

Julie Woodson

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NATURAL ROCK GUARD RAIL IN THE KERN RIVER CANYON—Views on the Walker Pass route, east of Bakersfield, showing Division Engineer Woodson's natural rock guard rail. This guard rail is not costly and harmonizes with the rugged canyon.

On page five: NATURAL ROCK GUARD RAIL IN KERN CANYON.

California Highway Department

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ECONOMICAL PIPE CULVERT EXTENSION

By E. T. SCOTT, Maintenance Superintendent, Division VII.

AN ECONOMICAL plan for the extension of pipe culverts, without the destruction of headwalls, has been used successfully by Division VII, between San Diego and Oceanside, where widening and repaving of the state highway is under way.

A special maintenance crew was employed and headwalls for both corrugated and concrete pipe culverts were moved in record time by the use of a hoisting frame, designed and built at the division shops at Lankershim. This hoist consists of a ten-foot length of six-inch I beam, supported by four two-inch pipe legs, capable of adjustment to a height of six to eight feet.

A trolley carrying a two-ton Wright chain hoist was operated on the I beam, adjusted to move freely along the full length of the hoisting frame.

METHODS DESCRIBED.

Excavations were made around headwalls and down to the bottom of the footing and extended out from six to ten feet to provide room for moving. The excavation also extended from two to three feet back to permit disconnecting with concrete pipe or cutting corrugated metal pipe about a foot back of the headwall.

After cutting the pipe, the hoisting frame was lifted into place. The hoist chain was hooked on the back above the pipe and a turn taken around the top of the headwall, just below the offset. The headwall was then raised and moved out to its new location by means of the trolley.

Corrugated metal pipe extensions were fastened in place with two band couplings, while concrete extensions were

made with two-foot sections of pipe laid with mortar in the usual manner.

FAST WORK CUTS COST.

Fifteen to thirty-five minutes was the time required for moving headwalls, varying in weight from 1800 pounds for the twelve-inch, to 3900 pounds for the twenty-four inch. The work included placing the hoist frame, and lifting and moving the headwall a distance of six to ten feet.

The average cost of moving thirty twelve-inch headwalls and extending corrugated metal or concrete pipe culverts was \$5.15 for excavating and back filling; \$1.35 for cutting pipe and moving cut headwall; and \$3.25 for setting in pipe extension, making the total cost for extending one end of a twelve-inch pipe culvert \$9.75.

About twenty of the thirty of this size moved were of concrete pipe.

Headwalls for twelve eighteen-inch corrugated pipe culverts were moved an average of ten feet and the pipe extended at an average cost of \$7.96 for excavation and back filling; \$1.75 for cutting pipe, moving out and leveling up, and \$2.74 for setting in the pipe extension, or a total of \$12.46.

The average cost for eight twenty-four-inch corrugated pipe culverts, moved an average distance of seven feet and the pipe extended, was \$12.60 for excavation and back filling, \$2.85 for cutting pipe, moving out and leveling up, and \$3.25 for setting in the pipe extension, making the total cost for extending one end \$18.70.

(Continued on next page.)



NEW GRADE CROSSING WARNING—Plan being tried out in Division VI. Approaching a grade crossing at the northern entrance to Fresno, the warning is painted on the pavement at intervals for several hundred feet. Similar experiments are under way near Modesto, Division X. See story on Page Six.



ECONOMICAL CULVERT EXTENSION, DIVISION VII.—Upper right, hoisting frame, carrying a trolley with two-ton chain hoist, built at the Lankershim shops for moving concrete headwalls during culvert extension operations. Other views show the process of moving out the headwall and clamping of the pipe extension in place.

TRAFFIC MOUNTS UPWARD

ANNOUNCEMENT is made by the Maintenance Department that studies of the June traffic census, from stations in all parts of the state, indicate an increase of approximately 47 per cent over the figures for 1922, the date of the last census. This is the same increase as was recorded for the period between 1920 and 1922, and shows the traffic increase keeping pace with the increase in the number of motor vehicles.

June figures also showed a remarkable increase over April, due to the removal of quarantine regulations in almost all sections. Another census will be taken in August and at intervals of two months, indefinitely.

CHILEAN ENGINEERS VISIT STATE

THE state highway department early this month had the pleasure of entertaining Sr. Fermin Leon and Sr. Hector Vigil, highway engineers from the Republic of Chile, who were in the United States making a study of highways and construction methods.

Upon their arrival in San Francisco, the visitors were entertained by Chairman Harvey M. Toy of the highway commission. Fred J. Grumm, as special representative of State Highway Engineer R. M. Morton, accompanied the visitors on a tour over highways in the vicinity of San Francisco and Los Angeles.

PIPE CULVERT EXTENSION

(Continued from page 3.)

On the Los Angeles-Bakersfield highway, between Quail Lake and the Kern County line, a widening program is in progress. Headwalls on this work are being moved at approximately the same cost as those on the San Diego County job.

Here a two-ton Yale differential block is hung from a tripod made with three-inch pipe legs, each twenty feet long. The legs, and a U strap from which the block is hung, are fastened together with an inch bolt. For moving headwalls, the tripod is set so that the block hangs freely over the new location. As the headwall is lifted, it slides out to its final position.

The tripod hoist folds up and is easily moved from place to place. It is adaptable where headwalls are located on steep side slopes, but in level country the frame with the I beam trolley is preferable.

Howard C. Means, chief engineer, and Levi Muir, materials engineer of the Utah state highway department, recently completed an inspection of resurfacing and repaving of state and county highways in California.

NATURAL ROCK GUARD RAIL FOR MOUNTAIN ROADS



A GUARD rail consisting of stones blasted from the rocky walls of the canyons through which the roads have been constructed, and erected at a fraction of the cost of wooden guard rails, is being tried out on the Walker Pass highway and the Sequoia Park lateral by Division Engineer J. B. Woodson of Division VI.

"Two men stones," approximately 12 inches square at the top and 18 to 24 inches square at the base, 3 to 3½ feet long, have been placed at intervals of 6 to 7 feet along graded sections of the highway in the Kern River canyon and also between Three Rivers and the boundary of the Sequoia National Park. The stones are embedded in the ground to a depth of 12 inches and are placed along the edge of the road in the same location as a wooden guard rail.

Cost is Much Less.

The cost of procuring stones of the proper size and their erection averages \$1 per stone or \$880 per mile, as they are needed only on one side of the road. The cost of a continuous wooden guard rail in the same location, Woodson estimates at \$7,920 per mile, hence a great saving in favor of the rock.

The heavy stones, under ordinary circumstances, will prevent a machine going off the road into the river, Wood-

son declares, pointing out that even if dislodged their weight probably would hold the average automobile.

In the Kern River canyon, the minimum width of the grade is twenty-two feet between the rock guard rail and the canyon wall and in most places it is wider. A wide highway also leads to the Sequoia Park.

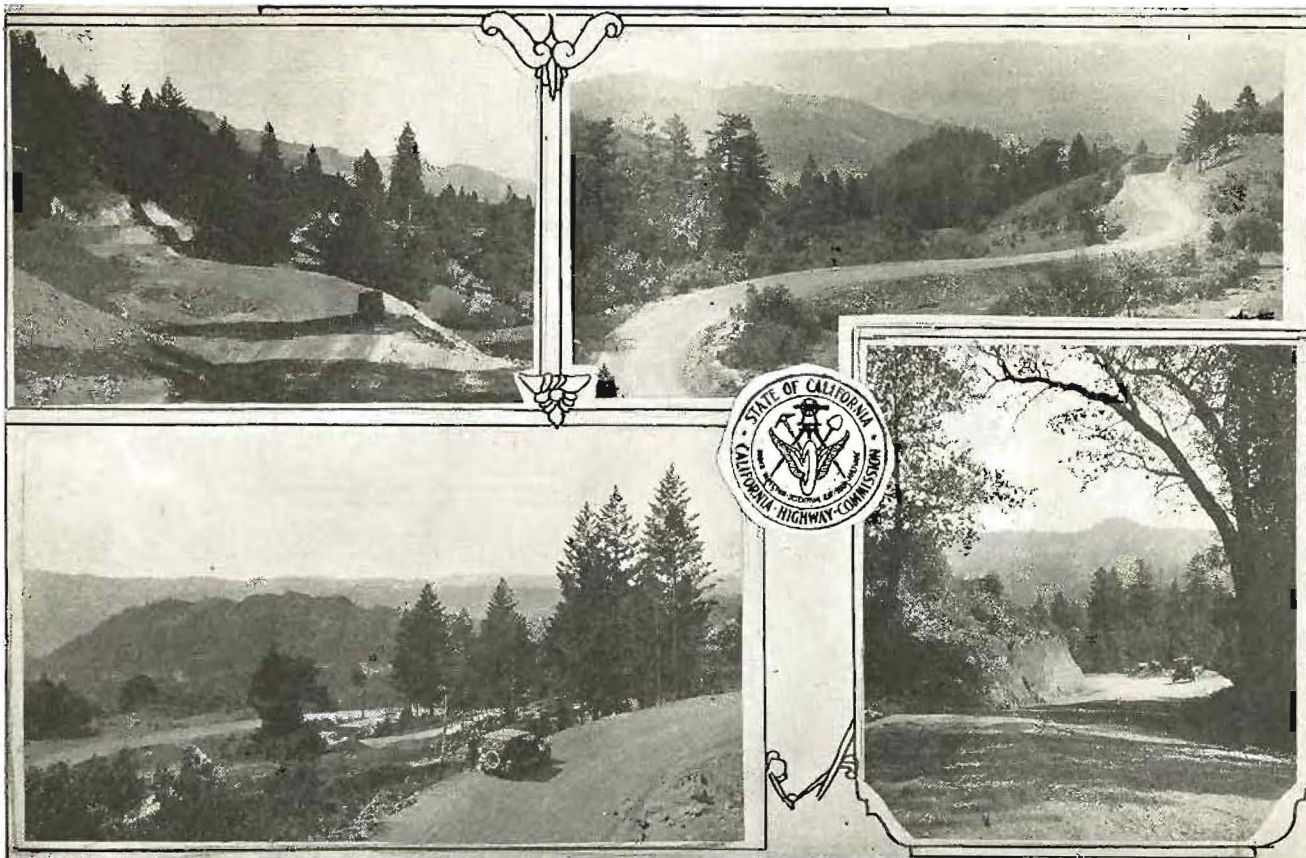
The rock is of a light color granite plainly visible at night. Painting is declared unnecessary and would only inject the artificial into the natural colors of the canyon.

A somewhat similar rock guard rail is being installed on the Mount St. Helena highway and on other state highways in Division IV. (See front cover illustration.)

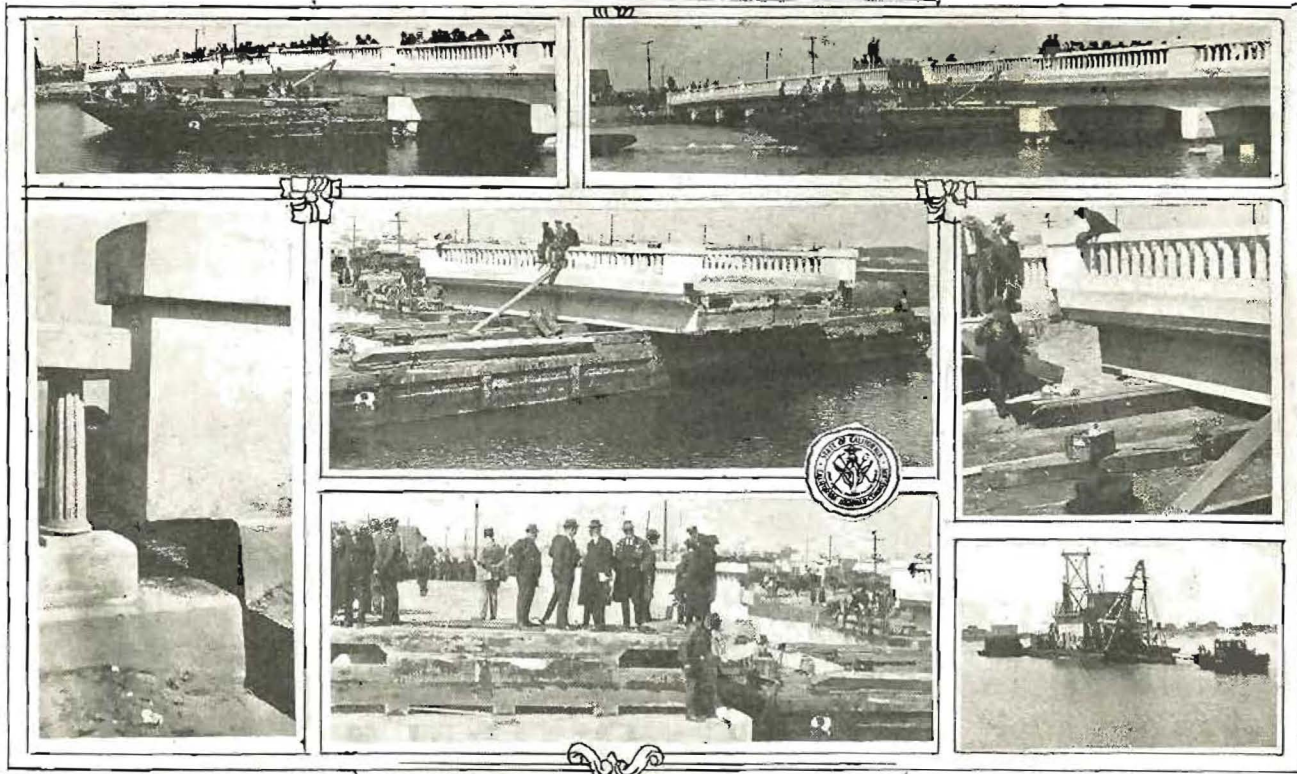
NEW STATIONS FOR DIVISION V

CONSTRUCTION of two new maintenance stations is now under way in Division V at Santa Maria and Buellton, both in Santa Barbara County. The California Highway Commission recently completed the purchase of a lot and residence in Santa Maria and the construction of a 30' by 50' maintenance warehouse on the property has been started.

A similar warehouse and storage building is being constructed at Buellton where the state has owned a site for some time.



OPENING LAKE COUNTY TO THE MOTORIST—Views of the recently completed Mount St. Helena State Highway between Calistoga, Napa County, and Middletown, Lake County, the pride of Division IV. This wonderfully scenic road climbs over the mountain with easy grades, taking the place of a steep and dangerous toll road, Lake County's only southern outlet in past years. (Photos by Assistant Division Engineer A. W. McCurdy.)



Using the tides to remove a span of the Alamitos Bay bridge, Los Angeles County.

HARNESSING THE TIDES TO OPEN A BRIDGE

IT was necessary, recently, to open the Alamitos Bay bridge, on the Coast boulevard, Los Angeles County, to permit the passage of a large dredge. The center concrete span had been constructed with this possibility in mind, and when the opening was requested, Division VII asked for bids for removing and replacing the span. An offer of approximately \$7,500 was received, the state to assume all risk of damage to the bridge.

The bid was believed too high, and the division undertook the work which was successfully completed at an expense of about \$500.

TIDE LIFTS SPAN.

A large barge was placed under the span at low tide and

the span lifted from place as the water rose in the channel. It was then floated back and lowered into place as the tide went out.

The entire job was done with such dispatch that the bridge was closed to traffic only five hours. No damage to the bridge was reported, despite the fact that the span was 46' 6" by 26' 10" and weighed 168 tons.

Division Engineer S. V. Cortelyou, in his report to the state highway engineer, highly commends L. M. Ranson, assistant engineer on construction work, for his efficiency in planning and handling the removal of the span.

The pictures above show scenes before and during the removal of the span and while it was being returned to its place in the bridge.

NEW GRADE CROSSING WARNING TRIED IN SAN JOAQUIN

A NEW type of grade crossing warning is being tried out by the maintenance forces near Fresno, in Division VI, and in the vicinity of Modesto, in Division X. The warning consists of broad diagonal lines painted at intervals across the pavement at the approach to railroad crossings. Alternating with the diagonal lines, are painted in large letters the words "R. R. Xing."

The lines are first placed about 500 feet from the crossing and are repeated several times so that it is almost impossible for a motorist to drive over them without his

attention being forcibly called to the fact that he is approaching a railroad.

A Fresno County traffic officer has expressed the opinion that the warning painted on the pavement near Roeding Park, at the northern entrance to Fresno, has had considerable effect in slowing down the speed of vehicles at the crossing. A stranger remarked to a maintenance foreman that he believed the warning was the best he had ever seen.

The plan may be tried out elsewhere in the state if the results obtained justify the relatively small expense involved. (See illustration on page three.)

TWO ACTING DIVISION ENGINEERS GET PROMOTION

H. S. Comly and J. C. McLeod Now Have Rank of Grade Six.

AS THE result of recent civil service examinations successfully passed, H. S. Comly and J. C. McLeod have been given the rank of Grade Six and advanced to the position of division engineer. The promotion became effective July 1st, it is announced by State Highway Engineer R. M. Morton.



H. S. COMLY

Comly's service with the state dates back almost to the beginning of state highway construction. It was in 1912 that he joined Division II as chief of party and since that time he has successively held the positions of resident engineer, assistant division engineer, acting division engineer, and now division engineer.

Before accepting a position with the state, Comly was employed by the Mexican National Railways and by the highway commissions of San Diego and Los Angeles counties.

McLeod From Oregon.

J. C. McLeod, the new chief of Division X, gained much of his experience as a highway engineer in the service of the Oregon Highway Commission. He held the position of division engineer in Oregon from 1917 to 1923 and prior to that time was engaged in railroad work.



J. C. McLEOD

Mr. McLeod is a graduate of the University of Washington at Seattle. It has taken him but a few months to become a loyal Californian.

MUST STAMP PAVEMENTS

Specifications for concrete pavement on California state highways now require contractors to stamp the date and name of the builder at the beginning and end of each day's run. This will permit the public to know who the responsible builder in each instance was and also will permit engineers in the future to quickly determine the history of any particular piece of pavement.

Samples of the concrete mix are taken daily on all paving jobs for testing at the headquarters laboratory.

A rigid inspection of eating houses along the Coast and Valley state highways recently was made by the California State Board of Health.

In harmony with the program of power conservation in Southern California, Division VII has discontinued the lighting of the Newhall Tunnel.

FOREST CONTRACT LET

THE United States Bureau of Public Roads has let a contract for the grading of twelve miles from Patrick's Creek to the Oregon line on the Crescent City-Grants Pass road, in Del Norte County. H. H. Boomer of Spokane, Wash., was the successful bidder.

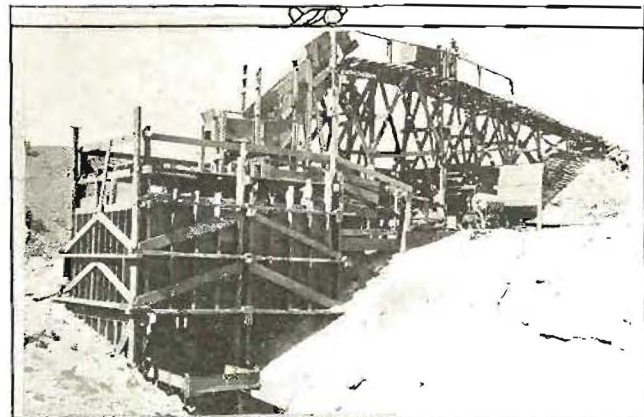
The section to be built, which eventually will become a part of the California state highway system, is the most northerly unit of the Redwood Highway in California. Funds for the construction of the unit will come from national forest appropriations.

Farther south, a section of the state highway between Trinidad and Fresh Water Lagoon, under contract for some time, has been opened to traffic and is now practically complete.

Widening Commended.

Users of the Redwood Highway have commended the work being done by state forces in Mendocino County, north of Willits, where a power shovel is moving 1,500 yards of material a day in connection with widening and straightening operations. The work is under the direction of Division I.

Today, more clearly than ever before, improvement of means of communication is one of the great forces making for cultural and economic advance.—President Coolidge.



DIVISION IX BUSY—Rock crushing plant of Division Engineer F. G. Somner getting out surfacing material for a section of the state highway in the Sherwin Hill district, Mono County.

\$9,025,247 is Total of Contracts Awarded by California Highway Commission January 9, 1923, to July 16, 1924

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

| Cont. No. | Division | County | Route | Sec. | From | To | Miles | Type | Contractor | Estimated cost | Date Contract approved by Attorney General | Contract time, days |
|-----------|----------|---------------|-------|-------|--|--------------------------|--------|--|---------------------------------|----------------|--|---------------------|
| 420* | IV | Sonoma | 8 | B | Arroyo Seco Creek Bridge | | | Reinforced Concrete Bridge | Davison & Nicholson | \$14,040 35 | June 26, 1923 | 92 |
| 421* | VII | Los Angeles | 9 | G | Fish Canyon Road | Anaheim | .97 | Grading and 24"x7" Concrete Base | W. D. McCroy | 43,535 01 | June 26, 1923 | 114 |
| 422* | IV | San Mateo | 55 | B | Across Crystal Springs Dam | | .11 | Reinforced Concrete Girder Bridge | J. H. Shepherd | 51,865 44 | July 24, 1923 | 135 |
| 423* | IV | Sonoma | 1 | A | Near Lytton | | .20 | 24' Grading, 18"x6" Gravel Surfacing | Teslan Brothers | 11,870 05 | Aug. 4, 1923 | 69 |
| 424* | I | Del Norte | 1 | A & B | Across Wilson Creek | | | Reinforced Concrete Girder Bridge | C. H. Gildersleeve | 8,851 97 | Aug. 29, 1923 | 76 |
| 425* | IV | Santa Clara | 32 | A | 5 miles east of Gilroy | San Felipe | 4.52 | Grading and Gravel Surface | J. P. Holland | 104,321 93 | Sept. 6, 1923 | 95 |
| 426 | VIII | Riverside | 26 | D | Across White Water River | | .58 | Reinforced Concrete Bridge | Gibbons & Reed | 138,475 87 | Sept. 8, 1923 | 135 |
| 427 | II | Lassen-Plumas | 29 | A | 3 miles east of Chester | 3 miles east of Westwood | 12.66 | Gravel Surface | T. H. & M. C. Polk | 70,063 66 | Oct. 13, 1923 | 250 |
| 428 | VII | Los Angeles | 23 | B | Santa Clara River Bridge | 1-5 mile easterly | .19 | Concrete Base | H. E. Cox | 13,086 72 | Nov. 20, 1923 | 48 |
| 429 | VIII | Riverside | 26 | A | In the city of Beaumont | | .73 | Asphalt Concrete Pavement | Southwest Paving Co. | 23,041 15 | Dec. 10, 1923 | 33 |
| 430 | VIII | Imperial | 26 | A | Westmoreland | 4 miles west | 3.98 | Grade and Gravel Surface | Pioneer Transfer Co. | 50,704 10 | Dec. 10, 1923 | 100 |
| 431 | II | Shasta | 3 | E | Redding | Bayha | 9.88 | Concrete Base | Kaiser Paving Co. | 478,414 87 | Dec. 29, 1923 | 250 |
| 432 | III | Nevada | 38 | A | Truckee | Boca | 7.22 | Grading | Irey & Holden | 85,905 79 | Jan. 24, 1924 | 300 |
| 433 | IV | Sonoma | 51 | B | Beltane | Schellville | 11.50 | 7.23 miles Grade and Gravel Surfacing—4.27 miles Concrete Base | Galbraith & Jones | 304,401 02 | Jan. 26, 1924 | 250 |
| 434 | II | Tehama | 3 | D | Los Molinos | Red Bluff | | Six Reinforced Concrete Bridges | McKenzie & Pollard | 58,766 31 | Jan. 24, 1924 | 300 |
| 435 | VII | Orange | 60 | A & B | Huntington Beach | Corona Del Mar | 8.20 | 8.20 miles Grading—3.52 miles Concrete Base | W. F. Beal | 208,302 89 | Jan. 30, 1924 | 200 |
| 436 | V | Monterey | 2 | F | Across San Lorenzo Creek | | | Reinforced Concrete Girder Bridge | Rocca & Caletti | 32,629 61 | Jan. 30, 1924 | 275 |
| 437 | IV | Santa Clara | 32 | B & C | Across Cedar Creek and North Fork Pacheco Creek | | | Reinforced Concrete Bridges | John Simpson & Co. | 46,617 51 | Feb. 29, 1924 | 150 |
| 438 | VIII | Imperial | 27 | B | Sand Hills | Colorado River | 14.05 | Grade and Gravel Surface | Kisselburg, Schmidt & Hitchcock | 208,111 50 | Mar. 3, 1924 | 200 |
| 439 | IV | San Mateo | 55 | C | Halfmoon Bay Road | La Honda Road | 12.36 | Grade and Gravel Surface | J. P. Holland | 573,064 60 | Mar. 24, 1924 | 175 |
| 440 | I | Humboldt | 1 | F | Across Van Dusen River near Alton | | | Reinforced Concrete Bridge | Bordwell & Zimmerman | 98,555 00 | Apr. 23, 1924 | 250 |
| 441 | II | Lassen | 27 | C & D | Janesville | 4 miles west of Milford | 9.71 | Gravel Surface | Warren Construction Co. | 52,713 10 | May 5, 1924 | 200 |
| 442 | III | Placer | 37 | C | 1/2 of a mile north of Colfax | Gold Run | 8.03 | Grading | C. R. Adams | 337,427 24 | June 20, 1924 | 450 |
| 443 | I | Del Norte | 1 | A | Klamath River Bridge | | | Reinforced Concrete Bridge | F. Rolandi | 430,014 00 | July 8, 1924 | 450 |
| 444 | III | Nevada | 38 | A | Across Truckee River about 1 mile north of Polaris | | | Reinforced Concrete Bridge | Proctor & Cleghorn | 55,467 50 | | 150 |
| 444 | I | Humboldt | 1 | G & H | Eureka | Arcata | 6.45 | Concrete Pavement | J. F. Knapp | 267,809 85 | July 17, 1924 | 150 |
| 445 | III | Nevada | 38 | B | Boca | Floriston | 5.32 | Grading | Irey & Holden | 274,280 56 | | 300 |
| Subtotal | | | | | | | 116.56 | | | 84,041,227 50 | | |

*Completed.

MOTOR VEHICLE FUND CONTRACTS (Including Gasoline Tax Fund)

| | | | | | | | | | | | | |
|-------|-----|--------------------|----|-------|---|-----------------------|-------|--|---------------------------------------|-------------|----------------|-----|
| M-24 | V | San Mateo | 2 | A & B | San Bruno | Bersford | 5 13 | Painting Bridges, Coast Highway | D. E. Burgess | \$50,030 50 | Aug. 29, 1923 | 120 |
| M-25* | IV | Placer | 3 | A | Roseville | Lincoln | 1 06 | Concrete Shoulders and Asphalt Surface | Pacific States Const. Co. | 316,042 03 | Aug. 28, 1923 | 141 |
| M-26* | X | San Joaquin | 5 | A | Westerly boundary | Banta | 8 07 | Concrete Shoulders and 2d Story Broken Stone Shoulders | Kaiser Paving Co. | 35,387 66 | Sept. 14, 1923 | 70 |
| M-28 | V | San Benito | 67 | A | 1-5 mile south of San Benito River | Pajaro River Bridge | 3 04 | Grading and Asphalt Macadam Surface | Irey & Holden | 44,423 45 | Sept. 17, 1923 | 130 |
| M-29 | I | Mendocino-Humboldt | | | Route 1 | | | Grading and Asphalt Macadam Surface | Granite Construction Co. | 100,804 61 | Sept. 20, 1923 | 180 |
| M-30 | III | Monterey | 2 | I | Bridge across Salinas River at Nacimiento Station | | | Painting 17 Bridges | Chas. L. East | 12,285 31 | Nov. 6, 1923 | 135 |
| M-31 | V | Siskiyou | 3 | C | Hornbrook | Yreka | 11 00 | Painting 5 Bridges | Jenkins & Elton | 8,291 80 | Nov. 20, 1923 | 90 |
| M-32 | II | Siskiyou | 3 | C | 1/2 mile north Suisun River | Oregon Line | 14 30 | Floor Repairs | Theo. M. Maino | 21,886 87 | Nov. 20, 1923 | 90 |
| M-33 | II | Los Angeles | 4 | D | Quail Lake | Northerly boundary | 10 43 | 32,340' Guard Rail | Calvert & Calvert, Schroeder & Pearce | 28,103 46 | Dec. 1, 1923 | 100 |
| M-34 | VII | Sacramento | 4 | B | McConnell Station | Sacramento | 18 03 | Grade and Gravel Surface | Dunn & Baker | 355,395 90 | Dec. 5, 1923 | 150 |
| M-35 | X | San Diego | 2 | A & B | San Diego | Oceanside | 17 14 | Grade and Widen Roadbed | Williams & Singletary | 55,248 76 | Jan. 17, 1924 | 150 |
| M-36 | VII | San Diego | 2 | A & B | San Diego | Oceanside | 17 14 | Concrete Base | Kaiser Paving Co. | 444,400 71 | Jan. 17, 1924 | 200 |
| M-37 | II | Shasta | 3 | B & C | Bayha | Halfway Creek | 9 32 | Concrete Base | Jahn & Brassi | 533,913 55 | Jan. 24, 1924 | 250 |
| M-38 | X | Sacramento | 4 | A | Southerly boundary | Galt (R. R. crossing) | 1 89 | Grade and Gravel Surface | Nevada Contracting Co. | 571,987 93 | Jan. 21, 1924 | 800 |
| M-39 | VII | Los Angeles | 2 | B & C | Shoup Avenue | Westerly boundary | 13 08 | Concrete Base | Kaiser Paving Co. | 73,144 52 | Jan. 21, 1924 | 90 |
| M-40 | VII | Ventura | 2 | A & B | Southerly boundary | Camarillo | 13 50 | Grade and 11.56 miles Concrete Slab and Shoulders | Geo. H. Oswald | 435,897 22 | Feb. 4, 1924 | 300 |
| | | | | | | | | Grade and 7.4 miles Concrete Slab and Shoulders | Sam Hunter | 355,608 08 | Apr. 3, 1924 | 200 |

Eight

| M-41 | IV | Santa Clara | 5 | A | Militias | Coyote Creek | 3.72 | Waterbond, Macadam Shoulders and Asphalt Concrete Surfaces | 86,202 30 | Apr. 11, 1924 | 90 |
|------|-----|--------------|----|-------|--|--------------------|--------|--|----------------|---------------|-----|
| M-42 | VII | Los Angeles | 2 | D | Pasadena Avenue | Montebello | 2.78 | Concrete and Asphalt Surface | 202,249 85 | Apr. 29, 1924 | 130 |
| M-43 | X | Sacramento | 4 | D | Old Elk Grove | Sacramento | 8.28 | Twelve Bridges | 41,109 05 | May 9, 1924 | 100 |
| M-44 | VII | Solano | 7 | A | Yuba City | Estayria | 9.45 | Concrete and Asphalt Pavement | 240,579 35 | May 27, 1924 | 176 |
| M-45 | VI | Orange | 2 | A | Eastern boundary | San Juan Bridge | | Painting Roadway | 29,872 60 | June 4, 1924 | 150 |
| M-46 | IV | Marin-Sonoma | 6 | A | Across Pt. San Pedro Creek | | | Painting Bridge | 5,244 90 | June 24, 1924 | 60 |
| M-47 | IV | Contra Costa | 14 | A | Quarry Creek Bridge | Johnstonville | 4.64 | Reinforced Concrete Bridge | 4,229 60 | June 17, 1924 | 60 |
| M-48 | IV | Lassen | 20 | C | Susanville | Southerly boundary | 3.46 | Asphalt Macadam Pavement | 52,449 76 | June 23, 1924 | 120 |
| M-49 | IV | San Mateo | 2 | B | Redwood City | | | Shoulders and Asphalt Concrete Surface | 128,028 02 | June 23, 1924 | 120 |
| M-50 | X | Sacramento | 4 | A & D | Dry Creek Bridge | | | Floor Repairs and Painting | 16,777 20 | June 16, 1924 | 100 |
| M-51 | II | San Joaquin | 3 | A | Oldey Creek, Clear Creek and China Gulch Bridges | | | Painting Bridges | 5,310 80 | June 20, 1924 | 90 |
| M-52 | IV | Shasta | 3 | A | Greenville | Livermore | 4.33 | Portland Cement Concrete Shoulders | 57,060 12 | June 23, 1924 | 75 |
| M-53 | VI | Alameda | 5 | A & G | San Joaquin | Rancho El Rincon | 1.20 | Sea Wall | 420,312 75 | July 8, 1924 | 600 |
| M-54 | VI | Yuba | 2 | B | Sea Cliff | Fairfield | 3.96 | Gravel and Portland Cement Concrete Shoulders | 46,682 82 | July 14, 1924 | 75 |
| M-55 | X | Solano | 07 | A | Soosville | | 8.07 | Reinforced Concrete Bridge | 6,002 20 | July 17, 1924 | 120 |
| M-56 | V | San Benito | 5 | A | San Juan Creek Bridge | Enola | | Asphalt Concrete Pavement | 186,941 71 | | |
| | | San Joaquin | | | Western boundary | | | | \$4,984,020 19 | | |
| | | | | | | Grand total | 287.93 | | \$9,025,247 78 | | |

NOTE.—This total does not include special appropriations for cooperative forest highway projects, work under way by state forces, maintenance expenditures or prison road camp activities.
*Completed.

IN MEMORIAM

EDWARD A. ARAUJO

March 16, 1895—June 20, 1924.

ON SUNDAY, June 22, the Construction Department received the sad news of the death of Edward A. Araujo, who passed away at his home in Sacramento on the previous Friday evening from a heart attack. He was about his work as usual Friday afternoon and gave no indication that he felt the slightest illness.



EDWARD A. ARAUJO

Mr. Araujo was born in Santa Margarita, San Luis Obispo County, and spent his early years on his father's ranch.

In 1915, he decided upon engineering as a profession, and engaged in this work in and about Atascadero. Following this experience, he came to Sacramento to accept a position with the county highway organization

where he first became acquainted with the present state highway engineer, R. M. Morton. He served under Mr. Morton and also under Mr. W. S. Caruthers.

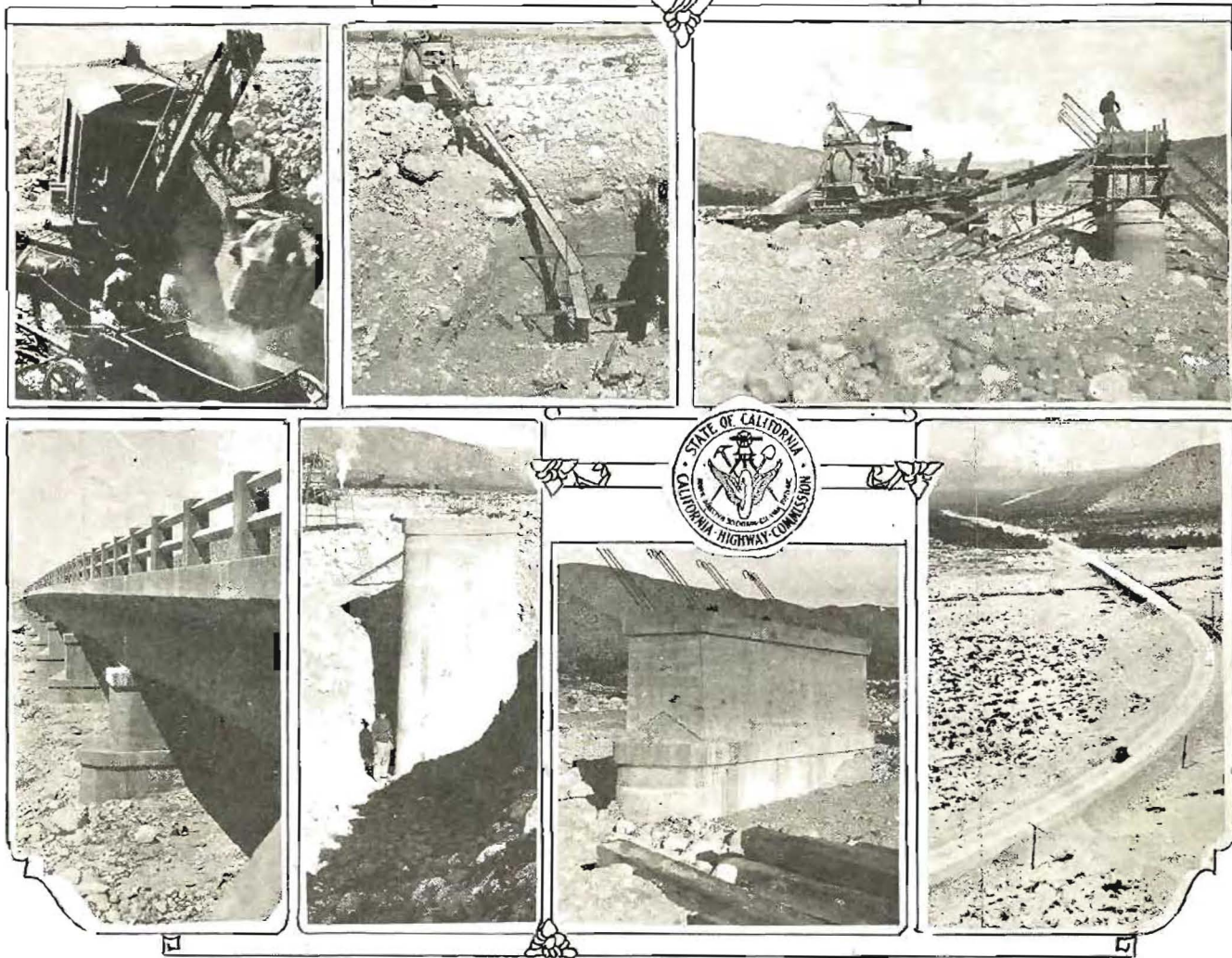
In 1918, Mr. Araujo acted as an assistant superintendent of construction at Mather Field, near Sacramento. Following this, he entered the Students' Army Training Corps at the University of Nevada where he remained until 1919, when he returned to Sacramento County.

From January, 1923, to the time of his death, Mr. Araujo was attached to the construction department of the state highway commission. He assisted in numerous important investigations, including soil and traffic studies, analyses of cost data, and matters relating to the control and apportioning of state highway funds. His last work was in connection with laboratory tests for the curing of concrete pavement with calcium chloride. This work was being organized at the time of his death.

It is with deep regret that the head of the department gives this brief review of the life of a man who seemed so necessary to the work he was doing and to the many friends he has left. In the course of a number of years of experience with men, there have been few instances in which the writer has had under his direction a man of such sterling loyalty and unusual cheerfulness of disposition. The vivacity, active spirit, friendliness, and ideals of conduct of Edward Araujo brought him the friendship and confidence of all those with whom he came in contact.

The Highway Commission in his death has lost a most worthy employee and his friends, a friend whom it will be difficult to replace.

C. S. POPE.



BUILDING A BRIDGE IN THE DESERT—Views showing various stages in the construction of the Whitewater River bridge on the Imperial Valley trunk line, Riverside County. The upper left shows the rather unique operation of a steam shovel excavating for a pier. The upper center view shows preparations for pouring concrete for one of the piers, while the completion of the capping is shown at the right. The lower views show a section of the completed bridge; a completed pier, indicating its depth below the bed of the stream; steel reinforcing for anchoring the pier to the superstructure of the bridge, and a general view of the completed bridge, showing wide sweep of the approach. Whitewater River is now practically dry but at times it is a raging torrent. (Photos by Division VIII.)

PLANS FOR \$2,000,000 IN NEW BRIDGES ARE APPROVED

THE importance which bridge construction has assumed recently in the state highway department is emphasized by the announcement that, since January 1st, State Highway Engineer R. M. Morton has approved for contract nearly \$2,000,000 worth of bridge and structural work, plans for which were prepared by the bridge department.

Included in this total, are plans for some fifty-five structures, including the large Douglas Memorial Bridge in Del Norte County, Van Duzen bridge in Humboldt County, the Ventura seawall, and groups of bridges in Sacramento, Tehama, and other counties. Plans for the construction of twenty-four bridges prepared by counties and the bureau of public roads also have been checked and approved, the cost of which will aggregate probably \$700,000.

The total approved for contract since the beginning of the year is several times the amount of bridge work approved in any similar period since the beginning of state highway construction in California.

Assistants Named.

Acting Bridge Engineer H. D. Miller, since the reorganization of the department to include supervision of bridge construction, has named several assistants to aid him in directing the work.

F. W. Haselwood, formerly assistant division engineer in Division I, has been placed in charge of all railroad grade crossing elimination work. He also will represent the state highway engineer on the recently created grade crossing committee, fostered by the California State Automobile Association.

Stewart Mitchell, formerly assistant bridge engineer of the Oregon State Highway Department, has been appointed assistant bridge engineer, following a recent civil service examination. He will be in charge of the construction of the \$400,000 Memorial bridge over the Klamath River.

D. C. Willett also has been appointed assistant bridge engineer. He will continue to act as office engineer.

L. D. Packard, formerly with Division VII, has been chosen to assist Mr. Miller in the supervision of bridge construction in the field and will have direct charge of certain portions of this work.

WILL TAX BILLBOARDS

MASSACHUSETTS will hereafter put a tax on the highway sign even though erected on private property. The contention is that the value of the sign is derived from the public highway, not from the private property on which it is located, and that the first obligation is to the public who owns the highway and gives the sign an advertising value. Permission from the landowner is a secondary matter.

It would be well for other legislatures to extend the Massachusetts idea and give the highway authorities some control over all signs erected on private property that in any way derive their value from their location as regards a public highway. This is the only way that the highway officials can keep any control over the sign and billboard nuisance along the public highways.—*Good Roads Magazine.*

HOW LONG WILL TIMBER LAST?

From the News Letter of the Wyoming State Highway Department.

The question is frequently raised as to the durability of timber when left in the open.

Georgia Highways carries an illustration showing a wooden head board of a grave in old Midway Cemetery in Liberty County, Georgia. The board is of black heart cypress timber and bears the date "Anno Domine 1770."

The carving was done by hand, and the somewhat unusual shape of the letters would indicate that the head board was made during the latter part of the 18th century. It has been constantly exposed to the elements since that time.

HIGHWAY PUBLICATIONS

Twenty-five states now get out monthly or weekly publications in the interest of highways. Arkansas, California, Florida and Utah have recently added interesting publications to the monthly list. All states are beginning to realize the urgent need for a publication of this kind in order that the people may be kept informed with accurate and reliable information regarding the activities of the state highway department. Such publications are both interesting and instructive. We congratulate these last four states on this forward step. *Texas Highway Bulletin.*

It is estimated that 10,000 automobiles carrying 40,000 motorists visited the Big Bear country in the San Bernardino Mountains during the July 4th week end. All records were broken for traffic over the Crest Route state highway.

"While as transportation facilities increase and transportation costs grow lower and cheaper, industry thrives, markets widen, commerce grows and wages increase by leaps and bounds."—Guy M. Walker in "Measure of Civilization."

The Truckee summit, on the Victory highway, was opened to travel May 5th and the Myers summit, on the Lincoln highway, opened April 30th. This is the earliest these roads to Lake Tahoe have been opened for many years.

Sprinkling of the highways east of Auburn and Placerville began weeks ago, owing to the dry condition of the mountains.

Eleven

A UNIQUE HONEYMOON

TOM MENDENHALL, employee of the service department of the headquarters shops, who has been the mechanic in charge of the cars used by the Committee of Nine in its inspection trips about the state, made such a hit with committee members that they refused to let him have time off for a honeymoon.

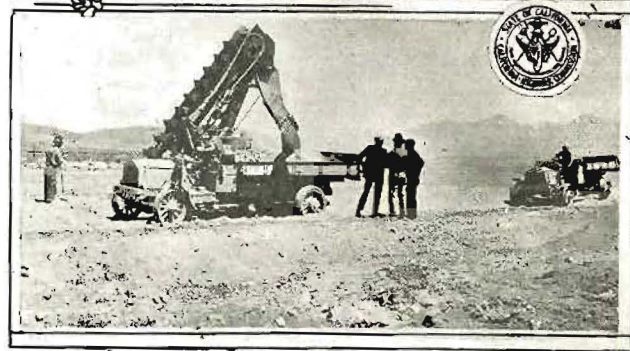
Tom and his bride of a few days were in Santa Cruz when the committee got ready for its trip over the Redwood Highway. A telegram was sent Tom and he was finally persuaded to bring his bride along.

When Mrs. Mendenhall, who was formerly Miss Maude Schillinger of Sacramento, arrived home eight days later, she had traveled some 1,500 miles over some of the best and some of the worst roads in the state. She had been an honored guest at a prison road camp and heard more about highways than some folks do in a lifetime.

She declared, however, she had a "wonderful time," even if there were fifteen men in the party, fourteen besides her hubby.

FRENCH ENGINEER ON VISIT

California highways and bridges were given considerable study recently by B. B. Gaspark, engineer connected with the engineering department of French Indo-China, while on a six months' leave of absence from his post in the Far East. While here, he asserted the fame of California highways has gone around the world and predicted that engineers from all nations will come here to study the state's successful methods.



IMPROVING THE NATIONAL OLD TRAILS HIGHWAY—Views of maintenance work under way on the Barstow-Needles connection with northern Arizona, through San Bernardino County. The upper view shows a drag at work, and, below, a loader is hoisting gravel into a truck for use as surfacing material. Much praise has been accorded this work which is being carried on with a comparatively small expenditure of funds. (Photos by Division VIII.)

BEDFORD PROPOUNDS SOME IDEAS ON ROAD BUILDING

By T. A. BEDFORD, Division Engineer, Willits.

THE highway engineer of today has a problem new to him but old to the railroad engineer.

If every automobile contained only the driver, we might say, "let him break his neck;" but there are so many innocent passengers, who are in no way responsible for the carelessness or recklessness of the driver, that the highway engineer must do his utmost to keep the cars on the road.



T. A. BEDFORD

To do this, he must have good alignment, wide roadways, open views, easy curves properly banked, and the dangerous places protected by a guard rail which machines can not go through.

We have a fast moving traffic which refuses to slow down for our *Danger* signals; we must remove as much of the danger as possible; we must provide as safe a roadway as possible and means to keep traffic on the road. A wreck on the road is never so disastrous as a wreck at the bottom of a cliff or embankment.

YOU'RE RIGHT, BEDFORD.

Yes, "You have to move dirt to build a road," also houses, barns, and even wells, and pay dearly for the privilege. Some small towns had better be moved to the highway.

A first class set of plans has a few houses and barns on the center line and a few small towns off of it. It takes a "leather legged" engineer and not a "feather legged" engineer to do this.

He needs the protection, for the dogs bite as he goes through the back fence, and politicians howl.

Somebody has got to do it some day, and the sooner the better.

The engineer who has not the nerve to do these things should go west.

"Straight is the path—and broad is the way" that leadeth not into the ditch.

SHOP WORK COMMENDED

AUTOMOBILES operated by employes of the state department of agriculture, along with those of other state departments, are repaired and serviced at the shops of the highway commission in Sacramento.

The following is quoted from a letter of one of the officials of the agricultural department to the head of the equipment department of the highway commission:

The Chief of my Division wishes me to take this opportunity to express to you our appreciation and satisfaction with the work done at the Highway Shops on the cars operated by us. We believe that the present arrangement of having repair work done by your Commission has worked out not only more economically but more efficiently than the old system.

DEL NORTE COOPERATES

AS A RESULT of recent action by the Del Norte County Board of Supervisors, Division I is in possession of a thirteen acre tract, on the highway just north of Crescent City, upon which a maintenance station will be established. The state has been given a free lease to the property without restrictions, for a period of ninety-nine years.

Division Engineer T. A. Bedford is enthusiastic over the action of the Del Norte supervisors in giving up a portion of the county fair grounds as he has been endeavoring to secure a desirable site for a maintenance yard in Crescent City for some time.

Maintenance Funds Also.

Del Norte County also has advanced the state highway commission \$8,000 for maintenance work on the Crescent City-Grants Pass highway. The contribution was made voluntarily and is more than Del Norte's share of the state motor vehicle fund. Surfacing of a section of the road with crushed rock is now underway.



SPREADING CALCIUM CHLORIDE—Methods used in Division IV to spread calcium chloride on the Skyline boulevard, south of San Francisco. This chemical absorbs moisture from the air, binding the surface of the road and lessening the dust.

DIVISION IV EXPERIMENTS

IN cooperation with the Whitney Chemical Company, the maintenance department of Division IV is making a series of experiments with substitutes for calcium chloride on a three-quarter mile section of the Skyline boulevard. Tests are being made with magnesium chloride crystals and a magnesium chloride liquid donated by the Whitney Company.

One unit has been treated with the salt, another with the liquid, and a third with sodium chloride. The division reports that indications are favorable for the magnesium chloride liquid test. If the result appears to justify it, additional tests will be made.

The end sought is a reduction in the cost of this type of maintenance. The tests are indicative of the desire of the engineering department not to overlook opportunities to try out new methods which may prove a more economical and efficient means of carrying on the highway work.

WHAT THE DIVISIONS ARE DOING

Park Roads Improved.

DIVISION IV reports present available funds will complete about half the improvement planned on the roads in the California Redwood park, in Santa Cruz County, now under the jurisdiction of the highway commission. A state-owned power shovel is at work on the job.

Widening of the Santa Cruz road at two old county bridges between Glenwood and Santa Cruz has greatly improved the safety of this route.

Division IV has been widening the Redwood Highway between Cloverdale Hill and the Mendocino County line. Calcium chloride has taken the place of sprinkling with satisfactory results.

J. P. Holland has been granted an extension of his contract for grading on the Skyline Boulevard and soon will be at work between Half Moon Bay Road and La Honda Road.

Convicts Transferred.

For the first time in many years, Division II is without a prison road camp. The last contingent of the Schilling camp has been moved to the Kern River canyon, east of Bakersfield, in Division VI, for work on the Walker Pass highway. A modified construction program is being continued on the Trinity lateral, where the prison camp work was discontinued.

Polk and Polk have started work on 4½ miles of asphalt macadam paving east of Susanville, in Lassen County. Surfacing of recently completed grading, both east and west of Susanville, also is underway.

Shortage of water compelled the Kaiser Paving Company to place ten miles of pipe line to continue paving operations north of Redding which are again underway. Widening operations in the Sacramento Canyon are progressing rapidly, the work going ahead night and day.

Shovels on the Job.

C. R. Adams of Merced, recently awarded the contract for grading between Colfax and Gold Run, Placer County, has two power shovels on the job, reports Division III.

The famous "Joy bump," on the Eastside Highway near Gridley, Butte County, has been removed by state forces.

The Folsom highway, between the Sacramento city limits and Brighton, has been reshaped and surfaced with asphalt concrete pavement.

Division III has plans and specifications ready for several large contracts on the Nevada connection, east of Auburn, and also for several specific maintenance and betterment jobs, all of which are awaiting additional funds before the work can go ahead.

Gravel Shoulders in Salinas Valley.

Division V has a comprehensive program under way for the placing of eighteen miles of gravel shoulders along the pavement between Soledad and King City, in Salinas Valley. Work of this nature already completed indicates that water-bound quarry waste, properly bound and rolled, gives better results than oiled rock shoulders, taking into consideration the expenditure involved and the particular materials available.

The shoulders add to the safety of the fifteen-foot pavement and will provide an excellent subbase for a future second story pavement.

Resurfacing of the Nacimiento River bridge, between Bradley and San Miguel, Monterey County, has been completed. Timber surfaced with asphalt was used. The good gravel detour through the dry river bed maintained during construction brought favorable comment from the traveling public.

Survey Resumed.

Division VI has resumed work on the survey of the proposed Madera-Yosemite highway, provided for by a special appropriation of the 1921 legislature.

Contractor W. S. Mead has completed the first 7½ miles of the Kern River canyon highway, in Kern County, and a Folsom prison road camp is at work on the second unit. Headquarters have been established at Rich Bar.

Rincon Seawall Under Way.

Division VII joins with the people of Ventura and Santa Barbara in rejoicing over the commencement of construction on the

Rincon seawall and fill along the Ventura Coast. The J. H. Tillman Company of Portland, Oregon, contractors, has begun operations and plans to rush the work as fast as possible. This company has handled other similar jobs and is prepared to carry the construction forward on an extensive scale. Traffic will be handled over the present trestle.

Grading has been begun by Williams and Singletary on nine miles of shoulder work in Orange County.

Test wells have been dug to determine foundation conditions at various bridge sites along the Coast Boulevard route through the Malibu Ranch, north of Santa Monica, in Los Angeles County. Grading operations on this section are under way by state forces.

Rough grading has been completed and culverts installed between Promontory Point and Corona Del Mar, on the Coast Boulevard, in Orange County, and grading is now in progress between the Newport Road and Huntington Beach.

Twenty men and a gas shovel are making progress on the southern end of the Ridge Route where the alignment on blind curves is being improved. A fleet of dump trucks is operated in connection with the shovel.

New Grade Sprinkled.

Heavy trucking over the new grade in the vicinity of Westmoreland, Imperial County, during the cantaloupe season, threatened damage to the crushed rock surfacing. A telegram to headquarters brought a sprinkling truck and the road was kept watered and in good condition. The division commends the efficient control of equipment.

To Try new Asphalt Spreader.

A new device for spreading asphalt concrete, designed to eliminate considerable hand labor and speed up handling of hot asphalt mix, will be tried out by Force and Currigan, contractors on the Vacaville-Batavia widening and thickening contract, it is announced by Division X. Paving will be begun by August 1st.

The Kaiser Paving Company hopes to complete the paving contract south of Sacramento in time for the opening of the state fair.

Progress is being made on line and grade revisions on the highway between Silver Mountain and Markleeville, in Alpine County.

Permanent camps for maintenance forces have been completed on the Carson Pass Road near Corral Flat and on the Sonora-Mono road at Baker's Station. Near the latter point, a new unit of road has been constructed to take the place of one destroyed last winter by a cloud-burst.

A considerable portion of the Big Oak Flat road has been surfaced from a crushing plant established near Second Garrotte.



"THAT THE PUBLIC MAY KNOW"—One of the signs erected in Division IV to inform the public concerning highway construction under way in Sonoma County.

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 and this privilege is extended newspapers and periodicals without restrictions.

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

Vol. I. JULY, 1924 No. 7

JUST AMONG OURSELVES



HIGHWAY NEWS NOTES

Stanton is Speaker.

ASSISTANT State Highway Engineer T. E. Stanton was a speaker before the national convention in Pasadena of the American Society of Civil Engineers. He discussed a recent paper of Dr. L. E. Hewes of the United States Bureau of Public Roads on the "Development of Highway Traffic in California."

C. S. Pope, construction engineer, addressed a meeting of the Sebastopol Chamber of Commerce on July 14th on the subject of highways, representing Mr. Morton.

Higher standards of construction on California state highways were discussed recently by Chairman Harvey M. Toy and Division Engineer J. H. Skeggs before a meeting of the Purchasing Agents' Association of Northern California.

Bridge Department Notes.

L. D. Packard, recently from Southern California, has joined the staff of the bridge department at headquarters.

Stewart Mitchell, until recently connected with the Oregon state highway department, is now among the tall timber along the Klamath River in Del Norte County where he will act as resident engineer on the construction of the Klamath River Bridge.

E. L. Nelson, resident engineer on the Klamath River piling job, recently sent in a receiving record for a nine-pound son. Headquarters sends best wishes.

Takes June Bride.

Paul C. Ricks, of the Division I drafting force, took Miss Lilas M. Cole of Willits for his bride during June.

E. W. Roberts of Division I is reported stepping high since the arrival of a daughter in his home on June 26th.

R. P. Hamlin, superintendent of the division shops at San Luis Obispo, was a visitor at the Willits office early in the month.

Comly Visits Old Home.

H. S. Comly, division engineer at Dunsuir, recently enjoyed a two weeks vacation at his old home in San Diego.

Division I reports that Richard Arthur Tremper Jr. reported for duty at the home of Mr. and Mrs. Tremper on June 7th.

Other new arrivals in the division are a daughter at the home of Mr. and Mrs. Oliphant; a son to Mr. and Mrs. Lambly; and a daughter to Mr. and Mrs. Hilton.

J. H. Orr reports landing a 26-inch steelhead trout in Rogue River. Who's next?

Mrs. L. A. Ralston and daughters journeyed to Southern California on their vacation.

F. Heard returned recently from a vacation trip to the Yosemite.

Carl Hague and family enjoyed a motor trip to Crater Lake during the early part of the month.

Headquarters News.

Miss Elizabeth Eizel enjoyed a vacation trip to Yellowstone National Park during early July.

Mrs. Alice Nathan made San Diego the destination for her vacation trip.

Other headquarters folks who have been away on vacations are Miss Hazel McBeath, Mrs. Pearl Moynham, Mrs. Beulah Farley, Mrs. Julia Harlow, and Geo. T. Gunston.

Miss Helen Nason, stenographer in the headquarters maintenance department, is now Mrs. Horton H. Halsted following a ceremony performed in Sacramento June 14th.

Engineers Assigned.

Division III reports that A. C. Irish has been named assistant resident engineer on the Colfax-Gold Run grading contract and that W. G. Remington has been assigned to a similar position on the work underway at the Truckee Summit.

Picnic in Division V.

Staff employees of Division V with their families enjoyed a barbecue steak dinner at a picnic ground near San Luis Obispo on June 17th. The dinner was followed by an evening of merriment around a large bonfire.

W. E. Barney, Division V draftsman, tried the High Sierra for a vacation and returned home declaring old San Luis climate the best in the state.

News From the San Joaquin.

P. L. Wilcox has been transferred from Lost Hills to Coarse Gold in charge of the Madera-Yosemite survey, reports Division VI.

C. M. Rosenberg has been named resident engineer for the prison road camp grading work in Kern River canyon.

W. J. Nelson, instrument man on Kern River location work, has been transferred to the Los Angeles division.

Eugene Garrigan has been transferred to Division X at Sacramento.

Elliott Completes His Work.

Judge J. C. Elliott, right of way man for the highway commission on the Oxnard-San Juan Capistrano highway for the past two years, has completed his work and returned to Oxnard to resume his office of Justice of the Peace. (Highway employees arrested in the vicinity of Oxnard are likely to see a familiar face in a strange place.)

J. O. Marsh, office engineer in Division VII, has been reelected director of the Los Angeles chapter of the American Association of Engineers. J. C. More, assistant division engineer, has been appointed treasurer.

B. H. Burrell, of the bridge department, is now resident engineer on the Rincon seawall job.

Enjoy Outing.

Division VIII, the "Division of Desert Highways," recently enjoyed a grilled steak dinner at the San Bernardino city playgrounds on the Crest Route. Division Engineer E. Q. Sullivan challenged all comers at horse shoes.

Howard Noble, chief of party of Division VIII, was transferred recently from the Imperial Valley to Waterman Canyon in the San Bernardino Mountains. The change in temperature was from 119 to 80 degrees in the same day.

Miss Della Bitke, Division VIII clerk, visited her former home in Chicago while on a vacation.

Orin B. Fields, draftsman, took unto himself a wife in Los Angeles on June 18th. After a honeymoon in the Big Bear country, he returned to work with the usual peace offering of cigars and candy.

Continued on Page Fifteen.



SMILEWAYS



EPIC DEDICATED TO COMMISSIONER LOUIS EVERDING

ROCK ETERNAL.

Many, full many, years ago
When the cave man held full sway,
He used to slug his wife with rocks
To pass the time away.

Then several æons sped them by
Till the Pharaohs came on deck,
And they heaped a pile of rocks on high,
The pyramids, by heck!

Still later in the scale of time,
Before hash shops were known,
The Greeks, being given more to art,
With rocks built Pantheon.

A few more years went by, and then,
With no more Huns to goad,
Bold Caesar quoth "the times are slow,"
So he built with rocks a road.

Then the fathers of those who baked the beans,
Put all their goods in hock,
And they sailed across the bounding main
To land on Plymouth Rock.

And about this time Mr. Murphy said
To his good friend Malone,
"Tis a quiet old world we have, withal,"
So they kissed the Blarney stone.

And so the rock game carried on
Until, in modern times,
The millionaire heaps up his rocks,
And scorns to count the dimes.

And only four short years gone by,
Oh! why do we not die,
We used to put our foot on rails
And sip sweet rock and rye.

To the divisions now, Chief Morton says,
"Go forth and get some rock";
We do, and Pope he comes along,
Says he, "That's mud, not rock."

And now the very candy looks like rock,
'Tis sad for me to tell,
We'll blame it on the bloomin' Frogs
And—Louis from Korbel.

So, from the silent rocks I learn
That some things may be done
If those who do them mix with work
A little bit of fun.

—H. S. Comly.

Many a driver has failed to realize that a car moving along the highway at forty miles an hour is a big responsibility.—St. Paul *Pioneer Press*.

The advisability of passing a car at a curve depends upon whether the widow will think the loss covered by insurance.—Fairmont (Minn.) *Independent*.

It is never too early in the season for motorists to remember that even on a single track railroad trains come from both ways.—Bemidji (Minn.) *Pioneer*.

Fifteen

Automobiles have succeeded in putting most of the horses out of business, but the jackass crop is still going strong.

Hordes of autos now remind us,
We must mend our road today;
And departing leave behind us
Paths that are not worn away.

When our children pay the mortgage
Father made to carry the load,
They'll not have to ask the question
Here's the bond, but where's the road?

Tennessee Highways.

I stood on the bridge at midnight,
A beaver was damming the river,
And a guy with a broken radius rod
Was doing the same to his flivver.

"Some Digging Animal."

R. S. Badger, of the headquarters maintenance department, was once resident engineer on a grading contract. It was his custom to dig holes in the subgrade to see that the water penetrated to the bottom of all fills.

One day the contractor visited the work, in not the best of humor, and the following conversation took place with his foreman:

Contractor: "Where's Gopher?"

Foreman: "Who do you mean by Gopher?"

Contractor: (impatiently) "Gopher, mole, squirrel, woodchuck—"

Foreman: "Oh! you mean Badger."

Contractor: (with much relief) "Yes. I knew it was some kind of a damned digging animal."

From the Accounting Department.

Mr. Cropsey: (on receipt of a letter from a vendor) "I believe some stenographer must be handling this correspondence."

Mr. Pearce: "I think so myself. It is surely someone without brains."

A Dutch judge upon trying a speed maniac for injuring a pedestrian: "Owing to de extreme gravity of dis case, I vill take it under advisement but will ewentually give a verdict to de plaintiff."

HIGHWAY NEWS NOTES

Continued from page 14.

Clifford J. Temby, formerly with headquarters and now with Division X, is the proud daddy of Jack Temby, Jr., who arrived on June 23rd.

W. W. West, formerly with Divisions III and IV, is now a draftsman with Division X.

R. E. Pierce, Division X maintenance engineer, recently enjoyed a vacation with his family at Bijou Lake Tahoe.

Other members of the Division X staff who have been on vacations recently are: L. E. McDougal, office engineer; Mrs. Daisy M. Nugent, stenographer, and T. Hilmar Nervig, clerk.

F. C. Hewett is now resident engineer on the Rockville-Fairfield shoulder and widening job.

Wedding in Division IV

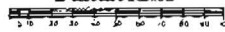
H. G. Hughes, draftsman, was married during June to Miss Ann Louise Simonsen. They enjoyed a honeymoon in Yosemite Valley and will make their home in San Francisco.

W. W. West, draftsman, has been transferred to Division X at Sacramento.

The fact is that the only perfect rule of safety is to have safe drivers of automobiles.—St. Cloud (Minn.) *Journal-Press*.

STATE OF CALIFORNIA
 CALIFORNIA HIGHWAY COMMISSION
 MAP SHOWING
 STATE HIGHWAY SYSTEM

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



1924

LEGEND

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



DIVISION HEADQUARTERS

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

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