Valley trunk line between Goshen Junction and Bakersfield.

On the Visalia-Sequoia highway, a steam shovel is cutting away dangerous points and widening curves. This road originally was built by Tulare County and is on poor alignment. When completed it will be the main entrance to the Giant Forest.

CAMP WRITTEN UP.

The Briceburg convict camp is attracting much attention, due, perhaps, to its accessibility. Special writers from the Stockton Record and the Fresno Bee already have visited the camp and given it excellent illustrated write ups.

DIVISION VII.

HEADQUARTERS, LOS ANGELES.
S. V. CORTELYOU,
ACTING DIVISION ENGINEER.

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

LINE changes to be made between San Diego and Oceanside, under the widening and repaving contract recently awarded Jahn and Bressi of Los Angeles, will find approval among motorists of southern California. Curves and several grade crossings will be eliminated.

Rights of way are being secured between Corona Del Mar and Laguna Beach, in Orange County, for the Coast highway and plans are in preparation for construction of this unit. Plans also are under way for a reinforced concrete addition to the westerly end of the bridge across Ventura River, in Ventura County.

It is expected that bids will be called for in the near future for the rebuilding of the Rincon causeways, west of Ventura, on the Coast route. Plans are practically complete for this improvement.

Work is well under way on the widening of the grade between Quail Lake and the northerly boundary of Los Angeles County. Williams and Singletary of Colton have this contract.

H. E. Cox of Pasadena has completed the paving of 1000 feet of the approach to the bridge over Santa Clara River and the installation of slope paving at this point on the Saugus route in Los Angeles County.

COAST TOWNS BENEFITED.

Newport and the Balboa Bay section will be benefited greatly by the new link in the Coast highway authorized by the contract awarded, recently, to W. F. Beal of Brawley. At present there is no coast road connecting these two points and completion of this unit will make a direct connection.

The new Topango Canyon bridge, built by Los Angeles County, has been opened to traffic.

Arrangements have been made to wire the Newhall Tunnel for lighting purposes as authorized in a recent maintenance order.

Dismantling of the old San Gabriel River bridge has been completed by maintenance crews. This was deemed necessary as a measure of protection for the new concrete structure recently open to traffic.

Work on the foreman's cottage and combination garage and bunkhouse for the Saugus maintenance station, in Los Angeles County, has been completed.

The site has been cleared for the erection of the new division shops at Lankershim for which an appropriation of \$27,000 from maintenance funds has been made.

DIVISION VIII.

HEADQUARTERS, SAN BERNARDINO.
E. Q. SULLIVAN,
ACTING DIVISION ENGINEER.

Counties of San Bernardino, Riverside, and Imperial.

WINTER tourists coming into California, via the Imperial Valley, are happy when they strike the paving job of George H. Oswald, Imperial 27-A, which undoubtedly will be finished by the time this is in print. Farmers in the vicinity also have high praise for the work.

The Pioneer Transfer Company is at work grading the four miles between the concrete highway and Westmoreland, the contract for which was awarded the company recently. Gravel surface will be laid and drainage conditions greatly improved.

The bridge across Whitewater Wash, ten miles east of Banning, in Riverside County, is nearing completion and paving in the town of Beaumont also is about finished. Both improvements will be greatly appreciated by the traveling public.

MAINTENANCE WORK.

Despite several heavy snow storms, the Crest Route to the mountain resorts in the San Bernardino mountains has been kept open for travel by two maintenance crews.

Fordson tractors equipped with large graders and scarifier attachments are making a fine showing on the Barstow-Needles road which is rapidly becoming one of the finest dirt roads in the south. A survey party is now working east from Amboy.

DIVISION X.

HEADQUARTERS, SACRAMENTO
J. C. McLEOD,
ACTING DIVISION ENGINEER

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

WORK has been started on the reconstruction of the upper Stockton road, in Sacramento County, on the two



J. C. McLeod

contracts for concrete paving held by the Kaiser Paving Company. This is an improvement long desired by the people of Sacramento and Stockton. The first contract is 1.9 miles in length and extends from the southerly boundary of Sacramento County through

Galt to the Southern Pacific Railway crossing on the north. Equipment is on the ground.

The 9.0 mile section between Old Elk Grove and Sacramento is also under contract and will be completed during the 1924 season. C. M. Butts is resident engineer on these contracts.

Gravel macadam shoulders from the westerly boundary of San Joaquin County to Banta, 8.1 miles, are nearing completion. The added safety of the additional width was noted during recent wet weather.

Maintenance Under Way.

The following jobs have been completed or are under way by state forces, financed from the Motor Vehicle Fund:

Widening between Shawmut Grade and Priest's Hotel on the Big Oak Flat road. An additional allotment of \$2,000 has been granted and work will be continued to include parts of the Shawmut Grade.

To make a better surface on the unpaved unit between Keystone and Jamestown, on the Sonora Pass road, \$7,000 has been allotted for grade surfacing.

Negotiations are under way for a maintenance camp site at Chinese Camp. Erection of storage and bunk house buildings for winter quarters on the Big Oak Flat road at this point is planned.

Repairs to the Mokelumne River bridge in San Joaquin County are under way.

STATE OF CALIFORNIA
 CALIFORNIA HIGHWAY COMMISSION
 MAP SHOWING
 STATE HIGHWAY SYSTEM

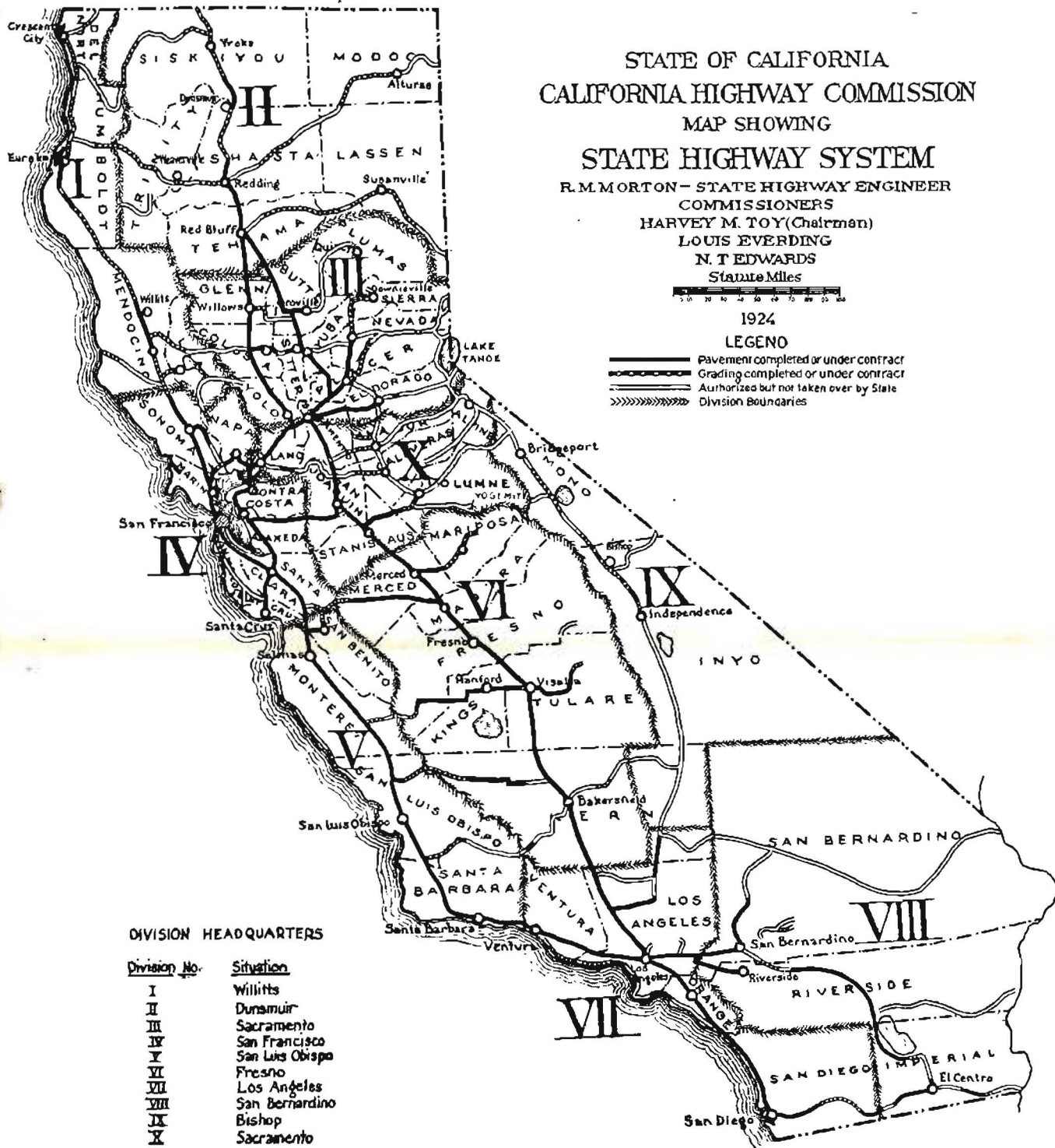
R. M. MORTON - STATE HIGHWAY ENGINEER
 COMMISSIONERS
 HARVEY M. TOY (Chairman)
 LOUIS EVERDING
 N. T. EDWARDS
 State Miles



1924

LEGEND

- Pavement completed or under contract
- Grading completed or under contract
- Authorized but not taken over by State
- Division Boundaries



DIVISION HEADQUARTERS

Division No.	Situation
I	Willits
II	Dunsmuir
III	Sacramento
IV	San Francisco
V	San Luis Obispo
VI	Fresno
VII	Los Angeles
VIII	San Bernardino
IX	Bishop
X	Sacramento

Map showing progress of paving and other improvements on the California state highway system, and also boundary lines of newly-created divisions.