

# CALIFORNIA HIGHWAYS

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SWITCHBACKS ON THE WATERMAN GRADE—A view on the state highway leading from San Bernardino to Arrowhead and Big Bear lakes in the San Bernardino Mountains—one of the heavily traveled recreational roads of the state. Originally built as a toll road, negotiations are now under way looking to a survey for its reconstruction on easier grades as a forest highway project. (Div. VIII.)

*In this Issue:* "WHAT I GOT OUT OF THE SAN FRANCISCO MEETING."

Happy New Year

# California Highway Department

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## HIGHWAY CONVENTION INSPIRATION TO WEST



### AMERICAN ASSOCIATION ENDORSES NEEDED LEGISLATION

THE inspiration of the tenth annual meeting of the American Association of State Highway Officials, which came to a successful conclusion in San Francisco last month, will have a lasting influence on western highway building. California engineers and those of nearby states returned to their tasks with a new vision of the great undertaking in which they are engaged, confident of an appreciation of their problems by other sections of the country.

In point of attendance, the convention, the first to be held west of the Rockies, was the largest in the history of the association. Forty states and the Territory of Hawaii were represented, registered delegates numbering nearly 300, including the entire staff of the Bureau of Public Roads.

#### Papers to be Published.

CALIFORNIA HIGHWAYS will not endeavor to review the important papers presented, as these will be published in full in the official organ of the association. Suffice it is to say, that contact with the leading highway builders of America was an invaluable opportunity of which our engineers took full advantage. A brief summary of their impressions will be found elsewhere in this issue.

Every effort was made to make the stay of the visitors pleasurable. Prior to the opening of the convention, a large number were met in Sacramento and taken to San Francisco in automobiles, and at its conclusion sixty of those attending, from twenty-four states and Hawaii, accepted the invitation to make a two-day motor trip from San Francisco to Los Angeles as guests of the California Highway Department. The entertainment provided by San Francisco during the four days of the convention received most hearty commendation.

The paper presented by State Highway Engineer R. M. Morton on the use of convict labor in highway building in California was received with marked attention, and the discussion of "Needed Highway Legislation for Public Land States," by Chairman Harvey M. Toy, resulted in the unanimous adoption of a resolution expressing the desire of the association for the enactment into law of the Colton bill now pending in congress.

This measure provides for the removal of the limitation per mile on federal aid and 100 per cent federal aid for sparsely-settled public land states. Its approval by congress is urgently desired by the west.

Other important resolutions adopted urged appropriations for roads within the national parks; continuation of the regular federal aid appropriations; working out of a plan for uniform marking of all transcontinental highways; and an increase in the salary of the Chief of the Bureau of Public Roads to not less than \$12,000 per year.

#### Officers Chosen.

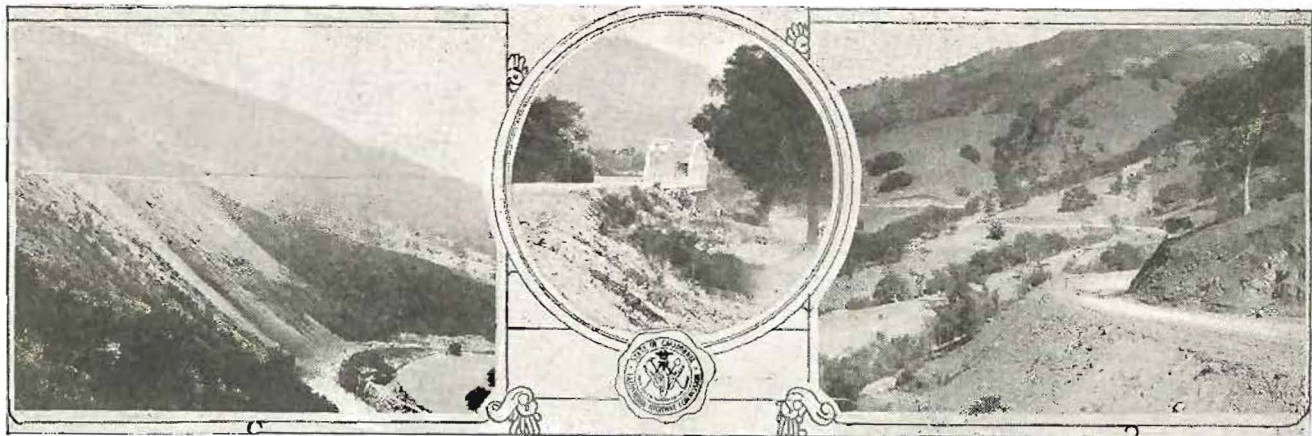
The following officers were elected:

F. F. Rogers, Chairman Michigan Highway Commission, President; Frank Page, Chairman North Carolina Highway Commission, Vice President; L. D. Blauvelt, Chief Highway Engineer, Colorado, Secretary; Frank T. Sheets, Chief Highway Engineer, Illinois, Treasurer.

Board of Directors, five-year term—Thos. H. MacDonald, Chief Bureau of Public Roads, Washington, D. C.; C. M. Babcock, Highway Commissioner, Minnesota.

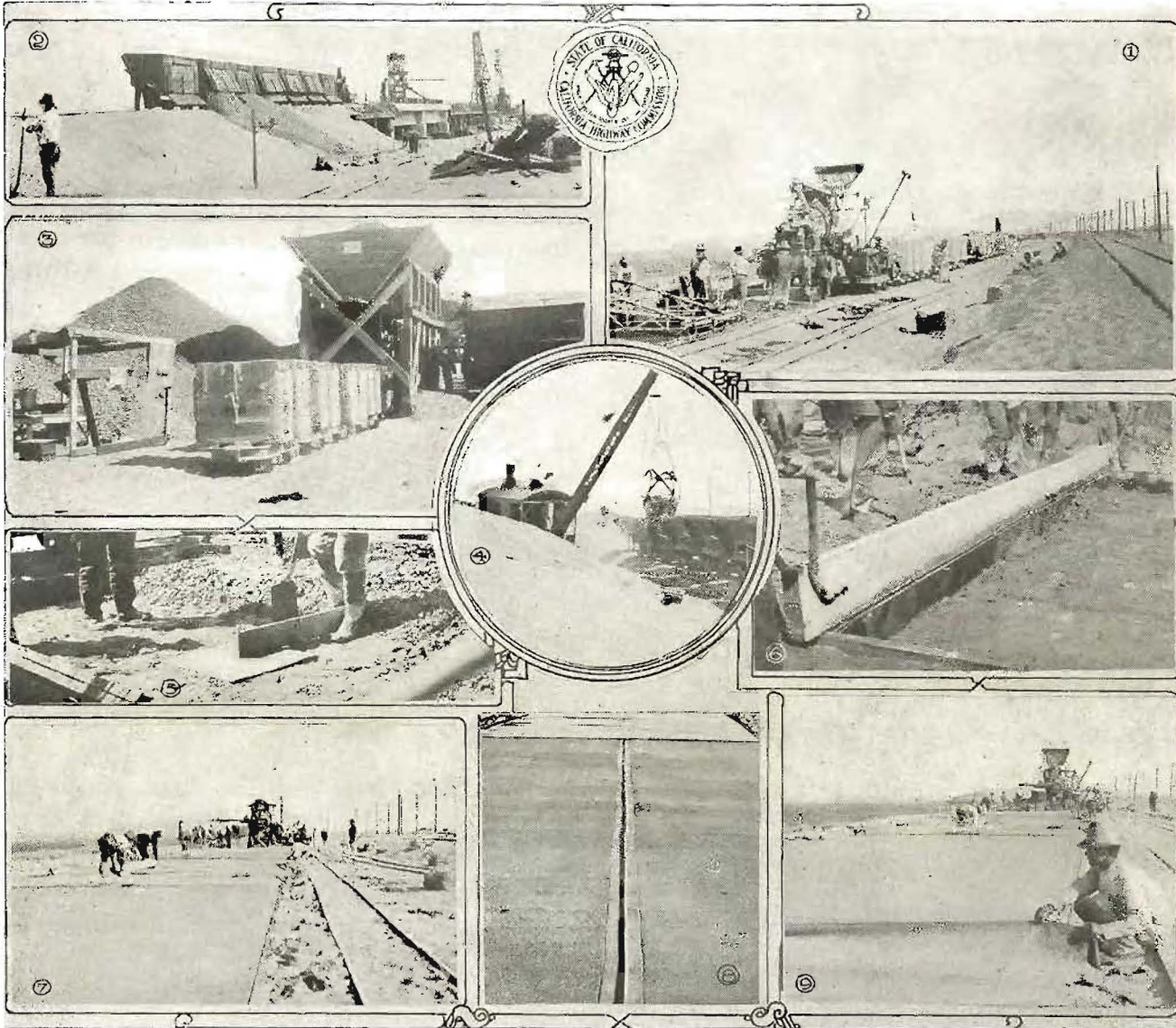
Director, two-year term—F. R. White, Chief Highway Engineer, Iowa.

Mr. Toy remains on the Board of Directors as one of the representatives of the west, having been elected to a five-year term at the New Orleans Convention a year ago.



CUYAMA FOREST HIGHWAY PROJECT—Views on the section of the Cuyama state lateral in Santa Barbara and San Luis Obispo counties under construction by the Bureau of Public Roads as a forest highway project. See article on page ten.

BUILDING THE HIGHWAY ALONG THE ORANGE COUNTY COAST



CONSTRUCTION SCENES ON THE HUNTINGTON BEACH-NEWPORT SECTION OF THE OXNARD-SAN JUAN CAPISTRANO ROUTE—(1) Smith paver equipped with power derrick for unloading aggregate boxes from industrial railroad; (2) train of side dump cars depositing material for embankment adjacent to new Santa Ana River bridge; (3) Industrial cars with aggregate boxes being loaded from proportioning bins; (4) Erie shovel with clamshell bucket loading dump cars with material for embankments; (5) placing experimental precast concrete block under intersection of longitudinal center joint and the transverse expansion joint. Block buried in subgrade with top flush with top of subgrade and covered with roofing paper to prevent bond with bottom of concrete slab; (6) placing expansion joint before shutting down at noon. Expansion header accurately set; (7) longitudinal float and belt in use to finish concrete surface; (8) completed longitudinal center joint; (9) strips of burlap kept moist used to protect green concrete pavement.

NEW COAST HIGHWAY BREAKS TRAIL ALONG THE OCEAN FROM HUNTINGTON BEACH TO NEWPORT

By C. P. MONTGOMERY, Resident Engineer.

A **S**PLENDID new highway where none existed before between Huntington Beach and Newport, on the Orange County coast, soon will be open to motor traffic. Completion of the bridge across Santa Ana River, now under construction, will permit travel over the three and a half miles of new pavement recently completed.

This unit of paving, sublet to H. H. Peterson, is a part of the Huntington Beach-Corona Del Mar contract of

W. F. Beal. Grading has been completed on the unpaved portion, which is also ready for traffic.

Commencing at Huntington Beach, the new state highway parallels the Pacific Electric and Southern Pacific railroads along the ocean beach, crosses the Santa Ana River and runs along the base of the bluff past Newport to Promontory Point where it climbs eighty feet to the picturesque cliffs overlooking beautiful Newport Bay, and extends on southward through Corona Del Mar.

**Sand is Construction Problem.**

Breaking trail for a new highway through sand dunes along the ocean front rendered the use of motor trucks impossible, and necessitated the installation of an industrial railway to haul materials and supplies. At Macklin Siding, a supply base and central proportioning plant were established. Tracks for the industrial railroad were extended in both directions. Fordson tractors were converted into locomotives to haul the strings of side dump cars loaded with embankment material, or industrial cars carrying wooden batch boxes of proportioned aggregate for the concrete pavement. Material was loaded with an Erie shovel provided with a clamshell bucket.

**Methods of Construction.**

Headers were set after the grading was completed and the subgrade shaped and rolled. A compact base was secured for the concrete pavement by flooding the subgrade with water, soaking the sand to a depth of about 18 inches.

The concrete pavement was 20 feet wide, 6 inches thick in the middle, and thickened to 9 inches at the outer edge. It was laid full width, with a longitudinal center joint as well as transverse expansion joints.

The center joint was made with a ½-inch by 6-inch pine board held at each end by two 1-inch by 2-inch stakes driven to within one and one-half inches of the ground and nailed through both stakes and board. Boards were held rigid by a channel iron fitting over the top and held in place until concrete was poured on each side for almost the entire length of the wooden strip, the proper center of which was done with a "two by four" with a bracket to fit over the header and a lug to fit in a hole in the channel iron.

The grade of longitudinal strips was secured by stretching a string over 1-inch blocks held on the headers, to conform to the crown of the pavement.

Expansion joints, placed at noon and night, were about 250 feet apart and were formed by header boards, 2½ inches at the top tapering to 2 inches at the bottom, cut to conform with the crown of the pavement and well oiled. They were removed in from three to five hours. To insure easy riding joints, all expansion headers were blocked up so that the top fitted perfectly with a hand tamper, corresponding to the crown of the tamper blade on the Lakewood mechanical tamper.

For the first three-quarters of a mile south of Huntington Beach, standard expansion joints corresponding to the cross-section of the pavement were used with ½-inch reinforcing steel rods placed 2 inches from the surface. This was done in each of the four corners formed by the intersection of the center longitudinal joint with the transverse expansion joint. Each corner was reinforced with an 8-foot bar bent 90 degrees at the center and two 4-foot rods, wired together in the form of a fan.

**New Experiment Tried.**

Along a short stretch of pavement, 2-feet by 2-feet by 6-inch precast concrete blocks were placed under the intersection of the center joint and the expansion joints to support the four corners. These blocks were buried in the subgrade flush with the top of the subgrade and covered with a piece of roofing paper to prevent a bond with the pavement slab.

Most of the expansion joints were a full 9 inches deep, with the pavement thickness tapering back to 6 inches in 3 feet on both sides of the joint. Here the four corners were reinforced as described above. All expansion joints were filled with a mixture of sawdust and asphalt.

Concrete aggregate was shipped from the Orange County Rock Company to Macklin Spur, and unloaded directly from the cars to the bunkers.

**Aggregates Measured.**

Aggregate for each batch was measured in a box at the bottom of the bunkers and loaded into boxes on Kippel batch box cars. As trains passed the cement cars, the correct number of sacks of cement were loaded on each batch box.

Tamping of concrete was done with a Lakewood mechanical tamper. Finishing was accomplished with a roller, a 16-foot longitudinal float operated from two bridges, and two canvas belts. The mixer began at 7.00 a.m. and quit at 3.30 p.m. to allow finishers time to keep off green concrete with the finishing belt and still complete their work before dark. An average of about 500 lineal feet of pavement per day was laid.

This construction is on a unit of the Oxnard-San Juan Capistrano route authorized by the bond issue of 1919.

**Reconstruction and Maintenance**

**Income for 1924, \$8,825,101.67**

THE income of the California Highway Commission for reconstruction and maintenance received during the calendar year 1924 totaled \$8,825,101.67. This represents the state's half of the motor vehicle license fees and the gasoline tax, divided as follows:

License fees, \$2,762,028.92; gasoline tax, \$6,063,072.75.

The gasoline tax law went into effect September 30, 1923. Distribution of the proceeds for the first twelve months was made in May and November of 1924. The collections for the last quarter of 1924 will be received by the commission in May, 1925.

In February, 1925, the motor vehicle fees for the last half of 1924 will be distributed and it is expected the state's share will be approximately \$564,000.

**Counties Get Equal Amount.**

An amount equal to that received by the state from the motor vehicle fees and the gasoline tax has been divided among the several counties in proportion to the number of registered automobiles.

According to a statement of the Controller, rebates authorized by the gasoline tax law amounted to \$842,022 during the first year the act was in effect. The Attorney General reports that information in his hands shows \$769,744.48 in gasoline taxes delinquent. Ultimate collection of this sum depends upon the decision rendered in suits now pending in the courts for the adjudication of the law.

**Use Limited.**

The funds received by the State Highway Commission from the sources outlined above are reserved by law for maintenance and reconstruction of existing state highways and can not be used for new construction.

## “What I Got Out of the San Francisco Meeting”

THE CALIFORNIA HIGHWAY DEPARTMENT was represented at the San Francisco convention of the American Association of State Highway Officials by the three members of the commission, the attorney and secretary, the state highway engineer and his assistant, the heads of all departments from Sacramento and the ten division engineers and some of their assistants.

Through the Bulletin, Mr. Morton asked those attending to prepare a brief outline of their impressions of the gathering and the good accomplished. These interesting statements are presented below:

**HARVEY M. TOY, Chairman, California Highway Commission**—Programs of other sections of the country, as outlined at the convention, make certain that California must speed up highway construction or be outdistanced by other states, many of which are adopting the gasoline tax method of financing. Eastern officials were given first-hand information concerning the problems of western states, with a result that they have a more kindly attitude toward them. I appreciated the opportunity to discuss administrative problems with high officials of other states.

**LOUIS EVERDING, Highway Commissioner**—Much good was accomplished by the convention in San Francisco. The exchange of ideas and information between our engineers and those of other states can not help but be beneficial to them and to California. Personally, the opportunity I had to meet visiting commissioners was appreciated more than words can express.

**NELSON T. EDWARDS, Highway Commissioner**—The association meetings provide an opportunity for nation-wide cooperation among the states on important matters of national highway legislation.

**T. E. STANTON, Assistant State Highway Engineer**—I believe the value of my services to California have been increased by contact with men of national prominence in highway work, who have risen to their positions by virtue of their ability to handle, in a broad and able manner, the many problems continually confronting the highway executive. The opportunity to discuss traffic problems of highway transport directly with officials of the Bureau of Public Roads was of great value, especially in view of the fact that California is beginning to face serious problems similar to those of the east.

**W. F. MIXON, Secretary, California Highway Commission**—My vision has been broadened by the week of contact with men of intellect, vision, energy and determination—men who have faith in one another and in the ultimate completion in the United States of a great network of improved highways.

**PAUL F. FRATESSA, Attorney, California Highway Commission**—I learned that the \$200 annual dues which California pays to the association is one of the best investments the state makes. Through these meetings, the states are enabled to act as a unit in securing federal appropriations and other favorable highway legislation.

**FRED J. GRUMM, Engineer in charge of Surveys and Plans**—The meeting was an invaluable opportunity to hear men prominent in highway work discuss their problems and efforts to meet them. It eliminates delay and waste in highway building by providing the means for disseminating reliable information relative to the experience of the several states.

**C. S. POPE, Construction Engineer**—The most interesting feature of the San Francisco meeting was the contact with leading engineers of other states and the Bureau of Public Roads. Discussion in the Committee on Design convinces me that, in the construction and design of pavements, California ranks with most eastern states. Some give more thought to theoretical considerations, but in practical construction we are on a par with the others. In the treatment of soils, I found no one with ideas in advance of what California is doing. Some of the papers did not receive the discussion to which they were entitled, and in the future more time should be given to general discussions from the floor. My proposal that contractors be paid on the basis of strength of concrete, as well as volume, did not arouse objections, and some seemed to think it might be a good idea.

**G. R. WINSLOW, Maintenance Engineer**—A better understanding of the means and methods of overcoming maintenance difficulties in other states was what I got out of the San Francisco meeting. This first-hand knowledge was acquired by personal contact and interviews with visiting engineers from other sections of the country.

**R. H. STALNAKER, Equipment Engineer**—What I got out of the San Francisco meeting was a realization of the splendid spirit of cooperation existing between the states and the Bureau of Public Roads, and a fuller appreciation of the importance of the great work in which we are all engaged—the building of the highways of the nation. I was particularly impressed with Mr. MacDonald's presentation of the need of uniform traffic laws, and the discussion of mountain road construction by Dr. Hewes.

**HARLAN D. MILLER, Bridge Engineer**—A serious consideration of bridge design and construction for three days prior to the convention by men who are among the foremost bridge experts of the country brought the realization that California bridges are equal to or better than those of other states. Many matters were argued at length in the committee, and at the conclusion, the chief bridge engineer of the Bureau of Public Roads said that he was glad to know that California's ideas regarding bridges were so nearly identical with his own. I gained confidence in our own bridge practice, and came away from the meeting with a feeling of pride in California state highway bridges, as well as much valuable information gained from other states.

**C. L. McKESSON, Research Engineer**—The greatest value of the meeting was its tendency to give a broader viewpoint. Problems of engineering can not be solved in any one state, and real forward progress must come from the cooperative effort of all engineers, utilizing every possible means for interchange of ideas and experiences, and results of experiments.

The technical discussion developed that in concrete pavements the practice is rapidly standardizing on the thickened



**CALIFORNIA DELEGATION AT THE SAN FRANCISCO MEETING OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS**—Standing, left to right—Ben H. Milliken, Superintendent of Convict Road Camps; C. L. McKesson, Research Engineer; C. S. Pope, Construction Engineer; Fred J. Grumm, Engineer in charge of Surveys and Plans; Harlan D. Miller, Bridge Engineer; W. F. Mixon, Secretary, California Highway Commission; Louis Everding, Highway Commissioner, Arcata; Harvey M. Toy, Chairman, California Highway Commission, San Francisco; Nelson T. Edwards, Highway Commissioner, Orange; R. M. Morton, State Highway Engineer; T. E. Stanton, Assistant State Highway Engineer; Paul F. Fratessa, Attorney, California Highway Commission, San Francisco; Herman D. Weaver, Chief Accountant; R. H. Stalnaker, Equipment Engineer; C. R. Winslow, Maintenance Engineer; Frank E. Durkee, Bulletin Editor. Kneeling, left to right—T. A. Bedford, Division Engineer (Div. I), Willits; H. S. Comly, Division Engineer (Div. II), Redding; F. W. Haselwood, Acting Division Engineer (Div. III), Sacramento; J. H. Skeggs, Division Engineer (Div. IV), San Francisco; L. H. Gibson, Division Engineer (Div. V), San Luis Obispo; J. B. Woodson, Division Engineer (Div. VI), Fresno; S. V. Cortelyou, Division Engineer (Div. VII), Los Angeles; E. Q. Sullivan, Acting Division Engineer (Div. VIII), San Bernardino; F. G. Somner, Division Engineer (Div. IX), Bishop; J. C. McLeod, Division Engineer (Div. X), Sacramento.

edge type, now in use in California. Twenty-four states out of thirty-one reporting are using the thickened edge. The day of haphazard concrete is gone forever, and the time is nearer when Mr. Pope's dream of concrete bought and paid for on a strength basis will be realized.

Several days spent with engineers of the Bureau of Public Roads engaged in research investigations was of the greatest value. There was an opportunity to check California methods, progress and personnel against those of other states and my conclusion is that our state, in the rapidly developing science of road building, is fully abreast of the times. But we must keep on our toes if we are to stay in the front rank.

**HERMAN B. WEAVER, Chief Accountant**—The convention gave me an opportunity to get a bird's-eye view of the road building situation in the United States. The great problem everywhere, as in California, is the question of finance. To learn about conditions in other states makes one realize that California is fortunate; we want more roads, but we are better able to pay for them. An interesting proposal was the one for numbering transcontinental highways.

**BEN H. MILLIKEN, Superintendent of Convict Road Camps**—After hearing the splendid talk by Mr. Morton, our chief engineer, on the use of convict labor in California, and the discussion by O. T. Reedy of the Colorado highway commission, which followed, I am more than ever convinced that California is the leading state in the use of prisoners in road building. The fact that in California the highway engineers are on the job until the road is finished, and the pay feature, make for the success of our system.

**T. A. BEDFORD, Division Engineer, Willits**—The paper of R. W. Crum of Iowa on the weighing of concrete aggregate opened my eyes to a method which seems to offer superior results. The paper of James Allen, Washington State Highway Engineer, on problems of mountain road construction, was particularly interesting, and drove home the feeling that principles of aesthetics often must be sacrificed in designing roads to safely carry a large volume of traffic.

**H. S. COMLY, Division Engineer, Redding**—The most striking and interesting feature to me was the report of the Committee on Highway Transport. The collection of statistical data and research along these lines should furnish logical information on which to base every step in the building of a highway to serve the actual economic needs of the community. Highway engineering is still young, and we have little economic data on which to base the design, administration or financing of highways. Data on highway transport, which the Bureau of Public Roads is now collecting in the east, should be expanded to cover all sections of the country and correlated and digested into orderly deductions. Such information is particularly desirable in California at the present time when so much reconstruction of highways is in prospect.

Other interesting points were brought out in the paper and discussion on tests of concrete aggregates, particularly regarding the effect of the moisture content in sand, and the weighing of aggregates. The latter seems desirable for many reasons, and the paper read at the meeting clearly brought out these points and demonstrated the practicability of this method.

**F. W. HASELWOOD, Division Engineer, Sacramento**—The meeting offered an opportunity for forming a personal acquaintance with recognized leaders in the field of highway building. The formal meetings, with technical papers and discussions, revealed the fact that a great deal of concentrated and clear thinking is being applied to the problem of highway construction. Highway engineering is still in a stage of rapid transition, but certain well-defined principles are being developed. The engineer must be continually on the alert if he wishes to keep up with his profession, and such meetings offer opportunity for gauging the advances that have been made. Many interesting facts were brought out in the committee meetings.

**J. H. SKEGGS, Division Engineer, San Francisco**—I was most impressed by the unison of purpose, of steadfast devotion to practical, technical and economic development of

(Continued on page 11.)

# Department Purchases Cover Wide Field

By LOWELL R. SMITH, Purchasing Agent, California Highway Commission.

**M**AKING the purchases for so large an undertaking as the construction of the California state highway system, extending as it does over thousands of miles, is no small undertaking. Probably in no other department of the commission's activities is there greater opportunity for economic handling of public funds.



LOWELL R. SMITH

Since the reorganization of the highway department, authorized by the legislature of 1923, the purchasing agent of the highway commission has been relieved of the duty of making purchases for the Divisions of Architecture, Engineering and Irrigation, Water Rights, and Land Settlement, now grouped in the Department of Public Works. This change has made possible a concentration of

effort and a more efficient handling of highway purchases.

### Distributed Over State.

The latter now total slightly more than \$2,000,000 annually and cover thousands of items involving business transactions in hundreds of cities and towns up and down the state. They necessitate familiarity with freight rates, a study of the market, and close cooperation with other department heads within the organization to insure the greatest value per dollar expended.

The California Highway Commission operates, on maintenance and day labor work, a fleet of approximately twelve hundred motor trucks and passenger cars, in addition to gasoline tractor equipment, shovel equipment, etc. For this equipment the yearly purchases of gasoline, oil and grease amount to \$380,000. In point of money value this is the largest single item purchased by the commission. This department executes price agreements yearly with the different oil companies in the state for lubricating oil and grease. The base price paid for lubricating oils under these price agreements is 31 cents per gallon. On gasoline the commission is now securing 3 cents off the market price. The yearly tire bill for trucks and passenger cars is \$105,000.

The next item purchased in point of money value is major equipment. During the biennium of June 30, 1922, to June 30, 1924, there was expended for motor vehicle equipment \$182,283.95. The greater portion of this expenditure represents replacement of vehicles worn out in service. The purchase of other road building equipment, exclusive of motor vehicles, during the same period, was \$370,106.59.

### Machinery Big Item.

The buying of road building equipment for the commission covers a wide field, including such items as road graders, rock crushers, power shovels, tractors, air compressors, snow plows, asphalt heating equipment, road drags, mowing machines, concrete mixers, scarifiers, wagon loaders, etc.

This department works in close touch with the Equipment Department in the purchase of road building machinery, as the latter department is responsible for the maintenance and

upkeep of such machinery, maintains a thorough system of inspection, and at all times is in close touch with the wants and needs of the various divisions throughout the state.

Perhaps the most interesting single purchase of road building equipment during the last biennium, although not exceeding some other purchases in value, was the purchase of thirty-four road graders. This purchase was made at the direction of the state highway engineer in an effort to systematize grader purchases and to effect as much of a saving as possible by purchasing the yearly requirements of graders at one time rather than piece-meal throughout the year.

### Saving on Graders.

An approximate saving of 15 per cent was made by purchasing the grader requirements in this manner. At that time, in addition to the purchase of thirty-four graders of one make, a single grader of each of the competitive bidders was purchased for purpose of trial and comparison.

The purchase of repair parts for the maintenance of equipment is also a large item. For motor vehicle equipment, staple items in wholesale lots are purchased and stocked. These purchases include such items as spark plugs, bought in lots of from 4000 to 5000; horns, fan belts, magnetos, and in fact all items where a saving can be effected by quantity purchases.

This department formerly purchased all road building materials for contract work as well as for maintenance and day labor work. Early in 1923 the state highway engineer established a policy under which contractors furnish all road building materials with the exception of corrugated metal pipe for culverts. This reduced considerably the purchase of road building materials, although the department is still purchasing large amounts of rock, sand, cement, asphalt, etc., for day labor and maintenance work.

Last year's purchases of rock and sand amounted to \$162,000; asphalt \$50,000; cement \$50,000; culvert pipe \$112,000; and calcium chloride \$51,000. The larger portion of the culvert pipe purchased was for contract work.

### Culvert Pipe Purchases.

Below is given a tabulation of culvert pipe purchases since the beginning of highway construction in 1913:

| Year                   | Amount of culvert pipe purchased |
|------------------------|----------------------------------|
| 1913                   | \$1,157 81                       |
| 1914                   | 98,031 82                        |
| 1915                   | 71,974 77                        |
| 1916                   | 22,604 81                        |
| 1917                   | 49,969 65                        |
| 1918                   | 75,340 47                        |
| 1919                   | 63,759 79                        |
| 1920                   | 50,639 11                        |
| 1921                   | 107,239 86                       |
| 1922                   | 116,558 69                       |
| 1923                   | 98,114 05                        |
| 1924 (to July 1, 1924) | 63,411 82                        |

Total culvert purchases to July 1, 1924..... \$818,802 65

Other large yearly purchases of supplies and materials consist of explosives, approximately \$100,000; hardware,



approximately \$75,000; engineering supplies and equipment, \$25,000; paints, \$20,000; plumbing supplies, \$22,000; electrical materials, \$5,000; and lumber, \$50,000.

**Convict Purchases Interesting.**

Among the interesting phases of the purchasing is that done for the convict labor camps. The Purchasing Department works in close touch with the superintendent of these camps in making purchases for them so that no opportunity will be overlooked in keeping these camps on the most economical basis. A wide diversity of wants is met for the maintenance of the convict labor camps, some of the major items purchased yearly being as follows: groceries, \$150,000; clothing, approximately \$25,000; and tobacco, from \$8,000 to \$9,000. These items are charged to the prisoners and paid for by them out of their daily wage allowance.

The Purchasing Department keeps in close touch with all other departments of the commission, including the Construction Department, Maintenance Department and the Accounting Department. In the expenditure of such large sums of money, it is of course necessary that the greatest care be exercised on every purchase, and contact with the various departments aids this department in making its purchases on the most economical basis possible. Close relationship to other departments, as outlined above, gives the purchasing agent a better insight into the needs of all phases of the Commission's work.

**Competitive Bidding the Rule.**

Competitive bids are always asked, except for such items as repair parts for machinery where competition can not be had, and in some cases of minor supplies and occasional emergency where delay would be detrimental to the progress of the work. Purchases without competition are kept at a minimum.

The Purchasing Department keeps a complete, current set

of railroad tariffs, and checks all freight bills, as well as prices and terms on all invoices covered by purchase orders. The number of such orders issued yearly to handle the requirements of the California Highway Commission approximates 20,000.

Costs of road construction materials are furnished to the Engineering Department for use in preparing estimates of cost of proposed construction work.

In addition to the purchasing the department also handles the sale of surplus, obsolete and junk equipment and supplies.

The work is handled by the purchasing agent, assistant purchasing agent, a clerk and from three to five stenographers.

**BIENNIAL REPORT READY SOON**

The Biennial Report of the California Highway Commission, covering the fiscal period June 30, 1922, to June 30, 1924, has been filed with Governor Friend Wm. Richardson and printed copies will be off the press about January 1st. The statement of State Highway Engineer R. M. Morton to the commission forms a part of the report, which also contains financial and other data covering state highway construction from date of the first bond issue.

Motor Cop—"Hey, where are you going? Don't you know this is a one way street?"

Abe (in new car)—"Vell, I'm only going von vay, ain't I?"

Recently a rancher of Sonoma County requested from Division IV a permit to install a 15 corrugated metal pipe under the driveway leading to his ranch house. The rancher, however, failed to put the inch mark after the 15.

One of the division's fair stenographers in reading the request preparatory to writing the permit gained a rather different impression, whereupon she informed the division engineer:

"I have a request for a permit for fifteen corrugated metal culverts under a driveway—that sure is some driveway, isn't it."

We'll say that's *some* driveway.



ALONG THE SOUTHERN COAST—View of the state highway north of Santa Monica, Los Angeles County, a part of the Oxnard-San Juan Capistrano route. This wonderfully scenic road is planned to relieve traffic in the congested section around Los Angeles. Its construction is going steadily forward.

## Gasoline Tax to Make Possible Improved Sacramento Entrance

THE fruition of a long cherished hope for an improved highway entrance on the north is about to be realized by Sacramento. Thanks to the last legislature for the passage of the gasoline tax law, the State Highway Commission is in a position to announce that construction will be undertaken in the near future on the subways under the tracks of the Sacramento Northern and Western Pacific railways. A ground level road will follow and the present dilapidated wooden trestle will be removed.

Proceedings initiated by the highway commission before the State Railroad Commission resulted in a decision assessing 50 per cent of the cost against the railroads. The Western Pacific Company has petitioned for a rehearing, but a stipulation has been signed with the commission which will permit the work to go ahead.

### Plans Now Under Way.

The bridge department is now preparing plans for 90-foot steel girder skew spans and approaches to be placed on concrete bents. These spans will provide a clear roadway width beneath the railroads of thirty feet for the present, but the work will be done in such a way that an additional thirty-foot roadway may be built at a later date, if required by traffic.

Final plans for a ground level pavement have not yet been approved by the State Highway Engineer, but will be ready by the time the underpasses are completed. Construction of such a road has been approved by the State Reclamation Board.

In case of high water in the flood channel of the American River, which is crossed by the present wooden trestle, arrangements have been made with Sacramento County for the improvement and rebuilding of a section of the trestle leading to the Natomas boulevard which will provide an alternate route, via El Camino Avenue, into North Sacramento.

### Will be Gasoline Tax Job.

In line with further improvements on the northern entrance to Sacramento, surveys have been made and studies are now under way for the elimination of the Ben Ali grade crossing on the Southern Pacific railroad. It is hoped construction of an underpass in this vicinity may be undertaken in the near future.

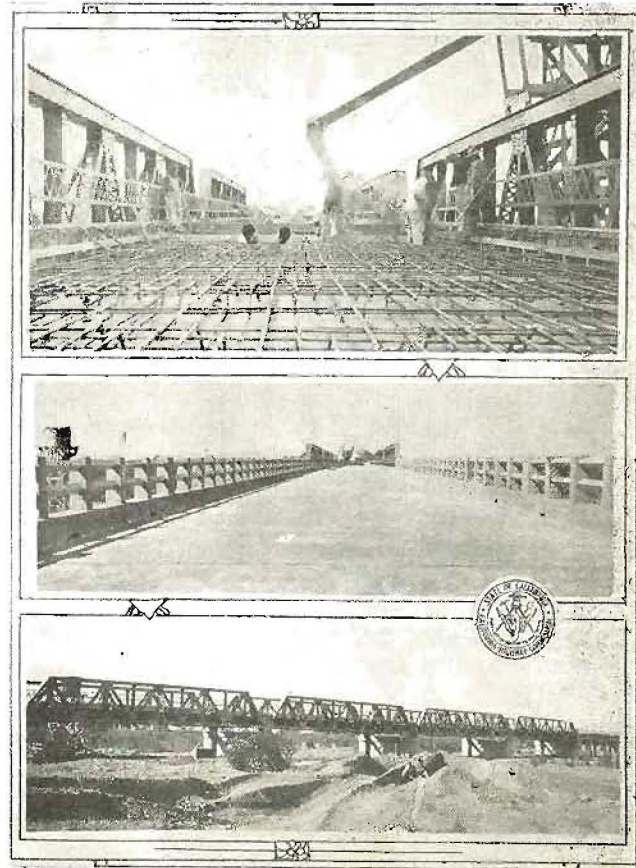
Elimination of present intolerable conditions at the northern approach to Sacramento has been the subject of years of study upon the part of engineers of the highway commission and a determined effort looking to its solution has been made in recent months. Receipts from the gasoline tax have made possible financing of the project. These funds are being devoted by the highway commission to such improvements, and for widening and thickening of previously constructed highways in many sections of the state.

### The Pace That Kills.

First Hunter—"Killed anything?"

Second Hunter—"Not a thing! Wish I'd gone motoring now."

Bystander (London).



STONY CREEK BRIDGE—New structure on the Chico-Orland state highway in Glenn County, recently completed. Views show pouring of the concrete floor and sections of the completed bridge, which is a combination of steel and concrete.

## THE CUYAMA FOREST HIGHWAY

ABOUT six and one-half miles of the Cuyama state lateral, connecting the San Joaquin Valley at Bakersfield with the Coast highway near Santa Maria, is within the Santa Barbara National Forest. The section within the forest, together with approximately nine and one-half miles approaching it from both ends, is being constructed under the supervision of the United States Bureau of Public Roads with forest highway funds and cooperative funds supplied by the State Highway Commission and the Cuyama joint highway district.

The contractor, reports Division V, has been working three shovels in a vigorous attempt to complete the fifteen miles now under way within the year. However, due to considerable hard rock encountered, it is evident the work will extend well into next year.

### Counties to Complete Work.

The construction is reached from a point on the Coast highway near Santa Maria by approximately eighteen miles of state highway of the gravel type, built by the highway commission and the Bureau of Public Roads.

On the east, thirty-seven miles will connect the portion now under construction with the improved highway at the Kern County boundary. This unit is to be graded by Santa Barbara, San Luis Obispo and Kern counties, jointly.

"It costs more to go without roads than to build them."—Thomas H. MacDonald, Chief of U. S. Bureau of Public Roads.

## "What I Got Out of the San Francisco Meeting"

(Continued from page 7.)

highways to meet the needs of transportation evidenced by officials and engineers from all parts of the country. The papers and discussions provided much food for thought and action which should lead to highway development that will serve the needs of the nation as a whole, rather than a few of the wealthiest states. The outline of the policies of the Bureau of Public Roads in its cooperation with state highway departments, as outlined by Mr. MacDonald, gave me a better appreciation of the work of the Bureau than I have heretofore had.

The address on the Wendover Cut Off, by Howard C. Means of Utah, brought a realization that others have difficult problems to face, which makes ours seem less difficult. An interesting point brought out in connection with the discussion of eastern traffic surveys was the fact that some motor transportation companies engaged in making long-distance hauls have found that they can not compete with the railroads and are going out of business.

The statement of R. W. Crum, Material and Testing Engineer of Iowa, to the effect that unit bids are not appreciably increased by requiring contractors to install scales for weighing concrete aggregates was rather surprising.

L. H. GIBSON, Division Engineer, San Luis Obispo—I was particularly impressed by the spirit which brought those attending the convention together in an effort to work out the many problems of highway construction confronting the country. The personal benefit derived was from the inspiration gained in meeting and hearing highway engineers and officials of national reputation. They are leaders in a project of great magnitude and it is a pleasure to work for and with them.

J. B. WOODSON, Division Engineer, Fresno—The acquaintanceship and comparison of ideas was the big thing I got out of the San Francisco convention. Dr. Hewes' paper on Mountain Road Construction illustrated the advancement in highway development to keep pace with increasing traffic. I also discussed the Yosemite road construction problem with Stephen T. Mather, Director of National Parks, and soils and concrete construction with Mr. A. T. Goldbeck of the Bureau of Public Roads. The two-day trip to Los Angeles with the visiting engineers gave further opportunity for comparison of ideas.

S. V. CORTELYOU, Division Engineer, Los Angeles—The interesting and instructive papers presented the latest ideas and practices in highway construction and maintenance. This, and the personal contact and exchange of views with leading highway engineers and officials of the whole country, made the San Francisco convention very helpful and enjoyable.

Mr. Winslow and myself had an interview with Mr. A. T. Goldbeck, chief of tests of the Bureau of Public Roads, on an important problem in this division—the cracking of reinforced concrete near the ocean. Mr. Goldbeck gladly furnished us information regarding investigations of this problem in other parts of the country which may be of considerable value to California. This is but one of several interviews of this kind.

E. Q. SULLIVAN, Division Engineer, San Bernardino—It is one thing to read engineering reports and another to

hear papers presented by the men who have been doing the work and making the investigations. The San Francisco convention convinced me we should attempt to carry out proven refinements instead of considering them in the abstract and keeping on in the same old rut. I am thinking particularly of improvements in methods of testing of materials for concrete and the proportioning of aggregates, also the newer ideas in specifications for high quality of construction.

I came away from San Francisco with a feeling of enthusiasm, convinced that the road builders of the country are earnest and self-sacrificing in their efforts to serve the public. I was proud of the showing made by our own organization.

F. G. SOMNER, Division Engineer, Bishop—The San Francisco convention told the whole story of highway building in America, every phase of which was discussed in a comprehensive and masterful fashion. The construction of the Wendover Cut Off, the discussion of traffic laws for public safety, and problems in mountain road construction were among the features with which I was particularly impressed. The discussions of highway research and highway transport were a credit to the engineering profession. The division engineers are indeed fortunate in having this opportunity for contact with such eminent authorities in the field of highway building.

J. C. McLEOD, Division Engineer, Sacramento—So much information of value was presented in the various papers that I am awaiting their publication to more fully digest them. This is particularly true of the paper presented by Mr. MacDonald, and the several papers presented with regard to highway research and construction of pavements, particularly those of J. Gordon McKay and R. W. Crum. The impression I had following the presentation of Mr. A. T. Goldbeck's paper was that California is abreast of the best known methods of other states. Many of Mr. Goldbeck's conclusions are borne out by practical application in our own organization.

I am also convinced that we should put into practice some plan for marking state highways to designate them from county roads as suggested at the meeting.

### COOPERATION APPRECIATED.

The thanks of the department are due the Automobile Club of Southern California and the State Motor Vehicle Department for their cooperation in making the motor trip of the visiting highway engineers from San Francisco to Los Angeles a big success. The club furnished two machines with drivers and the caravan was accompanied all the way to Los Angeles by an escort of motorcycle police.

Equipment Engineer R. H. Stalmaker had charge of arrangements.

The Department of Convict Road Camps, shortly before Christmas, distributed \$2,391.26 to the dependents of 107 of the prisoners working in the three camps. The money is a part of the earnings of the men and is paid to their families upon their order.

### She'd Tell Him.

It was the dear old lady's first ride in a taxi, and she watched with growing alarm as the driver continually put his hand outside the car as a signal to the traffic following. At last she became exasperated.

"Young man," she said, "you look after that car of yours and watch where you're driving. I'll tell you when it starts raining."—*The Tappet.*

## WHAT THE DIVISIONS ARE DOING

### DIVISION I CLEARS SLIDES CAUSED BY UNPRECEDENTED RAIN STORMS

UNPRECEDENTED rain storms in Division I have caused considerable damage in Del Norte and Humboldt counties and in northern Mendocino County. The roadway has been blocked for short periods by slides, one of which, a few miles south of Crescent City, required a power shovel to open the road.

J. F. Knapp, contractor, is continuing the Eureka-Arcata paving whenever weather permits. A twenty-foot concrete pavement is being placed in accordance with the latest specifications of the State Highway Engineer.

### DIVISION II NOW LOCATED IN NEW HEADQUARTERS AT REDDING

THE engineering and office forces of Division II are now located in the new division headquarters in Redding, the move from Dunsuir having been completed early in December. The new headquarters office was planned by the state architect with the needs of the division particularly in mind. New shops also have been erected. The site for the building and shops was a gift to the state from the Redding Chamber of Commerce.

Division II has graders and snow plows located at five different points in the division and maintenance forces are prepared to battle snow on the main trunk line to Oregon in the vicinity of Weed; between Burney and Fall River Mills on the Alturas lateral; between Alturas and Cedarville; Buckhorn grade, Redding to Weaverville; and between Susanville and Westwood in Lassen County.

The oil macadam and gravel surfacing contract of Polk and Polk, east of Susanville, Lassen County, has been completed and the equipment moved out. The same applied to the gravel surfacing contract of Warren Brothers on 9.7 miles between Janesville and Milford in the same county.

#### Contract Ahead of Schedule.

The grading contract of the Nevada Contracting Company, on the Pacific Highway between Bayha and Halfway Creek, was practically complete more than a month ahead of the time limit. Early in December, removal of a few slides and the placing of 9000 cubic yards of rock surfacing was all that remained to be done except for some shoulder work and general finishing up of the job. The time limit expires February 5th.

Steady progress on the extension of the Dunn and Baker contract is noted. Two power shovels are operating and placing of crushed gravel is progressing as fast as the grading permits, with considerable benefit to traffic.

A cable line, placed in anticipation of a washout, is handling mail, freight, and passengers at Cedar Flat where a temporary bridge on the Trinity River highway was carried away during recent high water. It is probable the structure will not be replaced until next summer.

### MAINTENANCE IS NOW UNDER WAY ON MANY DIVISION III ROUTES

A BIG program of maintenance activities is now under way on several routes in Division III. Extensive grading and shaping of shoulders has been undertaken on the Eastside highway between Lincoln and Sheridan, Placer County.

Between Williams and Colusa, 7.4 miles of gravel shoulders are being placed with an allotment of \$9,625.

Superintendent W. H. Miller is in charge of an extensive program of culvert extension on the trunk lines through the Sacramento Valley and on several lateral highways. As fast as the culverts are lengthened, guard rails are removed and the appearance of the highway thereby greatly improved. The allotment for this work is \$9,956.

#### Bridge Approaches Finished.

Grading of approaches to the Stony Creek bridge on the Chico-Orland lateral has been completed and state forces are now engaged in grading sections of the highway to connect with the present county road.

Repairing of bridges at Bowman, Placer County, and grading of approaches has been completed.

Grading of 0.9 of a mile of the highway between Tahoe City and the Nevada line has been completed and a rock crushing plant for the production of surfacing material is now under construction at Carnelian Bay.

#### Snow Gauges Erected.

Snow gauges have been installed on several highway routes in Division III in the Sierra Nevada mountains. These gauges consist of 4-inch by 4-inch by 12-foot posts marked to feet and inches. They have been erected outside of drift areas at the following locations:

Riverton, Phillips, Echo Summit, Comptonville, Indian Hill, Downieville, Yuba Pass, Cisco, Donner Summit, Donner Lake, Truckee, summit of the Dog Valley grade, Tahoe City, Boca, Floriston, and Calvada station, and at several locations on the Nevada-California border.

Keeping of a systematic snow record will have a definite value in the determination of future types of road construction and in making plans for organized snow removal when traffic warrants the expenditure.

#### Tractors Prove Economical.

Division III, this season, is using 30-horsepower tractors for the operation of graders on valley grading and shoulder work instead of the trucks heretofore used in maintenance activities. The tractors are proving more economical in operation and better results are being obtained.

Good progress is reported on the grading contracts under way between Auburn and the Nevada line. Conditions so far are favorable to a continuation of the work throughout the winter.

Wet weather has delayed the completion of the asphalt concrete job on the Chico-Orland lateral in Butte County.

### CONSTRUCTION ON BAY SHORE HIGHWAY INTERESTS PUBLIC

WIDESPREAD public interest in the Bay Shore highway, a section of which is now under construction in the vicinity of South San Francisco, is reported by Division IV. Contractor A. D. Foley is rushing work on the tide gates with the expectation that they will be finished before winter storms. A dredger and steam shovel are working to capacity in the building of the grade across the tide flats.

Contractor J. P. Holland is making excellent progress on the Skyline boulevard between the Kings Mountain and the La Honda road. Another section of this highway has been opened to traffic between Sloat boulevard and the Kings Mountain road where the Skyline boulevard intersects the county highway to Woodside and Redwood City.

#### Widening Jobs Completed.

Traffic over Altamont Pass has been greatly facilitated by the widening of the state highway between Greenville and Livermore, in Alameda County. This improvement was made possible by the use of gasoline tax funds.

Freeman and Whiting have about completed their contract for the widening of the Peninsula highway between Redwood City and the southerly boundary of San Mateo County. This is also a gasoline tax job.

#### Park Widening Resumed.

State forces have resumed the work of widening the highway between Boulder Creek and the California Redwood Park in Santa Cruz County. A three-quarter yard Northwest gasoline shovel is being used to excavate embankments and improve alignment. The recent good weather has permitted the work to progress faster than expected. Surfacing of the new grade with rock will be started shortly.

Bridges built by Sonoma County over Calabazas Creek and Stuart Creek, on the Beltane-Schellville section of the highway, have been completed and opened to traffic.

### BIG JAHN AND BRESSI CONTRACT IN SAN DIEGO IS COMPLETED

THE big Jahn and Bressi contract for the widening and thickening of 17.14 miles of the Coast highway in San Diego County, Division VII, has been completed and the new highway opened to traffic. Placing of concrete was finished several weeks ago and

**DIVISION ACTIVITIES**

shaping of shoulders was completed during the present month. This is one of the largest gasoline tax jobs to date and represents an expenditure of approximately \$533,000.

A 48-inch reinforced concrete pipe storm drain to relieve flood conditions on the Whittier boulevard at Workman Mills is being installed in accordance with the Los Angeles County plan for flood control.

With the camp established near Winter Canyon, the day labor crew on the Malibu Ranch is "plugging away" moving dirt and installing culverts.

**Paving Completed.**

The completion of the new bridge across Santa Ana River, now under construction by Orange County, will open for traffic the new concrete pavement between Huntington Beach and Newport. Placing of concrete on this structure is now in progress.

Placing of concrete has been completed on the new pavement between Huntington Beach and Corona Del Mar, another important job in Division VII. Shoulders are being shaped. A hydraulic fill near the north arm of Newport Bay will not be paved until time has elapsed for settlement. This is an important unit of the highway along the southern coast.

**Grading Progresses.**

Installation of culverts is progressing rapidly on the W. D. McCray contract at Laguna Beach on the Coast boulevard. Two power shovels and a fleet of trucks are engaged in the grading work.

Two large culverts near Irvine, Orange County, have been completed by a special day labor force in charge of Superintendent A. W. Schmuck. They form a part of the program to improve the cross county drainage. Adjacent owners are constructing connecting ditches.

Paving of fills on the Jahn and Bressi contract with oil macadam pending settlement has been completed by a special day labor force.

**DIVISION VIII STARTS WORK ON MECCA-BLYTHE HIGHWAY**

UNDER the general direction of Maintenance Engineer J. E. Stanton, Division VIII has started work on the improvement of the Mecca-Blythe highway between Shavers Well and Blythe, in Riverside County. Methods which proved successful on the Barstow-Needles route are being followed in the improvement of the new highway across the desert which is a part of a Los Angeles-Phoenix route.

Several small tractors have been purchased and grading operations started at several locations. W. E. Tedford, formerly foreman at Ludlow, has been placed in charge, with headquarters at Shavers Well.

**Yuma Plans Celebration.**

Division VIII is looking forward to the completion of the highway between the Sand Hills and the Colorado River at Yuma. Citizens of the Arizona city are planning to celebrate the event.

Work is progressing on the graveling of the state highway through the main street of the town of Westmoreland, Imperial County, which is being done by state forces. H. S. Payson is resident engineer in charge.

**IMPORTANT WIDENING AND THICKENING WORK COMPLETED IN DIVISION X**

COMPLETION of contracts is rapidly adding to the mileage of splendid new highways in Division X.

The Valley Paving Company has completed the widening and thickening of eight miles on the Stockton-Oakland route in western San Joaquin County. The pavement has been widened to twenty feet and thickened with asphalt concrete. Vialog tests show a satisfactory smoothness of surface. The work was done with gas tax funds.

Another widening job in Division X which has been completed is the flush concrete shoulder contract of four miles between Rockville and Fairfield, Solano County. The work included crushed rock shoulders at the side of the pavement. Safety of travel on this section has been improved greatly by the added width.

**Contractors Rush Paving.**

The asphalt concrete widening job of Force and Currigan, between Vacaville and Batavia, Solano County, another gasoline tax job, is rapidly nearing completion and with reasonably good weather will be finished by the time this is in print. The placing of an average of 300 tons of asphaltic concrete mixture per day has been maintained during recent weeks.

Grading on the Rio Vista lateral between Denverton and Suisun, Solano County, is progressing rapidly. The county has started work on the surfacing in accordance with its agreement with the highway commission. The latter work is in charge of County Surveyor F. A. Steiger.

The new fog signal on the bridge at Rio Vista was officially placed in operation December 1st.

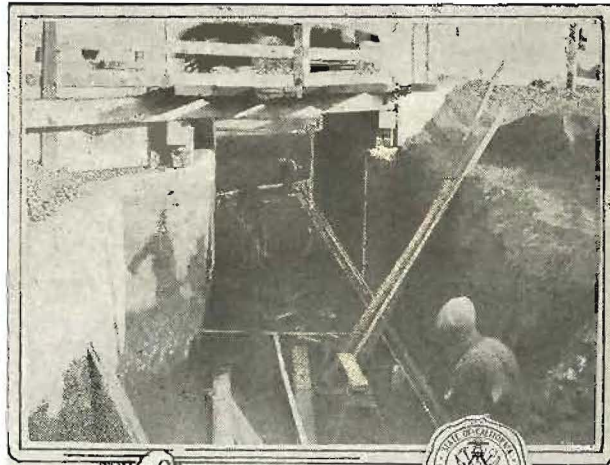
The roadway on the high fill between Mossdale and Banta on the French Camp-Tracy section of the highway, San Joaquin County, is being made safer by the placing of guard posts on the shoulders similar to those placed on the Stockton-French Camp road.

Maintenance crews on the mountain roads in Division X are engaged in placing gravel and making other improvements in anticipation of next season's travel.

**County Secures Rights of Way.**

Amador County has secured necessary rights of way for the highway between Central House and Drytown and it is expected state forces shortly will be authorized to start work on the approaches to the Dry Creek bridge. The fills will be rip-rapped to provide protection from flood waters. The bridge, which is being built under county contract, is nearing completion.

A new deck is being placed on a wooden trestle a short distance south of Thornton on the Lodi-Rio Vista lateral.



IMPROVING DRAINAGE—Large culvert constructed near Irvine, Orange County, to assist the completion of a cross-county drainage system. The upper view shows traffic using the highway unhampered by the construction under way.

## HARLAN D. MILLER APPOINTED BRIDGE ENGINEER

THE APPOINTMENT of Harlan D. Miller to the position of bridge engineer of the highway department, effective as of November 1st, is announced by Mr. Morton.



HARLAN D. MILLER

The new head of the bridge department succeeds H. E. Warrington, who resigned early in the year.

Mr. Miller has been engaged in engineering work for nineteen years. He formerly was connected with the bridge department of the New York Central railroad and held a similar position with the state of New York.

Mr. Miller assumed the position of acting bridge engineer a year ago, at the time all bridge work was transferred from the divisions to headquarters and placed under a centralized department. The department has been considerably enlarged under his direction.

The new bridge engineer is a graduate of the Case School of Applied Science in Cleveland, Ohio, where he was elected a member of the Sigma Xi, the scientific honor society. He has been with the California Highway Commission for five years.

### BRIDGE DEPARTMENT NEWS

THE J. H. Tillman Company has installed extensive facilities for handling construction at the Ventura Seawall and it is expected work will be under way by the time this is in print. A standard gauge railroad spur has been installed and also an industrial railroad. Although the work is somewhat behind schedule, the contractor is sparing no expense to insure the work progressing rapidly when a start is made.

The rock crushing and screening plant will produce over 200 cubic yards of aggregates per day and the central mixing plant has a capacity of 400 cubic yards of concrete per day. However, it is planned to operate the mixer a half day at a time, placing about 200 yards of concrete in the seawall. The disposition of the concrete from the mixer to the forms will be handled by the industrial railroad.

#### Dingle With Bridge Department.

C. O. Dingle, resident engineer, formerly with Divisions III and X, is now with the bridge department. He has been assigned to the Simmons Creek Bridge in San Luis Obispo County. C. C. Gildersleeve has been awarded the contract.

Construction of the bridges near Bieber, in Lassen County, has been shut down for the winter.

A large concrete arch culvert is being constructed at Sycamore Creek in San Diego County, north of Oceanside. H. H. Peterson is the contractor.

#### Floods Delay Northern Projects.

The work at the Douglas Memorial Bridge across the Klamath River in Del Norte County has been held up on account of high water. F. Rolandi, the contractor, lost considerable false work in the recent floods.

Work at the Van Duzen River Bridge, in Humboldt County, also has been a battle with the elements during the last month. The river rose a second time and carried away the falsework from under the arches. Fortunately, the keys had been in place for some time and no damage to the structure resulted. Finishing work, however, will be delayed for some time.

## COMMENT ON MAINTENANCE ACTIVITIES

THE Marysville Appeal declares Maintenance Foreman William Reynolds has earned the title of "Safety First Bill" by his improvement of the state highway between Roseville and Marysville. Shoulders have been widened and guide lines painted in the center of curves and bridges.

The editor of the Placerville Democrat comments favorably upon the work being done between Placerville and Folsom. Rebuilding of shoulders and widening of curves is under way. H. L. Montefort is in charge.

A trip over the Fall River Mills-Burney section of the Alturas lateral was made recently by the editor of the Fall River Tidings, who declared he was surprised at the amount of work accomplished. He declares those who use the road appreciate the efforts of Maintenance Engineer F. J. Gribble.

### NEW SEAL ADOPTED

CONSIDERABLE interest has been manifested throughout the department in the new seal of the California Highway Commission, which has been in use for a number of months. The new design was made necessary by the separation of the highway commission from the department of public works, authorized by an act of the last legislature.



For the first time, the commission now has an individual seal. It was designed by E. M. Muse, of the staff of the testing laboratory, who was awarded the \$25 prize offered by State

Highway Engineer R. M. Morton. A number of designs were entered in a competition, open to all engineers of the department.

The transit is the dominant symbol and typifies Science, Mr. Muse explains. The pick and shovel represent Labor and the winged wheel Transportation and Speed.

The Latin slogan: "*Robur directum Scientia est via fortunae*," is translated, "Energy directed by Science is the highway to prosperity."

#### Same Story Everywhere.

"In placing before you this, my fifth annual statement of the activities of the Public Works Department, I desire at the outset to emphasize the fact that if more money could reasonably be placed at my disposal, works in hand could be finished in less time, and others, which can not now be commenced, might be added to the year's program of work."—From the 1924 report of the Minister of Public Works of New Zealand.

### NO, THEY'RE NOT CROSS-WORD PUZZLES.

Down on the Peninsula highway, south of San Francisco, the Maintenance Department is making a study of the position traffic takes on the highway. Numerous numbered lines are painted on the pavement to assist in taking a count of the number of vehicles passing over a given section.

The maintenance man in charge was somewhat provoked when a woman motorist stopped and asked him if he were working out the cross-word puzzle on the highway.

# CALIFORNIA HIGHWAYS

OFFICIAL PUBLICATION OF THE  
**CALIFORNIA HIGHWAY COMMISSION**  
 SACRAMENTO, CALIFORNIA

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

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

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

Vol. 1. DECEMBER, 1924 No. 12

## JUST AMONG OURSELVES



### HIGHWAY NEWS NOTES

#### Turkey Dinner for Division II.

A FAREWELL to the office force of Division II was arranged by the Lions Club of Dunsmuir just before the departure for the new division headquarters in Redding. A turkey dinner was served at the Hotel Weed as an expression of the good will of the club members. Division employees declared they were leaving Dunsmuir, its accommodating business men, wonderful scenery and the "best water on earth," with keen regret.

Mrs. M'Dell Payne enjoyed a visit of a few days recently in San Francisco.

Mrs. A. M. Mitchell and Miss Josie Paul, of the Division II force, visited in Sacramento over Thanksgiving.

A. F. Ager, draftsman, has returned to Redding after a vacation in San Juan and San Francisco.

Equipment Superintendent W. A. Smith of Division IV recently was presented with a set of golf clubs by friends in Sacramento.

#### Resident Engineer Transferred.

H. C. Reeder, resident engineer on the recently completed Whittier boulevard paving contract, has been transferred to the new Sycamore Creek bridge in San Diego County.

#### Started on One of Sullivan's Picnics.

A romance which had its beginning beneath the desert moon on one of the Division VIII picnics has resulted in wedding bells for Miss Lillian Bollong, clerk in the accounting department at San Bernardino. The man in the case is Mr. Ralph Wright, formerly of the drafting department. Division Engineer Sullivan reports this is the third romance in the division since it was established a short while ago.

The marriage of Earnest R. Samson, maintenance foreman at Beaumont, and Miss Pearl Viola Kohler, daughter of Mr. and Mrs. Henry F. Kohler, was announced recently.

L. W. Aldrich, Division VIII draftsman, has returned from a vacation in Los Angeles.

C. B. Boyce, formerly maintenance foreman at Victorville, has been transferred to Waterman Canyon.

Miss Edith Miller, stenographer, W. E. Prather, senior clerk, and Mrs. Leah Wagner, stenographer, are among members of the San Bernardino staff who have returned from vacations.

Mrs. E. E. Fifield, of Division X, enjoyed a vacation recently, visiting in the Bay cities.

#### Some More Proud Daddys.

A baby daughter, weighing almost nine pounds, recently put in an appearance at the home of R. W. McCrea, draftsman with Division X, and formerly of the Division III office.

Recent weeks also brought a daughter to the home of Mr. and Mrs. Carl F. Heintze. The new daddy was formerly assistant division engineer in Division III.

#### Smith Attends Convention.

Lowell R. Smith, purchasing agent of the department, attended the annual convention of State, County and Municipal Purchasing Agents held in Oakland early in the month. Matters relating to economic public buying were discussed and valuable information gained from contact with others having similar problems. Smith reports a tour of Oakland manufacturing plants, arranged by the Oakland Chamber of Commerce, highly instructive.

#### Bridge Men Honor Miller.

In honor of his promotion, engineers of the bridge department and their families recently tendered Mr. Miller a little surprise in the way of a dancing party at the Municipal Clubhouse at Sixteenth and C streets. During the evening the department staff presented their chief with a handsome Sigma Xi pin to replace the one he had lost several weeks previously.

On the trip south over the El Camino Real, a member of the visiting party of engineers was heard to remark: "This is nearer Heaven than I ever expected to be."

At a rodeo held recently "east of the high Sierras," a son of Erin, just over, was induced to mount a notorious bucking mule. Pat held tenaciously to the pommel and bucking straps, at every jump exclaiming, "Be jabers and you'll not get me off." Finally the mule in its frantic efforts to unseat the Irishman got its hind feet mixed up with the stirrups, which Pat had lost early in the game. "Be gorra," says Pat, "if you're going to get on, I'm going to get off."

#### Not Likely.

Jimmy, aged five, was being prepared for bed. Mother hunted high and low, but nowhere could she find a nightgown.

"Well, Jimmy," she said, "you'll have to wear your sister's just for tonight."

Jimmy drew himself up haughtily.

"What?" he asked in astonishment. "Wear a girl's?"

"Yes; why not?"

"I won't wear a girl's nightgown," said Jimmy, indignantly. "I'd rather go to bed raw."—*The National Mason.*

#### VISITORS GREETED.

The families of highway officials and engineers on their way to the San Francisco convention were greeted upon their arrival in Sacramento by a delegation of the headquarters engineers and their wives. The Sacramento women coupled a personal word of greeting with bouquets of violets. Among those assisting in the distribution were: Mesdames T. E. Stanton, Fred J. Grumm, Harlan D. Miller, R. E. Pierce, J. C. McLeod, L. V. Campbell, W. F. Faustman, F. W. Haselwood, C. S. Pope, and G. R. Winslow.

## DIVISIONS MAILING BULLETIN

THE mailing of the Bulletin to engineers and staff and maintenance employees, exclusive of the Sacramento headquarters, has been placed in charge of the several divisions. Sufficient bulletins are shipped each month directly to the headquarters of the ten divisions to be redistributed.

Frequent changes in address of the men in the field made it difficult to keep the Sacramento mailing list up to date. In the future, those who do not receive the bulletin promptly should immediately call the matter to the attention of the division engineer.



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