

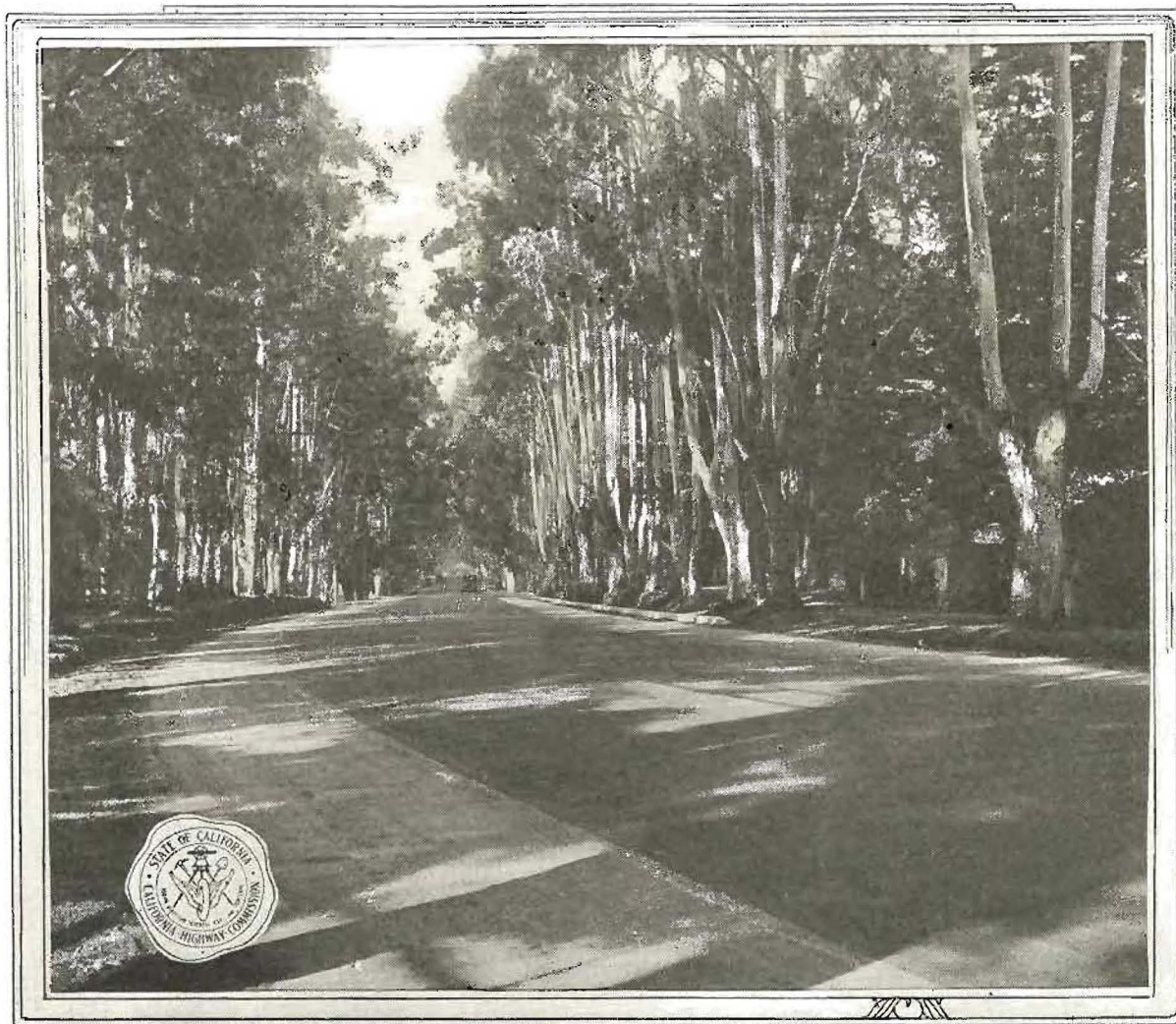
CALIFORNIA HIGHWAYS

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

Vol. 2

MAY, 1925

No. 5



HIGHWAY OF THE PADRES TODAY—View of a section of the historic El Camino Real in San Mateo County, widened to forty feet by the California Highway Commission. An additional section of the Peninsula route has been placed under contract for similar improvement which includes heavy cement concrete shoulders and a center wearing surface of asphalt concrete.

In this issue: FEDERAL CONTROL OF INTERSTATE TRAFFIC—HUMBOLDT PAVEMENT LEADS STATE FOR STRENGTH—1925 PROGRAM OUTLINED.

CALIFORNIA HIGHWAYS

HARVEY M. TOY, Chairman;

N. T. EDWARDS and LOUIS EVERDING, Commissioners.

ROBERT M. MORTON, State Highway Engineer.

W. F. MIXON, Secretary.

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

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

Vol. 2 MAY, 1925 No. 5

CALIFORNIA HIGHWAY DEPARTMENT

CALIFORNIA HIGHWAY COMMISSION

HARVEY M. TOY, Chairman, San Francisco

N. T. EDWARDS, Commissioner, Orange
LOUIS EVERDING, Commissioner, Arcata

R. M. MORTON, State Highway Engineer, Sacramento

PAUL F. FRATESSA, Attorney, San Francisco

W. F. MIXON, Secretary, Woodland

HEADQUARTERS STAFF, SACRAMENTO

T. E. STANTON, Assistant State Highway Engineer

FRED J. GRUMM, Engineer of Surveys and Plans

C. S. POPE, Construction Engineer
G. R. WINSLOW, Maintenance Engineer

HARLAN D. MILLER, Bridge Engineer
R. H. STALNAKER, Equipment Engineer

L. V. CAMPBELL, Office Engineer

BEN H. MILLIKEN, Superintendent of Convict Road Camps

HERMAN B. WEAVER, Chief Accountant
LOWELL R. SMITH, Purchasing Agent

DIVISION ENGINEERS

T. A. BEDFORD, Division I, Willits

H. S. COMLY, Division II, Redding

F. W. HASELWOOD (Acting), Division III, Sacramento

J. H. SKEGGS, Division IV, San Francisco

L. H. GIBSON, Division V, San Luis Obispo

J. B. WOODSON, Division VI, Fresno

S. V. CORTELYOU, Division VII, Los Angeles

E. Q. SULLIVAN (Acting), Division VIII, San Bernardino

F. G. SOMNER, Division IX, Bishop

J. C. McLEOD, Division X, Sacramento

General Headquarters, Fifth Floor, Forum Building, Sacramento

IN THIS NUMBER.

The Highway of the Padres.....	Front Cover
Federal Control of Interstate Traffic.....	page 3
Humboldt Pavement Shows High Strength.....	page 4
New Construction Manual Outlines Duties of Field Men.....	page 6
Logs Serve as Guard Rails on Redwood Highway.....	page 8
Proposed Expenditures for 1925 Listed.....	page 9
Division X Man Builds Pavement Marker.....	page 10
Highway Legislation Before 68th Congress.....	page 11
What the Divisions Are Doing.....	pages 12 & 13
Table of Contracts, accepted, awarded, and pending.....	page 14
Highway News Notes.....	page 15
Standard Oil Representative Commends Maintenance Work.....	page 15
Uniform Marking System for Highways.....	page 15
Map of State Highway System.....	Back Cover

CALIFORNIANS TO REPORT FOR INTERNATIONAL ROAD CONGRESS

THREE MEMBERS of the staff of the California Highway Commission have been honored in the selection of American engineers to report for the Fifth International Road Congress which will be held in Milan, Italy, during September, 1926.

Mr. R. M. Morton, state highway engineer, has been chosen as collaborator on the first question—a report on concrete roads, covering the progress and achievement in the use of materials for the construction of this type of highway.

Mr. C. S. Pope, construction engineer, has been appointed chief reporter for the United States on question two—"Bituminous and Asphalt Roads, the Qualities Required and the Material Used." Mr. Pope will coordinate the reports of eight collaborating engineers throughout the United States.

Mr. C. L. McKesson, research engineer, has been chosen collaborator on the question, "Quality Required in Bituminous Binders." He is to work with A. T. Goldbeck of the United States Bureau of Public Roads.

What the Congress Is.

The International Road Congress was organized in 1908. It holds sessions every three years to which are invited the engineers of every country. Prior to the war, American engineers took an active part, and special efforts are being made to make the Milan session next year representative of the best engineering thought of all civilized nations.

The congress is governed by an international committee sitting in Paris. At the meetings, papers are presented and discussions entered into by the international reporters on the various questions proposed by the congress.

Each reporter has as collaborators, a number of engineers who have achieved distinction in the phases of the work upon which they are to report. The chief reporter assembles the papers and makes his comments thereon and submits his conclusions from his own knowledge of the subject. The congress is thus assisting to gather together the most advanced information available on the subject of road building.

Federal Control of Interstate Highway Traffic



COMMENT ON THE RECENT DECISION OF THE UNITED STATES SUPREME COURT.

BY THE EDITOR.

THE POWER to regulate interstate commerce, delegated to congress by the constitution, the courts have decided, extends to the control of interstate motor vehicle traffic.

Improvement of interstate highways made it inevitable that this question should come before the United States Supreme Court for adjudication, and on March 2d two decisions were handed down affirming the authority of the federal government. Students of the highway problem realize the far reaching importance of these rulings and predict the situation created by the decisions will be a live issue before the next congress. *It may have an important bearing on the future of federal aid.*

In one decision from the state of Washington, the court held the state could not refuse to authorize licenses for motor busses over that section of the Pacific Highway lying within its borders. The court stated that states must not impose unreasonable burdens upon interstate motor vehicular traffic.

The other decision was in a case from Maryland. The court decided that the state could not decline to permit motor vehicles to use its highways. The state has authority to make regulations, primarily to promote safety and conservation in their use, but could not impose even an indirect burden upon interstate commerce.

States Can Not Interfere.

No state, either by statute or by regulation through a public service commission, can interfere with interstate traffic on the highways and in no way can the state invade the federal control over interstate commerce.

The decision of the federal court has been followed by the California Supreme Court which has ruled that the State Railroad Commission has no authority to impose regulations on automobile stages engaged in interstate passenger transportation. The decision reverses the superior court of San Francisco and the District Court of Appeal.

The California Case.

The reversal of the lower courts was made upon appeal of Melville Yahne, who conducts an automobile stage line from San Francisco to Portland, Oregon. Yahne was convicted in the superior court on the charge of conducting a stage line without a permit from the Railroad Commission, in violation of the Auto Stage and Truck Transportation Act.

Three

In reaching its decision, the Supreme Court said:

"A statute that is not concerned with the manner of use of the highways, but by whom used, is in effect regulation of commerce by the state and an unconstitutional invasion by the state of a field reserved by the commerce clause for federal regulation."

The new situation has many interesting angles. Bus interests in all parts of the country are speculating upon the outcome. It is apparent, however, from a study of the decisions in the recent cases, and other decisions of the Supreme Court upon the question of interstate commerce, that the states still retain the right to regulate *intrastate* business of bus lines even though the stages may be engaged in interstate commerce.

To Ask State Control.

Announcement has been made by the National Association of Railroad and Utility Commissions that it will ask congress at its next session to empower state commissions to regulate interstate bus lines. It is asserted the Interstate Commerce Commission does not wish to undertake the task laid out for it by the decision of the Nation's highest tribunal. No federal agency has ever been specifically authorized to undertake the regulation of vehicle traffic on interstate highways and the state commissions seem anxious to retain authority in the matter.

Just how congress can delegate to the states power which the constitution plainly confers upon the federal authority is not explained, but precedents for such action are declared to exist.

The Decision and Federal Aid.

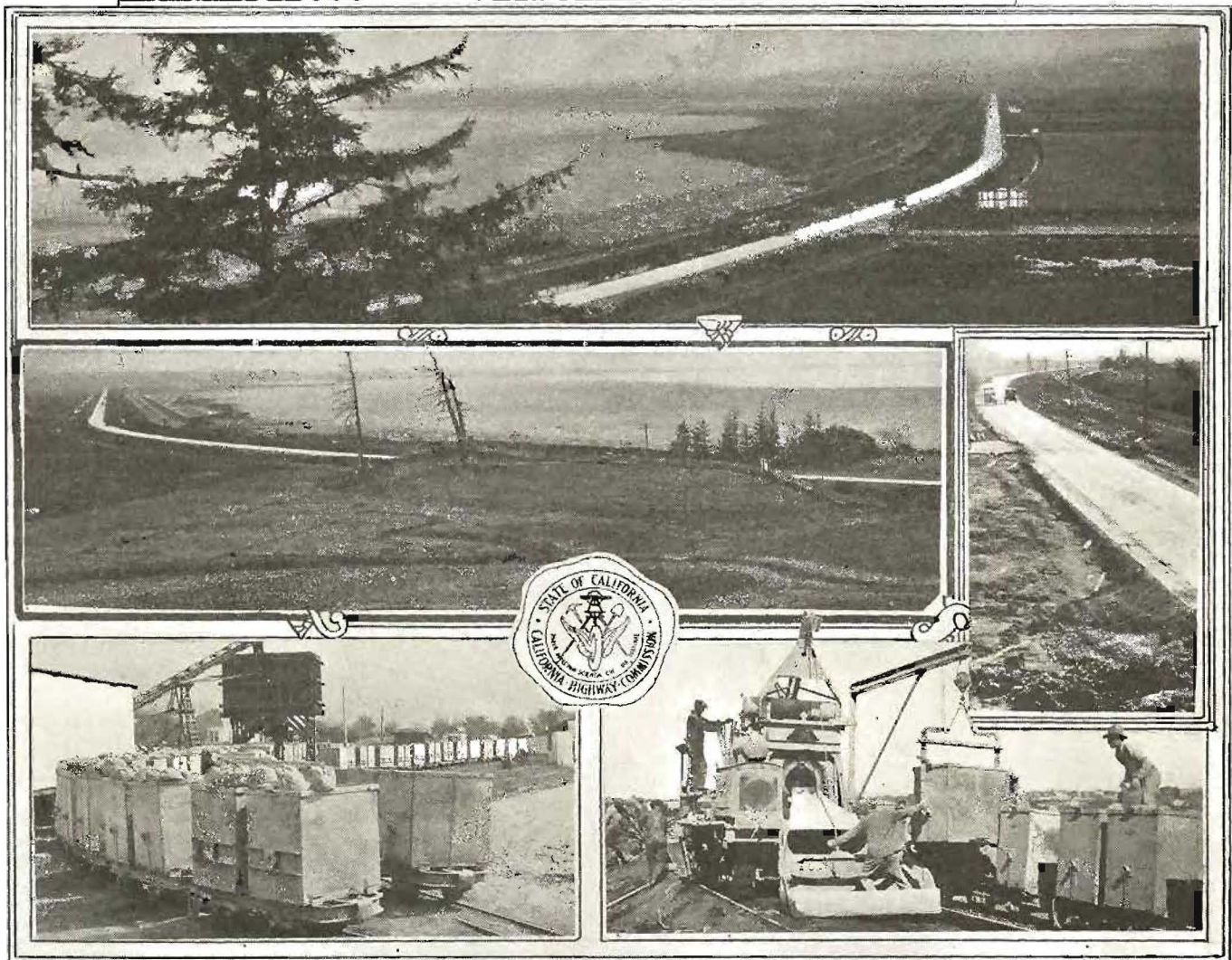
The decision of the Supreme Court is of particular interest at this time when certain eastern senators are endeavoring to wreck the federal aid plan under which a great national highway system is beginning to take form.

Western highway builders realize that the friends of federal aid must be marshalled in the not distant future for a determined stand in its behalf. To them, the decision will be not unwelcome.

FEDERAL CONTROL OVER INTERSTATE HIGHWAYS NATURALLY WILL CARRY WITH IT FEDERAL RESPONSIBILITY IN THE CONSTRUCTION OF THOSE HIGHWAYS.

The West will not forget this point.

NEW STATE HIGHWAY NOW CONNECTS EUREKA AND ARCATA



NEW SECTION OF THE REDWOOD HIGHWAY.—A twenty-foot concrete pavement now spans the tide flats of Humboldt Bay, adding a unique unit to the famous highway up the north coast. *Above*, looking northward toward Arcata; *center*, view in the opposite direction with Eureka in the distance; *right*, a close up of the new road before grading of shoulders was completed; *below*, industrial railroad used to convey aggregates to mixer. This method was required by the specifications which barred trucking in order to protect the subgrade.

HUMBOLDT BAY PAVEMENT LEADS STATE FOR STRENGTH

By H. C. INGLE, Resident Engineer.

DESPITE adverse conditions under which the work was carried forward during much of the construction period, the new pavement on the Redwood highway between Eureka and Arcata, Humboldt County, ranks well with other similar state highway projects recently completed.

Laboratory tests indicate the compressive strength of concrete on the Eureka-Arcata contract is the highest of any pavement of this type on the state highway system. Twenty-eight day tests resulted in a maximum break of 6930 pounds and a minimum of 3160 pounds, or an average for sixty-four tests of 4980 pounds.

What the Tests Show.

Following is a tabulation of the breaking strength obtained from test cylinders taken on this contract:

10-day breaks—

Maximum, 4720 pounds per square inch.
Minimum, 2340 pounds per square inch.
Average (54 tests), 3391 pounds.

28-day breaks—

Maximum, 6930 pounds per square inch.
Minimum, 3160 pounds per square inch.
Average (64 tests), 4980 pounds.

A vialog record made early in May resulted in an average of 11.7 units of roughness per mile, which makes this seven-mile section the third smoothest piece of state highway pavement in California.

Clean aggregate, high quality cement and the cooperation of the field inspection force and the contractor's organization made possible the production of a uniformly high test concrete and a good riding pavement. Special efforts were made to keep the water content low and this, no doubt, should be taken into consideration in judging final results.

Interesting Section.

The Eureka-Arcata unit always will be an interesting section of the Redwood highway. Located on an almost direct line across the tide flats of Humboldt Bay, it is in marked contrast to the heavily wooded country north and south. The grade was built in 1918 and 1919 with adjacent heavy marsh material excavated by dipper dredges. As the fill settled a good surface was built up with rock and gravel. In the placing of the pavement every effort was made to utilize this macadam surfacing to the fullest possible extent for subgrade purposes.

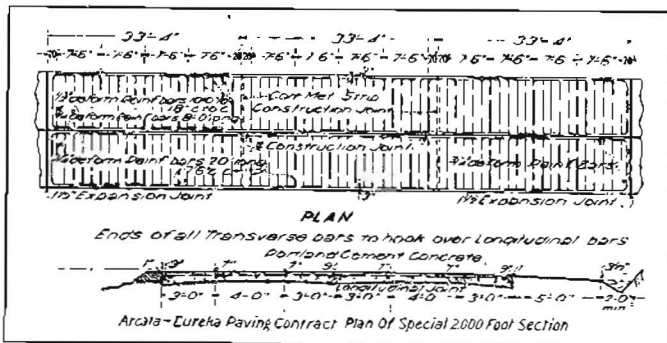
Alignment was closely adjusted so that the full area of existing gravel surface was utilized as a foundation for the pavement. In order to fully preserve the foundation strength no deep scarifying was permitted, the grade line having been laid in such manner that slight cuts only were made in the worst irregularities. Such high points were planed off and fine sand material from Brainard's Point distributed as a sand cushion to bring the subgrade to full section.

As a further protection to the macadam, the specifications required that all concrete materials be hauled by industrial railway. As there was no existing shoulder, this made it necessary that one-half width of pavement be laid at a time, and hauling done on the other half width.

Pavement Section.

The pavement section is of twenty-foot width, being laid in two ten-foot widths. The middle four-foot slab of the half section is six and one-half inches thick and thickens to nine inches at the outside edges of each half section. Prepared expansion joints 1½ inches thick were placed every 100 feet at the even stationing and corrugated metal contraction joints at 33 1/3 feet from expansions. A ¾-inch marginal reinforcing bar was placed 3 inches in from the edge and 2 inches down from the surface around each 100-foot length of half pavement section.

A portion of the roadbed, 2000 feet in length, showed evidence of possible continued settlement and a special section of pavement was laid over this. The slab thickness was increased to seven



inches. In addition to the standard reinforcing steel, ½-inch and ¾-inch transverse steel was placed (as shown in diagram). The twenty-foot lengths of ¾-inch steel act as tie rods between the two half sections.

Field Laboratory Control.

Gravel and sand were obtained from Mad River. Materials were handled through loading bunkers, located at the Arcata end of the job where paving operations started on September 25, 1924. A small field office 8 feet by 14 feet was built at the loading

Five

bunkers and equipped with the necessary screens, scales, and other equipment necessary for field sampling of aggregate.

Before paving operations started analyses of aggregate were made and a trial mix determined upon. It was found that the river sand did not contain sufficient fines to be within the required grading. To overcome this it was decided to obtain sand from the ocean beach and add about ten per cent in volume of it to the river sand. This brought up the grading between the 20 and 80-mesh and produced a sand mix approaching the proper grading line.

First runs proved the theoretical mix close to a correct working mix. The effort throughout the paving was to obtain as coarse a mix as could be properly worked and finished.

Calcium Chloride Tests.

Two series of test blocks for comparative water and calcium chloride curing were made under the supervision of Mr. C. L. McKesson, research engineer from headquarters. Results from these tests were published in an article by Mr. McKesson in the February, 1925, issue of the bulletin.

Details of Pavement Construction.

A five-sack batch was used throughout the job. Mixing was done by a Multi-Foote Mixer No. 21-E, which was charged from batch boxes hauled on the industrial railway. A Lakewood mechanical tamper was employed.

Header boards were 3-inch by 10-inch, surfaced four sides and were rested on wedge stakes 2 inches square and 10 inches long driven to grade and lined at four-foot intervals. This formed a very solid support true to line and grade.

In order to hasten the completion of the work and take advantage of all favorable weather, two shifts were employed. A comparison of the finished pavement done by day and night shift shows no apparent difference and speaks well for finishers who worked by the artificial lights.

Unfavorable Weather.

Unusually early rains came in October and were a source of interruption to the work throughout the job. Over one-third of the working days for pavement work were lost on this account, but the contractor held his working crew together and took advantage of every available hour of favorable weather.

Despite these difficulties the pavement was completed on March 5th. It was thrown open to traffic March 31st.

J. F. Knapp of Turlock was the contractor. The cost of the work, including the special heavy slab, bridge approaches, paving of slopes, and hauling in of additional shoulder material was approximately \$275,000, or \$39,000 per mile.



New twenty-foot concrete pavement in Sacramento County placed on an oil macadam sub-base. A gasoline tax job.

NEW MOSSDALE BRIDGE AND LINE CHANGE—SAN JOAQUIN COUNTY



MOSSDALE FROM THE AIR—A contract has been awarded for the new bridge at the location indicated in the airplane view secured through the cooperation of the United State Air Service. Rights of way also have been deeded the state by the county for the realignment of the highway, substituting two easy curves for six almost at right angles.

NEW CONSTRUCTION MANUAL OUTLINES DUTIES OF FIELD MEN

SUPERSEDING innumerable General Instructions and several hundred circular letters addressed to the divisions at various times since the organization of the state highway department in 1912, the Headquarters Construction Department has issued in printed form a Manual of Instructions, which is now in the hands of the field men and effective as of May 1st.

It is the purpose of the manual to cover all matters pertaining to the work of the Construction Department. It outlines, in a single compendium, the standards and practices of the California Highway Commission relating to construction procedure, and is a part of the plan of State Highway Engineer R. M. Morton to revise and codify the many instructions and regulations, now in force, governing the work of the several departments.

Policies Set Forth.

The general policies of the department in its relation to other departments, the contractor, and the general public are set forth in the introductory paragraphs and will be of interest to engineers and the public alike. The instructions, the manual points out, are to be studied in all cases in connection with the requirements of the specifications.

Continuing, the general instructions read, in part, as follows:

"Construction employees are constantly required to exercise their judgment on minor points not covered in the instructions. Matters of major importance not covered should be brought to the attention of the Division Engineer and the Construction Department at Headquarters. * * * *Thoroughness, attention to details and integrity of purpose are just as necessary as skill and experience in dealing with construction matters.*

Relations Should be Friendly.

Relations with contractors and other employees must be agreeably maintained. Surliness or overbearing tendency on the part of construction employees will not be tolerated. The contractor risks his fortune and reputation on the job, and it might be personally profitable sometimes to imagine yourself in his position. Anticipate the contractor's difficulties. Advise, but do not try to force him to a certain course of procedure where the contract and specifications permit more than one method. Avoid taking an arbitrary stand on details prior to friendly conference with the contractor or his representative.

All employees, and particularly engineers on construction, should keep always in mind that they represent the State of California, and are held by the state and by the people of the vicinity to the responsibility of seeing that the work is completed so as to afford the greatest benefit and the least inconvenience to the public.

Your relations with the public should be courteous but businesslike, always governed by common sense.

Criticism of Plans Invited.

Closest cooperation is desired by the Construction Department with those representing this branch of activity among the division employees. This department is responsible for the planning of details of the work, and the division or resident engineer should not hesitate in submitting to the Construction Department criticism of any deficiency or over-design.

Organization for Construction.

With the exception of those activities under the jurisdiction of the Bridge Department, all construction operations, including preparation of specifications and modifications from standard practice which may be necessary, and also methods of control of work, are under the general supervision of the Headquarters Construction Department. This department, including laboratory and research work, is in charge of the construction engineer and his assistants.

The relationship of the department to the divisions is intended to be advisory rather than directly supervisory in nature, although, should occasion arise, the Construction Department will issue direct orders to the division engineer.

All construction work, except that relating to bridges, is directly under the supervision of the division engineer and his construction assistants. All contract jobs will be organized with a resident or assistant resident engineer in charge, representing the state, to see that specifications are carried out and the work properly performed.

Responsibility for supervising any work shall not be placed in the hands of any employee who has not had thorough experience in that particular line of work. This requirement will not be modified without the specific approval of the Construction Department.

The resident engineer will so organize his work as to require a minimum of assistance. On large construction jobs, where various branches of activities are being simultaneously carried on by the contractor, several assistant resident engineers may be required and it shall be the duty of the division engineer to see that the various jobs are properly but not over manned.

Acting under the direction of the division engineer and his assistants, the resident engineer shall have immediate charge of construction work. * * * He shall be a practical field man of experience in the particular kind of work under his direction, and shall be responsible for the satisfactory management of the state's interest. Upon him devolves the responsibility of maintaining cordial working relations with the contractor, and of upholding the good reputation of the California Highway Commission. He is responsible for the activities and efficiency of those assigned to assist him and shall see that * * * they protect the state by thorough inspection.

Assistant resident engineers will be assigned as required to help the resident engineer, and to such assistants will be delegated the responsibility of inspection of portions of the work. Upon their efficiency will depend their advancement within the organization.

The resident engineer shall keep a daily diary to be retained as a part of the division records, showing the progress of the work, salient developments, important understandings with the contractor or his representative, record of important conversations or verbal

discussions and all other data which might have bearing in the future should details come into dispute.

Written Orders to the Contractor.

If an order is given which modifies in the slightest degree the meaning of the specifications, or if the contractor claims such modification, said order should be presented in writing to the contractor. Copies shall be kept of all written notices given the contractor. In case claims for extra work necessitate appearance of the resident engineer as a witness, he should not be in the position of having his unsupported word contradicted by the contractor.

Laboratory Controls Local Materials.

In the design of work, every reasonable effort will be made to effect economy by the use of local materials. Responsibility for the acceptance of material rests with the laboratory, and in all cases their decision as to suitability must be obtained and shall be final.

The laboratory is always ready and willing to assist the resident engineers so far as possible in solving the many problems constantly arising that are not related to the specifications. When in doubt, submit samples to the laboratory and be sure the latter is fully advised as to all the conditions involved.

All employment under the jurisdiction of the Construction Department, division engineers and resident engineers, is subject to the provisions of the Civil Service Act, * * * and the rules and regulations of the Civil Service Commission * * *. Employment of aliens directly on work performed by the state is contrary to law."

Day Labor Work.

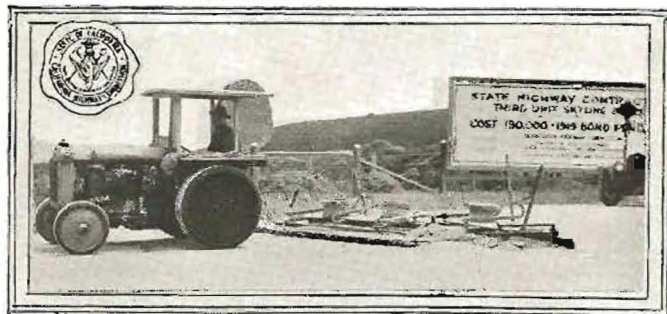
When authority is given for doing work by day labor, such work, the instructions state, shall be performed under approved specifications as if it were a contract. The same applies to work done by prison labor. This is in accordance with the state law on this subject, enacted in 1923.

Maintenance of Detours.

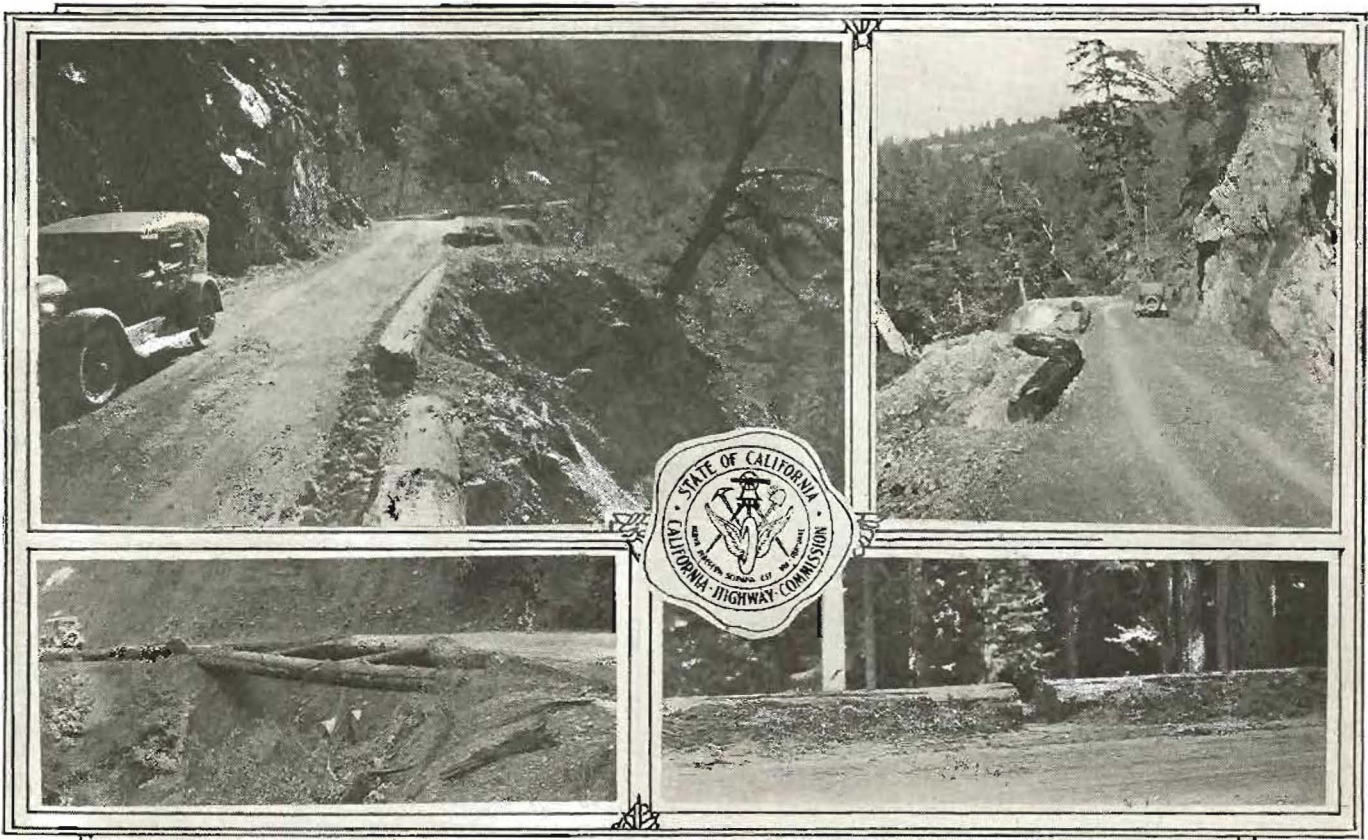
Public traffic must be maintained during the progress of state highway construction. Suitable detours shall be selected, maintained and properly signed. Laxity on the part of the resident engineer in attention to this detail discredits the entire highway organization. Warning signs * * * shall be procured by the resident engineer from the division office, and placed, lighted, and maintained in good condition by the contractor.

Attention of the field men also is called to the fact that all state-owned camps must conform to the requirements of the Commission of Immigration and Housing.

In closing the letter of transmittal, Construction Engineer C. S. Pope invites "suggestions and criticisms tending to the improvement of the instructions and the economy of the work."



MAINTENANCE ON THE SKYLINE BOULEVARD—Fordson and drag at work on the Skyline Boulevard, San Mateo County. Constant dragging keeps the road smooth.



GUARD RAILS ON THE REDWOOD HIGHWAY—Views showing use of logs to warn motorists of hazardous places and increase safety of the highway. This type of traffic guard rail is both inexpensive and effective. (Division I.)

LOGS PROVIDE CHEAP GUARD RAIL AND DRAINAGE CONTROL

By IRA C. THOMAS, Assistant Division Engineer.

UTILIZATION of local materials is not always for surfacing or paving. Along the Redwood highway, in Division I, logs that have fallen during storms or which were cut during the construction period have been used as guard rails to protect the traveling public at curves and narrow places in the roadway. They also assist in controlling drainage at the edges of high fills which are often on grades of four to seven per cent.

As its name implies, the Redwood highway in Mendocino, Humboldt and Del Norte counties is located through many miles of densely wooded country and a region of heavy rainfall. In northern Mendocino County, the original grade was constructed through virgin forests by convict labor. A narrow roadway following, in general, the contour of the country was turned over to the maintenance department as state highway. It was cut from the steep hillsides along the South Fork of Eel River, and originally in many places there was not room for two machines to pass.

Must Protect Traffic.

Increasing traffic is demanding wider and less tortuous roads, and it is evident this portion of the highway must be reconstructed before paving is considered. In the interim, the public must be protected. To construct a permanent, new standard guard rail would be money wasted, when the realignment takes place.

As a substitute, the log type guard has been tried with considerable success. Logs 18 inches to 30 inches in diameter are dragged to the narrow places and dangerous curves and placed along the outer edge of the roadway with approximately two-thirds of the diameter above the roadway surface. They are

securely anchored or braced against nearby rocks, stumps or trees and are neatly jointed on the curves.

As a result, traffic may use the full available width of the roadway without fear of running off the edge of the grade. Observation revealed that, previous to placing the logs, the average motorist would not venture closer than three feet from the edge of the bluff.

Aid Drainage, Too.

Another important use of the log guard rail is as a drainage control. This has been thoroughly demonstrated on the recently completed section of grading between Trinidad and Orick, in Humboldt County.

Here, many of the embankments are composed of a sandy material which is very easily eroded. Early in the winter, it became apparent that much of the road would be destroyed if drainage on the fills could not be controlled. Logs were placed on the extreme edge of the shoulders, as previously described. This eliminated the possibility of storm waters washing away the edge of sandy fills, and in addition is providing a protection to traffic. Openings between the logs were made at low points in the grade and the storm waters directed over the slope of the fill in a flume, preventing erosion.

Approximately 3000 feet of these logs have been laid at a cost of approximately 33 cents per lineal foot.

The first Federal Aid law to get into road building was recommended by none other than Thomas Jefferson.—*Senator McKellar.*

Proposed Expenditures for 1925 Listed

THE California Highway Commission, during the recent legislative session, furnished the Revenue and Taxation Committee of the State Senate with its plan for the expenditure of construction funds for the remainder of the year 1925. The estimated cost of the projects proposed is \$2,690,000.

The commission's program which is based upon estimated income from federal aid prior to January 1, 1926, as furnished the Senate committee, is as follows:

SAN BERNARDINO COUNTY—Victorville to Helen-dale, 20 miles, grading and surfacing, \$200,000.

RIVERSIDE COUNTY—Mecca-Blythe route, grading and surfacing, 10 miles, \$100,000; Coachella storm water bridge, \$20,000.

IMPERIAL COUNTY—Brawley to Imperial, grading and surfacing, 8 miles, \$125,000; El Centro to Holtville, grading and surfacing, 9 miles, \$135,000; Holtville to Highline canal, grading and surfacing, 7 miles, \$100,000; improvement Sand Hills, 6.5 miles, \$300,000.

LOS ANGELES and VENTURA COUNTIES—From eight miles north of Santa Monica to Oxnard, surfacing graded sections and grading and paving Hueneme road to Oxnard (covers 35 miles), \$535,000.

ORANGE COUNTY—Corona Del Mar to Serra, grading and surfacing, 14.5 miles, \$435,000.

SAN DIEGO COUNTY—Mountain Springs grade, surfacing, 7 miles, \$75,000; San Onofre and San Mateo Creek bridges, \$230,000.

SIERRA and NEVADA COUNTIES—Floriston to Nevada state line, grading in Truckee River canyon, 6 miles, \$200,000; three bridges and railroad grade separation in Truckee Canyon, \$150,000.

TEHAMA COUNTY—Cooperative paving of gap in trunk highway through city of Corning, one mile, \$40,000.

YOLO COUNTY—Cooperative railroad grade separation at west approach to Sacramento, \$40,000; grading and paving .65 of a mile at west entrance to Sacramento, \$25,000.

Total new construction for balance of 1925, \$2,690,000.

Work to be Fairly Apportioned.

It will be noted that the greater number of projects are located in what has been designated the thirteen southern counties. In presenting its proposed expenditures to the Senate, the commission pointed to this fact and explained that during 1923 and 1924, particularly during 1924, by far the greater amount of new construction authorized was in the forty-five northern counties. In justice to the south, therefore, the bulk of the 1925 work will be done in that section of the state.

The legislature was informed that federal aid is now the commission's only source of income for new construction.

RECONSTRUCTION BUDGET FOR 1925.

Under present circumstances, the commission is expending for reconstruction of existing highways a larger amount than is involved in its program for new work. The reconstruction budget for the year 1925 totals \$5,160,000 and is allocated in equal amounts to the thirteen southern counties and the forty-five northern counties.

The most necessary projects are being taken up in each section, but available funds are sufficient to care for less than half of the expenditures recommended as urgent by the division engineers.

The 1925 reconstruction program as approved by the commission is as follows:

MENDOCINO COUNTY—Leggett Valley to 2 miles north of Rock Creek, 6.3 miles, widening and resurfacing, \$200,000.

SHASTA COUNTY—Half Way Creek to Dog Creek, 10.84 miles, widening Pacific highway; bridges across Salt Creek, Charley Creek, Doney Creek; \$550,000.

SACRAMENTO COUNTY—American River to North Sacramento, .65 of a mile, paving; North Sacramento subways; \$75,000.

GLENN COUNTY—Culverts over Central Irrigation Canal, \$10,000.

YOLO COUNTY—Woodland Wye to Woodland, 8.33 miles, widening with cement concrete shoulders; Davis to Putah Creek, 4.47 miles, widening and thickening pavement; \$160,000.

PLACER COUNTY—Surfacing and grading at Lake Tahoe, 14.1 miles; surfacing Tahoe City to Nevada line, 11.55 miles; \$50,000.

EL DORADO COUNTY—Tallac to McKinney's, 6.3 miles, grading at points; Camino to 2 miles east of Sportsmen's Hall, 5.77 miles grading and surfacing; \$50,000.

CONTRA COSTA COUNTY—San Pablo Creek to El Ciervo, 6.64 miles, widening with asphalt macadam shoulders, \$150,000.

SAN MATEO COUNTY—Cypress Lawn Cemetery to San Bruno, 4.39 miles, widening pavement; through Daly City 1.2 miles, widening; \$200,000.

SONOMA COUNTY—Santa Rosa to Healdsburg, 9.71 miles, widening and thickening pavement, \$300,000.

MONTEREY COUNTY—San Lucas to King City, 8.5 miles, macadam shoulders; San Ardo to San Lucas, 11.5 miles, macadam shoulders; one mile north of Bradley to San Ardo, 12.9 miles, macadam shoulders; \$100,000.

SANTA BARBARA COUNTY—Santa Barbara city to Montecito, 1.91 miles, widening pavement; Ortega Hill 1.42 miles, grading and surfacing; Rincon Hill, 1 mile grading and surfacing; \$250,000.

MERCED, FRESNO and KERN COUNTIES—Buhach Canal to Livingston, 6.41 miles widening and thickening; Bakersfield to Lerdo, 8.21 miles, widening and thickening; Fresno to Herndon, 5.94 miles, cement concrete shoulders; \$350,000.

LOS ANGELES COUNTY—Bridge across San Gabriel River; Montebello subway; improvement of alignment on Ridge Route; Montebello to Whittier, 3.34 miles, widening and thickening pavement; widening Ventura boulevard, 5 miles; \$660,000.

SAN DIEGO COUNTY—Carlsbad railroad grade separation; Oceanside to 2 miles south of San Onofre, 15.70 miles, widening and thickening; 2 miles south of San Onofre to northerly boundary, 3.65 miles, grading and paving; \$690,000.

VENTURA COUNTY—Extension of Ventura River bridge; Middle Rincon causeway one-tenth of a mile; paving Rincon seawall, 1.31 miles; \$125,000.

SAN BERNARDINO COUNTY—San Bernardino to Redlands, 5.41 miles, widening and thickening pavement; Big Bear dam to Fawnskin, 3.25 miles grading and surfacing; \$325,000.

RIVERSIDE COUNTY—Banning to Westmoreland, 15 miles, rock shoulders, \$75,000.

SAN JOAQUIN COUNTY—New bridge over San Joaquin River at Mossdale; southerly boundary to Turner station, 11.5 miles, rebuilding pavement; \$500,000.

MONO and INYO COUNTIES—Reconstruction at various places in Division IX, \$75,000.

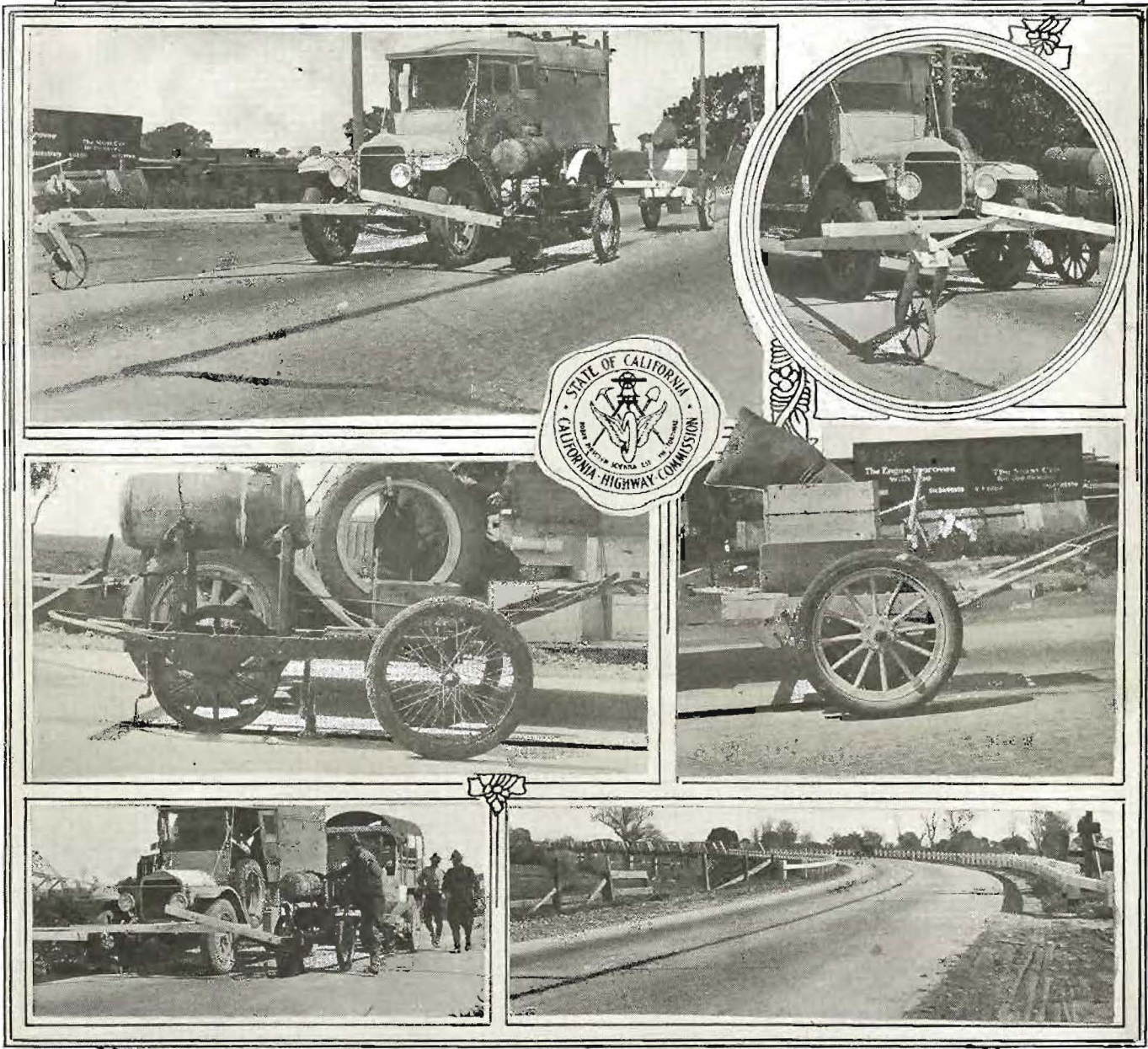
ORANGE COUNTY—San Juan Creek bridge; San Juan Creek to Galivan, 5.59 miles, widening and thickening pavement; \$265,000.

Total reconstruction for 1925, \$5,160,000.

INFORMATION ON CONTRACTS

The Bulletin, in the April issue, published a compilation of information on practically all contract work awarded or accepted as completed by the highway commission now in office. This issue contains a list of all contracts completed and accepted, awarded and pending award since the April issue. This information will be published monthly hereafter. See page fourteen of this issue.

DIVISION X SUPERINTENDENT BUILDS SUCCESSFUL PAVEMENT MARKER



THE BIXLER MARKER IN ACTION—Upper left, marker in operation showing truck and equipment; upper right, wheel guide which runs at edge of pavement; left center, close up of jet and brush in operation; right center, the sawdust distributor for protecting the freshly painted strip; lower left, marker in operation on levee road near Isteon, Sacramento County; lower right, work of the marker near Galt.

By R. E. PIERCE, Assistant Division Engineer in charge of Maintenance.

NECESSITY proved the mother of invention recently when Division X desired to paint a traffic stripe along the expansion joint in the center of the new pavement between Sacramento and McConnells on the Upper Stockton highway.

A small hand machine was tried out but was discontinued because of the excessive amount of paint used; better and more economical results were desired. As a means to this end, Maintenance Foreman B. W. Bicksler, in charge of this section, was authorized to try and devise a machine that would be more satisfactory. After some experimenting, the outfit shown above was

evolved. It consists of two units—one for painting the line and the other for distributing sawdust over the fresh paint to prevent its being smeared over the pavement by traffic.

Before the plan for covering the fresh paint with sawdust was worked out, it was found impossible to keep traffic from spoiling the looks of the job. An effort was made to correct this defect by sprinkling cement over the paint by hand. This proved very expensive and Mr. Bicksler suggested sawdust as a substitute.

It was first planned to operate the machine for spreading the sawdust by hand but later a scheme was worked out for attaching it to the truck, as shown in the illustrations.

Discarded Parts Are Useful.

The painting rig, shown in the close-up, consists of a frame supporting the paint container and mounted on three wheels; the front, or marker, is a discarded Ford wheel with a felt-covered rim. We have two of these, interchangeable, one having a rim 4 inches and the other a rim 6 inches in width. The other two wheels were taken from a discarded motorcycle. The container is an old truck gas tank and at first was used as a pressure tank to spray the paint onto the marking wheel. This proved unsatisfactory, and the paint now flows down a small pipe by gravity and pours onto the pavement immediately in front of the marking wheel. A cut-off valve is attached to a long lever so it can be operated by the one pushing the machine. Behind the marking wheel, two paint brushes are placed so as to smooth the paint and work it into the pavement.

The sawdust distributor consists of a bin for holding the sawdust mounted on a pair of old Ford wheels. Two small wooden wheels connected by an axle with an eccentric are fixed so that they can be brought to bear against the large wheels. The eccentric is connected by a rod with a tin trough under an opening in the sawdust bin, agitating it and causing the sawdust to fall onto the freshly painted mark. A burlap sack is dragged behind to spread the sawdust evenly.

The line is kept straight by an out-rigger with a small wheelbarrow wheel so placed as to be easily seen by the truck operator.

It is run along the outside edge of the pavement as a guide. The marking machine is fastened to the front of the truck and the sawdust distributor to the rear. They may be adjusted to mark any width of pavement.

Recently, we painted five miles of the pavement from the Isleton bridge to the Rio Vista bridge, on the levee road in the Sacramento delta, and found that we could average about two miles per hour with a three-man crew.

Cost Per Mile.

The cost of the work per mile was as follows:

<i>Labor:</i>	
Three men at \$1.75 per hour for one-half hour....	\$0 87½
Truck rental at \$0.75 per hour for one-half hour..	37½
<i>Materials:</i>	
6 gallons asphalt paint at 12½¢.....	75
10 sacks sawdust at 12½¢.....	1 25
Gas. oil, etc.....	75
<hr/>	
Average cost per mile.....	\$4 00

The asphalt paint is made by dissolving asphalt in gasoline. A clean-cut job free from smearing is secured by using this apparatus, and it is our intention to paint a white stripe on the asphalt roads of the division later in the year.

LEGISLATION AFFECTING HIGHWAYS BEFORE THE 68th CONGRESS

THE LAST congress had before it several matters of legislation affecting highways. As usual, more bills were introduced than became laws. The following were of most general interest.

Bills Which Became Laws.

Dowell Bill (H. R. 4971), authorizing appropriations under the Federal Highway Act \$75,000,000 for the fiscal year 1926, \$75,000,000 for fiscal year 1927; and for forest roads and trails \$7,500,000 for the fiscal year 1926 and \$7,500,000 for the fiscal year 1927. This bill also makes organic law that all authorizations for roads shall hereafter be apportioned to the states by the Secretary of Agriculture on January 1 of each year. Nontaxable Indian lands are hereafter to be considered as "unappropriated public lands" in the operation of the Federal Highway Act.

Temple Bill (H. R. 4522), to complete topographic survey of the United States.

Reece-Capper Bill (H. R. 7269) directs the Secretary of War to transfer to the Secretary of Agriculture 100 5-ton tractors and 1000 trucks for use on roads.

Pan American Congress of Highways (S. J. Res. 190), authorizes the President of the United States to appoint a commission of five to attend the Pan American Congress of Highways at Buenos Aires October 3, 1925. This congress is the result of the visitation made in June of last year to this country of representatives of all the Pan American countries who visited many of our highways under the escort of the State highway departments.

Bills Which Did Not Become Laws.

Colton Bill (H. R. 6133). This bill provided that in the case of any state containing unappropriated public lands exceeding 5 per centum of the total area of all lands in the state in which the population does not exceed 10 per square mile of area, federal aid up to 100 per cent may be used on the primary system.

Also in the case of any project involving construction in mountainous, swampy, or flood lands on which the average cost per mile for the grading and drainage structures other than bridges of more than 20 feet clear span, will exceed \$10,000 per mile; and also in the case of any project which, by reason of density of population

or character and volume of traffic, the state highway department and the Secretary of Agriculture may determine should be improved with a surface of greater width than 20 feet, the Secretary of Agriculture may pay more than \$15,000 per mile. In no event shall the payments of federal funds on any project under this proviso exceed 50 per centum of the cost of the project, except as such payments are authorized to be increased in the public-land states.

That in apportioning appropriations for forest roads no state entitled to share in such appropriations shall receive less than \$20,000 of each year's allotments. This bill will be reintroduced in the next congress.

Naming Oregon Trail (S. 2053). Passed Senate, died in Committee on Roads of the House after extensive hearings.

Reorganization Bill (H. R. 9629). This bill provided for the transfer of the Bureau of Public Roads to the Department of the Interior and the creation of a new Department of Transportation in the Department of Commerce. This bill did not get to the floor of either House of Congress. It will be reintroduced in the next congress.

Denison Bill (H. R. 10468). This bill proposed granting privilege of erecting toll bridges under certain restrictions. No action was taken in either house of congress. Will be reintroduced in the next congress.—*American Highways.*

Ignorance.

A congressman's wife, waking him in the middle of the night, told him that there were robbers in the house.

"Impossible," said the congressman. "There may be robbers in the Senate, but not in the House."—*Florida Times-Union.*

LEGISLATIVE REVIEW NEXT MONTH.

The June issue of the Bulletin will contain a complete review of new highway legislation which will become effective as a result of the recent session of the legislature and executive approval. The period during which the Governor may sign bills does not expire until May 29th.

WHAT THE DIVISIONS ARE DOING

DIVISION I CELEBRATES OPENING OF NEW SMITH RIVER HIGHWAY

THE FORMAL opening of the first section of the Smith River highway between Adams Station and Patricks Creek, Del Norte County, was celebrated with a barbecue at the latter point on May 10th. Temporary bridges have been completed and the road is now open to traffic. After a recent trip of inspection, Commissioner Louis Everding declared the new water level grade along the river the most beautiful highway in California.

Many citizens from all parts of Del Norte County and from Grants Pass and other points in Oregon participated in the celebration.

Temporary Road Built

The section of the road now open eliminates fifteen miles of narrow, steep and rough mountain road. Three miles of temporary road up Patricks Creek, recently completed by the Division, affords a connection between the new construction and the county road. The opening of the road all the way through to the Oregon line is expected during 1926.

The section opened was built by the Bureau of Public Roads with funds furnished by the California Highway Commission and the United States Forest Service and is an important part of the Grants Pass interstate connection. Another section of seven miles is under construction by convict labor.

There have been additional slides in Division I, due to late rains, but maintenance crews have kept the highway open to traffic. The rainfall at Willits is expected to exceed sixty inches for the season.

LATE RAINS REDUCE MAINTENANCE COSTS REPORTS DIVISION II

LATE RAINS throughout the northern counties have considerably reduced maintenance costs in Division II. Sprinkling carts will not be in service until a month later than usual, and spring maintenance has been made more effective in preparing the roads to carry the heavy traffic expected during the coming summer.

The most important maintenance activity of the division at the present time is the preparation of some forty-eight miles of the Pacific highway for an application of calcium chloride. The work has been completed on ten miles immediately south of the Oregon line and the work on the entire section is scheduled for completion by June 1st.

New Highway Excellent.

Reconstruction contracts—widening and straightening—on the Pacific highway in this division accepted as complete by the commission during March are fully measuring up to expectations. The ease and safety with which traffic is handled over these sections is comparable with valley highways.

The Nevada Contracting Company is making excellent progress on the contract for the reconstruction of eleven miles of the Pacific highway between Halfway Creek and Dog Creek. Three power shovels are working a double shift. In addition, a 50-man culvert crew is busy and a rock crushing plant is in operation. Completion of this section before next winter is predicted.

DIVISION III PLANS WORK ON HIGHWAY IN TAHOE SECTION

DIVISION III is making preparations to resume the widening and surfacing of state highways along the shores of Lake Tahoe, discontinued during the winter months. Widening work will be done at the south end of the lake and surfacing will be placed between Tahoe City and Brockway, on the northern shore. State equipment stored at Carnelian Bay will be used on the latter project.

Concrete bridges on the state highway in Butte County, built by the county a number of years ago, will be resurfaced with asphalt concrete in the near future.

Screenings have been placed on the state highway between Auburn and Colfax and plans are being made for the laying of an oil macadam surfacing during the coming summer to prevent raveling.

Fill is Completed.

The sand fill at the north end of the American River bridge between Sacramento and North Sacramento, the first step in the rebuilding of the state highway between these two cities, has been completed.

Spring grading on valley roads has been completed and similar work is now under way on the foothill and mountain roads which are being dragged and placed in condition for traffic.

Division III is looking forward to the establishment of a system of permanent maintenance stations and the purchases of sites in Truckee, Colfax, Marysville, Willows, Williams, and Chico is under consideration.

DIVISION IV IMPROVES ROADS IN CALIFORNIA REDWOOD PARK

THE maintenance forces of Division IV, during the past winter, have completed important improvements on the state roads leading to and within the California Redwood Park in Santa Cruz County. Considerable straightening of the roadway and daylighting of blind curves has been done. Plans were made for keeping the road well sprinkled during the period of heavy summer traffic.

Widening of the Boulder Creek highway has been resumed by state forces and if funds permit the work will be continued during the summer. Traffic on this popular route is becoming heavier each year.

Surfacing to be Stock Piled.

The division is planning the purchase and stock piling along the Pacheco Pass highway of 10,000 cubic yards of gravel to be used for maintenance purposes.

Placing of concrete shoulders on either side of the existing pavement on the state highway through Daly City has been completed. A local road district financed sidewalks and curbs, and with the work done by the division the state highway through the town presents a much improved appearance.

Division Engineer J. H. Skeggs recently joined with Division Engineer L. H. Gibson and County Engineer H. F. Cozzens of Monterey County in investigating the possibility of building an improved highway from Hollister to King City by way of the Pinnacles National Monument.

PISMO RIGHTS OF WAY SECURED

RIGHTS OF WAY for the proposed line change and railroad grade separation on the Coast highway at Pismo Beach, San Luis Obispo County, Division V, are in such shape the work can be advertised for contract, and it is probable bids will be asked during the present month. Rights of way either have been purchased outright or funds posted in court and an order of possession secured. Attorney Paul F. Fratessa represented the commission in the court proceedings. The division's plans are now at headquarters.

Division Engineer L. H. Gibson has had maintenance forces busy removing slides from the San Simeon highway, north of



Loading apparatus used by maintenance crew on small shoulder widening jobs. (Division II.)

Cambria. The new grade will be placed in condition for travel to its present terminus at Salmon Creek.

MUCH WORK UNDER WAY AND IN PROSPECT IN DIVISION VIII

ACTIVITIES in Division VIII—San Bernardino, Riverside and Imperial counties, are on the increase. Surveys are being made and rights of way secured for several grading contracts in the Imperial Valley, paving is under way in San Bernardino County, and bids are pending for additional contracts. H. G. Fenton, contractor on the Brawley-Imperial grading job, is making strenuous efforts to get as much work done as possible before the period of hot weather.

The state and the town of Westmoreland are cooperating in paving the highway through the business district and the Pioneer Transfer Company is striving to complete the work before summer.

The contract of Basich Brothers for paving on the trunk line highway between the San Bernardino County line and Beaumont is well under way and rapid progress is being made.

The contract through the town of Barstow is now complete and open to traffic and a very striking improvement has been made. The new road eliminates a number of exceedingly dangerous grade crossings in the Santa Fe yards and over its main line tracks. The distance is considerably reduced.

RECONSTRUCTION PROJECTS GETTING UNDER WAY IN DIVISION X

WIDENING of the state highway between Davis and Woodland and also between the Winters Wye and Putah Creek, in Divisions X and III, is now under way. Concrete shoulders are being placed by the Kaiser Paving Company and between the Winters Wye and Putah Creek an asphalt concrete surfacing over the old fifteen-foot slab is being placed by Force and Currigan. From the Woodland Wye to Davis, the new width will be twenty-seven feet. The city of Davis is considering paving the highway the full width of the street through the city limits. Kaiser has a central mixing plant at Davis. C. M. Butts is in charge for the state.

San Joaquin Paving Gets Started.

Between Ripon and Turner Station, in San Joaquin County, J. F. Knapp is starting operations on the placing of 2.7 miles of flush concrete shoulders and 8.9 miles of new concrete pavement. The new pavement will be twenty feet wide with an oil macadam subbase.

A central proportioning plant and an industrial railroad will be used on this job. C. W. Springer is temporarily in charge for the division.

With more favorable weather at hand, R. N. Murdock is making better progress on the grading of the Alpine state highway between Jackson and Pine Grove. The project is about 50 per cent complete.

Shoulder Widening.

State forces under C. Bovey are completing some important shoulder work on the trunk line between Tracy and the westerly boundary of San Joaquin County. Material from an abandoned levee is being hauled for filling of roadside ditches and extension of shoulders. The highway has been made much safer and its appearance greatly improved.

New Experiment in Piles.

The maintenance forces of Division X are trying out an experiment at the Rio Vista bridge. The trestle approach, damaged during the high water of last winter, is being repaired, using Eucalyptus trees for piling.

Informal bids have been asked for the crushing and stock piling of 10,000 cubic yards of gravel on the lateral near San Andreas.

Crushed rock has been placed along the shoulders in Yolo County, east of the Causeway, and west of Cordelia in Solano County. Wooden wheel guards have been placed on several concrete bridges in the latter county.

Maintenance forces are busy opening the mountain roads and late showers have been keeping grading crews on the jump.

FIFTEEN-FOOT PAVEMENTS RAPIDLY BEING WIDENED IN DIVISION VII

WHEN the contract for the widening and thickening of 5.6 miles of the highway between San Juan and Galivan, Orange County, Division VII, is completed it will mark the reconstruction of the last of the original fifteen-foot state pavement in Orange County. The reconstruction program of the commission is fast putting an end to the old, narrow and dangerous pavements in populous sections of southern California.

Two new subcontractors, each with a gasoline shovel, have started work on the Malibu Ranch grading contract north of Santa Monica, and the work is going ahead with greater rapidity than ever before. The day labor camp which has been in operation on this section of the Coast boulevard for over a year, having completed the work assigned it, has been discontinued.

With the exception of a 1000-foot extension at Laguna Beach, now under way, the McCray contract for the grading of the Corona Del Mar-Laguna Beach section of the Coast boulevard has been completed and accepted.

State forces have completed the grading of the approaches to the new state highway bridge over the north arm of Newport Bay and the structure, which was built by Orange County, is now open to traffic, rendering the crossing of the bay by ferry unnecessary.

BRIDGE DEPARTMENT NEWS

BY THE TIME this is in print work will have started on one of the worst single situations on the state highway system, the elimination of two dangerous grade crossings between Sacramento and North Sacramento. Lord and Bishop, contractors, plan to carry on the work simultaneously on the two underpasses which, with the ground level pavement to be built by Division III, will eliminate the present wooden trestle at this point.

The State Railroad Commission has authorized the construction of an underpass under the tracks of the Union Pacific Railroad near Montebello on the Whittier boulevard, Los Angeles County, one of the heaviest traffic arteries on the state system. The total width of the roadway will be 61½ feet which will provide two 30-foot one-way roadways for traffic. The cost of the structure will be heavy and will be shared by the state, county and the railroad.

Work is starting on the San Juan Creek bridge, Orange County. A. J. Meehan is resident engineer representing the bridge department.

Construction is well under way on the Salt Creek bridge on the Pacific highway, Shasta County. A. S. Kennedy is resident engineer on this project. A detour bridge for handling traffic is in place.

Children to be Protected.

A safety pedestrian way for school children and workmen who are forced to cross the bridge daily will be provided by the sidewalk now under construction in connection with the repairing of the bridge across Eel River on the Redwood highway, near Scotia, Humboldt County. Work has been started by Henry Padgett, contractor. A new floor is being placed. Increasing traffic made necessary the use of the entire width of the roadway of the bridge for vehicle traffic. H. M. Sturges is resident engineer.

C. O. Dingle has completed his work at the Simmons Creek bridge, San Luis Obispo County, and has been assigned to the San Gabriel River bridge, Los Angeles County.

Albert A. Lernhart, recently in charge at the Van Duzen River bridge on the Redwood highway, is now resident engineer on the Polaris crossing, in the Truckee River canyon, Nevada County. Construction has been resumed on this bridge.

Milton E. Whitney has been transferred from the Ventura seawall job to the Cottonwood Creek bridge in Kern County, taking the place of G. W. Thompson who is now in charge at the seawall.

Albert B. Willitt will be in charge of the construction of the San Gorgonia Wash structure in Riverside County.

J. B. Hodges will be resident engineer on the Ventura River bridge extension after he completes final reports on the Santa Ana River and Newport Bay bridges built by Orange County under state supervision.

J. H. Orr, J. M. Lackey and J. P. Winslow are engineers recently added to the staff of the bridge department.

Leo Fahy has been placed in charge of the department's clerical work, having been transferred from the accounting department. Miss Grayce Maddox is cashier.

MOTOR VEHICLE FUND CONTRACTS (Including Gasoline Tax Fund)
COMPLETED AND ACCEPTED SINCE APRIL 6, 1925.

Cont. No.	Di- vision	County	Route	Sec.	From	To	Miles	Type	Contractor	Estimated cost	Date Contract approved by Attorney General	Contract time days	
M-59	III	Glenn.....	45-7	A	Central Irrigation Canal.....			Concrete Culverts.....	Otto Parlier.....	\$17,195 63	Jan. 3, 1925	60	
AWARDED SINCE APRIL 6, 1925													
M-57	III	Sacramento.....	3	B	At Sacramento Northern Rail- road Crossing.....			Underpass.....	Lord & Bishop.....	23,319 00	April 15, 1925	125	
M-68	III	Sacramento.....	3	B	At Western Pacific Railroad Crossing.....			Underpass.....	Lord & Bishop.....	44,881 88	April 15, 1925	125	
M-69	VI	Fresno.....	4	C	2 miles north of Fresno.....	Herndon.....	5 92	Concrete Shoulders.....	Stewart & Bland.....	45,685 91	April 15, 1925	90	
M-70	VII	Orange.....	2	A	At San Juan Creek.....			Bridge.....	Stevens Bros. & Haas.....	28,773 68	April 15, 1925	150	
M-71	I	Humboldt.....	1	E	Eel River Bridge.....			Sidewalk.....	Henry Padgett.....	19,890 00	April 15, 1925	100	
M-72	V	Santa Barbara.....	2	J	Ortega Hill.....	Santa Barbara.....	1 0	Concrete Pavement and Surfacing.....	Cornwall Constr. Co.....	60,075 90	May 4, 1925	100	
M-73	VII	Los Angeles.....	2	D	At San Gabriel River.....			Bridge.....	Chas. and F. W. Steffen.....	92,575 20	May 4, 1925	200	
M-74	VII	Orange.....	2	A	San Juan Creek.....	Galivan.....	5 50	Concrete Pavement.....	John & Bressi.....	181,687 03	May 4, 1925	125	
M-75	IV	Contra Costa.....	14	A-B	San Pablo Creek.....	El Ciervo.....	6 64	Resurface and Widen.....	Kaiser Paving Co.....	155,102 95	May 4, 1925	175	
M-76	VII	Los Angeles.....	4	A	Various locations.....			Paint Four Bridges.....	D. E. Burgess.....	7,882 03	May 4, 1925	125	
M-77	I	Mendocino.....	1	J	Leggett Valley.....	2 miles North of Rock Creek.....	0 3	Grade and Gravel.....	Butterfield Sears Co.....	210,118 61	May 4, 1925	400	
M-78	IV	San Mateo.....	2	A	Cypress Lawn Cemetery.....	San Bruno.....	4 39	Concrete Shoulders.....	Federal Paving Co.....	230,546 39	May 4, 1925	150	
Sub-total.....										30 44	\$1,109,538 59		
PENDING AWARD													
	VII	San Diego.....	2	D	San Onofre.....	Westerly boundary.....	3 65	Concrete Pavement.....		\$184,223 88			
	VII	Ventura.....	2	D	Ventura River Bridge.....			Bridge Extension.....		17,985 38			
	I	Humboldt.....	1	C-E-G	Various.....			Painting Five Bridges.....		56,952 00			
	III	El Dorado.....	11	E-F	Camino.....	2 miles east Sportsmans Hall.....	5 8	Grade and Gravel.....		51,464 34			
	VI	Kern.....	4	D	Beardsley Canal.....	Lerdo.....	8 2	Shoulders and Surface.....		155,006 30			
Total Motor Vehicle Fund awarded and pending award.....										48 09	\$1,525,170 49		

Note—The above obligations charged against the motor vehicle and gasoline tax funds do not include funds from these sources obligated for general maintenance and for specific betterments not being done under contract.

STATE HIGHWAY FUND CONTRACTS (Bond Funds, Including Federal Aid)
COMPLETED AND ACCEPTED SINCE APRIL 6, 1925.

Cont. No.	Di- vision	County	Route	Sec.	From	To	Miles	Type	Contractor	Estimated cost	Date Contract approved by Attorney General	Contract time days	
440	I	Humboldt.....	1	F	Across Van Duzen River near Alton.....			Reinforced Concrete Bridge.....	Bardwell & Zimmerman.....	\$110,937 25	April 16, 1924	250	
459	V	San Luis Obispo.....	33	B	Simmons Creek.....			Bridge.....	C. C. Gildersleeve.....	5,745 15	Nov. 15, 1924	90	
460	VIII	San Bernardino.....	31-58	F-F	½ mile west of Barstow.....	1 mile east of Barstow.....	2 32	Grading.....	H. M. Hennig.....	15,046 83	Dec. 13, 1924	60	
461	VIII	Imperial.....	27	B	Yuma Project Main Canal.....			Timber Trestle.....	W. M. Ledbetter & Co.....	7,371 00	Dec. 13, 1924	90	
Total State Highway Fund jobs completed and accepted.....										2 32	\$139,100 23		
AWARDED SINCE APRIL 6, 1925													
466	VII	San Diego.....	2	D	San Onofre Creek.....			Bridge.....	Fluor Construction Co.....	\$62,118 28	May 4, 1925	125	
PENDING AWARD None													

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

Fourteen

CALIFORNIA HIGHWAYS.

HIGHWAY NEWS NOTES

Loses Life in Kern River.

FRANK T. DAVIS, timekeeper, Division VI, lost his life in the Kern River on April 30th when he volunteered to swim the river to locate a bench mark on the opposite side for engineers working in connection with the prison road camp. He had been employed by the commission for four years and had an excellent record.

Division III Man Promoted.

A. R. McEwen, assistant resident engineer, has been promoted to resident engineer on the Boca to Floriston grading contract in the Truckee River Canyon.

C. W. Rust is acting as assistant resident engineer in charge of the grading and graveling job west of Williams, Colusa County.

Otto Hadley has been appointed clerk-stenographer at the Division III shop.

News From the Redwood Country.

H. C. Ingle, resident engineer on the Eureka-Arcata paving contract, Division I, has been transferred to Division VIII and is in charge of the paving through the town of Westmoreland.

C. F. Oliphant, draftsman in Division I, has been transferred to Livingston, Division VI, as assistant resident engineer.

A. E. Shaffer, formerly with the State Motor Vehicle Department in Sacramento, has accepted a position with the Division office at Willits.

Transferred to South.

R. W. Van Stan and M. L. Johnson, assistant resident engineers, have been transferred from Division II to Division VIII, and are located at Westmoreland and Brawley, respectively.

Forces Increased in South.

FORMER Division VI engineers, who have been transferred to Division VIII because of the increased construction program to be placed under way there, are R. A. Westbrook, F. A. Read, J. M. Hollister, Herbert Gladrow, J. V. Garrison, and Donald J. Stout.

Assists in Convict Hunt.

R. A. Watkins, equipment superintendent with Division X, made an airplane flight recently to assist the Sacramento police authorities in their hunt for two escaped convicts.

B. K. Lehman, formerly of headquarters, has been appointed clerk in the Division X equipment department.

Highway Engineer Honored.

R. E. Pierce, assistant division engineer, Division X, has been elected president of the Sacramento Chapter of the American Association of Engineers and also delegate to the national convention of the association.

Changes in Division VII.

C. N. AINLEY, resident engineer on the recent work between Newport and Laguna, has been assigned to the Jahn and Bressi reconstruction contract between San Juan and Galivan, Orange County.

Assistant Division Engineer J. C. More has been elected vice president of the Los Angeles chapter of the American Association of Engineers.

M. L. Sullivan, superintendent in charge of line changes on the Ridge Route, has recovered from a severe attack of influenza and pneumonia.

W. D. Eaton will be resident engineer on the San Mateo-San Onofre Creek line change.

E. T. Scott, maintenance superintendent, is the proud father of a brand new son.

H. C. Gladrow, recently transferred from Division VIII, has been assigned to the party of L. G. Corey on the Hauser contract.

It is beginning to look as though all the draftsmen of the future will be women. Forrest Manhart, of headquarters, is the proud daddy of a bouncing baby girl.

Highways and reforestation should continue to have the interest and support of the government.—*President Coolidge.*

UNIFORM MARKING SYSTEM FOR U. S. HIGHWAYS CONSIDERED

AGREEMENT was reached in Washington, D. C., April 21st, at the closing session of the meeting of the joint board of state and federal highway officials to create a group of interstate roads to be known as "United States Highways," which will be designated with uniform markers.

Final decision on the selection of the highways and the style of signs will be reached August 3d, when the board is to meet in Washington again after a series of regional meetings throughout the country to receive the recommendations of state highway officials.

The first regional meeting was held on the Pacific coast May 15th and 16th at San Francisco. Others will be held in the Mississippi Valley, probably at Kansas City; in the upper Mississippi Valley, probably at Chicago; in the east, probably at New York, and in the southeast, probably at Atlanta.

Policy Regarding Trail Associations.

The board adopted the policy of the American Association of State Highway Officials concerning the trail associations, by agreeing not to oppose "reputable trails' associations" now existing provided their activities do not conflict with state and federal policies.

R. M. Morton, State Highway Engineer of California, is a member of the board which was appointed recently by the Secretary of Agriculture. He was unable to attend the Washington meeting but was present at the western session in San Francisco.

STANDARD OIL REPRESENTATIVE COMMENDS MECCA-BLYTHE WORK

THE MECCA-BLYTHE state highway in eastern Riverside County, connecting the Coachella Valley with the Palo Verde Valley, was taken over for maintenance by the commission on January 1, 1925. With the exception of its termini, the road is mostly over desert sands. The work that is being accomplished by the maintenance forces of Division VIII is attracting attention.

The following letter has been received by Commissioner N. T. Edwards from C. W. Stewart, a representative of the Standard Oil Company in southern California:

STANDARD OIL COMPANY

Sales Department

LOS ANGELES, CALIFORNIA, April 11, 1925.

MR. N. T. EDWARDS,

California Highway Commission,

Pacific Finance Building, Los Angeles, Cal.

MY DEAR MR. EDWARDS: I have just returned from a trip to Blythe and I want to take this opportunity of congratulating the State Highway Department on the wonderful improvement of the desert road between Mecca and Blythe since I was last over it, some three months ago.

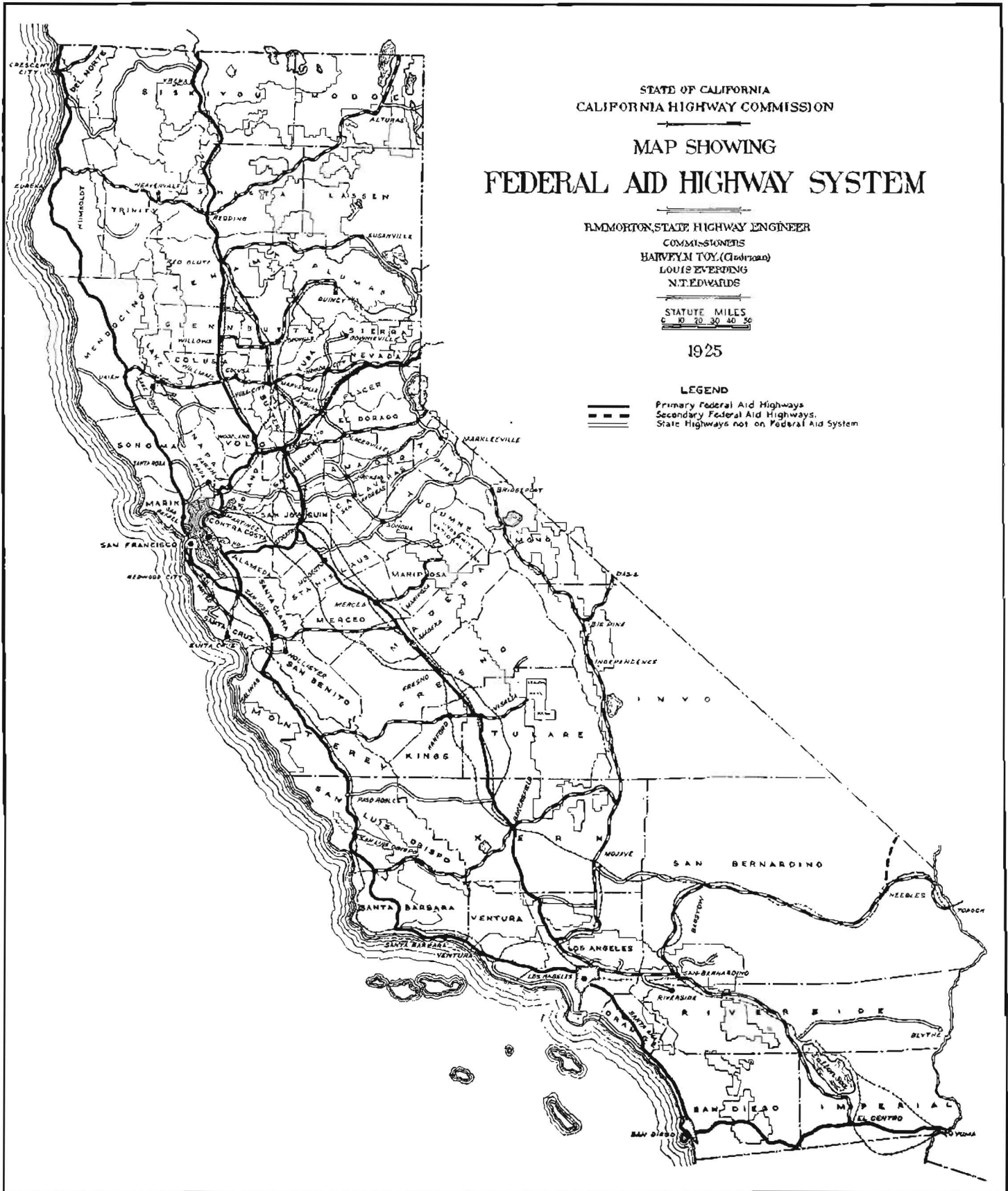
It is now possible for a person to make excellent time crossing the desert and at the same time to arrive physically fit.

The good work of the State Highway Department on this road is deserving of the highest commendation of the traveling public.

Sincerely yours,

(Signed) C. W. STEWART.

State maintenance of the Mecca-Blythe highway, the results of which are discussed in the above letter, has been made possible by the maintenance fund created by the passage of the 1923 gasoline tax law.



The above map shows the federal aid highway system of California in its relation to other state highways. The roads shown on this map constitute the present state highway system, except in one or two minor particulars where the federal aid system includes short sections not designated state highways.

CALIFORNIA STATE PRINTING OFFICE
JOHN E. KING, State Printer
SACRAMENTO, 1925